for chapel and school, as at present they are at great disadvantage as to room for such purposes. We believe this institution is doing good.

All of which is respectfully submitted.

(Signed) THOS. BELL,
On part of the Senate.
S. WILLIAMS,
J. R. WHEELER,
On part of the House.

TWENTY-FIRST ANNUAL MEETING

OF THE

Iowa Improved Stock Breeders' Association,

HELD AT

AGRICULTURAL COLLEGE, AMES, IOWA,

OCTOBER 17 AND 18, 1894.

OFFICERS:

President—W. W. McCLURG, Waterloo. Vice-Presidents—J. P. MANATREY, Fairfield; E. BAKER, Jr., Farley; JOHN COWNIE, South Amana; W. B. BARNEY, Hampton; PROF. C. F. CURTIS, Ames; W. W. VAUGHN, Marion; H. D. FARNUM, Newton; C. C. NORTON, Corning; F. R. SHAFFER, Campbell; HON. L. S. CURTIS, Ft. Dodge; J. A. BESSON, Sanborn.
Secretary and Treasurer—GEO. W. FRANKLIN, Atlantic.
Stenographer—C. L. DAHLBERG, Des Moines.

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1895.

IOWA IMPROVED STOCK BREEDERS' ASSOCIATION.

SECRETARY'S REPORT.

To His Excellency, HON. F. D. JACKSON, *Governor of Iowa:*

In compliance with the provisions of the statute, I have the honor to present the general review of the condition of this Association, and to render a stenographic report of all the proceedings of the last meeting, which was held in the town of Ames, Iowa, October 17 and 18, 1894.

GEO. W. FRANKLIN,
Secretary.

PROGRAMME.

WEDNESDAY AFTERNOON, OCTOBER 17.

1:00 O'CLOCK.

Welcome, by President W. M. Beardshear, Ames.
Response, by Hon. Daniel Sheehan, Osage.
President's address.
Appointment of committees.
"Farm Poultry," by W. K. Laughlin, Ft. Dodge.
Discussion.
"Management of Cattle—Present Conditions," by Richard Baker, Jr., Farley.
"Lessons of 1894," by C. L. Gabrielson, New Hampton.
Discussion, led by Hon. S. B. Packard, followed by Messrs. Norton, Barclay, McHugh, and others.

EVENING SESSION.

7:30 O'CLOCK.

"Heredity," by A. G. Lucas, of the *Homestead*, Des Moines.
Discussion, led by Prof. James Wilson, followed by Profs. Kent, Stalker, and others.
"Feeding," by Prof. James Wilson, Ames.
"Economy of Feeds," by Prof. D. A. Kent, Ames.
Discussion, led by E. C. Bennett, followed by Prof. C. F. Curtis, W. M. Lambing, and others.
"What We are Doing in Wisconsin," by Hon. Geo. McKerrow, Madison, Wis.

THURSDAY MORNING, OCTOBER 18.

9:00 O'CLOCK.

"Agricultural Education," by John Cownie, South Amana.
Discussion, led by Dan Sheehan, to be followed by Hon. A. V. Stout, C. L. Gabrielson, and others.
"Swine—The Value of State Fair Premiums and Boom-priced Sires," by D. L. Howard, Jefferson.
Discussion, led by Hon. B. R. Vale, to be followed by Geo. Prine, R. J. Johnston, and others.
"Corn Fodder," by E. C. Bennett, Tripoli.
Discussion, to be led by C. S. Barclay, followed by Joseph J. Edgerton, Hon. S. B. Packard, and others.
"Sheep—Present Profits and Future Prospects," by H. G. Codd, Sioux City.
Discussion, led by Hon. L. S. Coffin, followed by J. J. Edgerton, L. Smith, and others.

THURSDAY AFTERNOON.

1:30 O'CLOCK.

Report of Secretary and Treasurer.
Unfinished business.
Reports of Committees.
"Practical Dairying," by Prof. F. A. Leighton, Ames.
Discussion, led by P. G. Henderson, followed by A. C. Tupper, Commissioner Boardman, and others.
"Where the Horse Is At," by Hon. D. P. Stubbs, Fairfield.
Discussion, led by Prof. C. F. Curtis, followed by John Cownie, N. J. Harris, and others.
"Short-Horn Cattle as an Investment," by Col. J. J. Smart, Humboldt
General Discussion.
"Have the Farmer and Stock Grower Sufficient Protection from Disease?" by Prof. M. Stalker, Ames.
General Discussion.

OFFICERS FOR 1895.

PRESIDENT.

R. J. JOHNSTON,	Humboldt.

VICE-PRESIDENTS.

J. P. MANATREY,	Fairfield.
JOHN COWNIE,	South Amana.
R. BAKER, JR.,	Farley.
D. SHEEHAN,	Osage.
PROF. C. F. CURTIS,	Ames.
W. W. VAUGHN,	Marion.
J. R. CRAWFORD,	Newton.
C. C. NORTON,	Corning.
C. L. GABRIELSON,	New Hampt'n.
B. F. ELBERT,	Des Moines.
B. F. GOVE,	De Witt.

SECRETARY AND TREASURER.

GEO. W. FRANKLIN,	Atlantic.

The next meeting will be held at Osage, Mitchell county, beginning Wednesday, October 30, 1895.

THE CONSTITUTION.

ARTICLE I.

This Association shall be known as the IOWA IMPROVED STOCK BREEDERS' ASSOCIATION.

ARTICLE II.

The objects of this Association are to increase the excellency and to provide for the preservation and dissemination in their purity of the different breeds of improved stock of all kinds.

ARTICLE III.

Any person who is a citizen of Iowa and a breeder or owner of fine stock may become a member of this Association by paying a fee of *one dollar* annually, and signing the Constitution or empowering the Secretary to write his name thereon.

ARTICLE IV.

The officers of this Association shall be a President, five Vice-Presidents, to represent the different branches of stock breeding, and a Secretary and Treasurer, and these seven shall constitute an Executive Committee, of whom a majority shall be a quorum for the transaction of business, and the duties of these several officers shall be the ordinary duties of such officers in like associations.

ARTICLE V.

The annual meeting of this Association shall be held on the Wednesday on or before full moon in October of each year, at which time all officers shall be elected by ballot, and they shall hold their offices until their successors are elected and qualified.

ARTICLE VI.

This Association at any annual meeting may make amendments to this Constitution, may adopt By-Laws, may fix an annual fee of membership and may do any other business not inconsistent with the purposes of this Association; *provided*, that amendments to this Constitution must receive a two-thirds vote of all members present.

[The above is the amended Constitution. The number of Vice-Presidents have by the custom of committees been changed from five to one from each congressional district.—ED.]

INTRODUCTION.

Larger, much larger, has been the attendance of the annual meetings of this Association in the years that have passed, and it was thought that the time and place of holding this, the twenty-first annual meeting, would be a sufficient inducement to bring out all the prominent stockmen of the state, to assist in the discussion, and to help sharpen each other for the many vicissitudes which now stare the stockmen in the face, which is a constant menace threatening what little profit may be in sight in the stock industry. The weather was all that could be asked of a beautiful October month, and the surroundings at the college grounds were in their Sunday garb, the professors smiling, and everything that could be done to make stockmen happy was attended to by the hosts.

We can see no other reason for the lethargy which is made manifest at these meetings by some, than the fact that the margin of profit has slumped off one-half since the palmiest days of the growth of this Association. There being so little difference in the prices of pure bred cattle and those of little or no blood other than "scrub," has been a sufficient cause for the apparent loss of interest by cattle breeders. The horsemen have completely lost all interest, and they have a good reason for so doing, when the prices have gone off one-half for well bred horses. Hog breeders increase in numbers, and they are the only breeders of domestic stock who dare whistle. They are out of the woods, and they can see plenty of clear sky ahead of them. To speak the word sheep in a gathering of this kind, is sufficient to say "we now stand adjourned," for it has the same effect. To mention sheep or horses will vacate the room of stockmen quicker than the alarm of fire.

In the twenty-one years since this Association has been holding its annual meetings, there has not been so near a total failure in crops as the year of 1894 has to record in the pages of

our history. In many parts of the state the meadows did not show enough growth of grass to cover the last year's mower marks. Thousands of acres of hay were never cut, and the best was less than a half crop of hay. In view of this fact, a very large area of corn was cut up for use on farms where stock is kept. How to harvest, haul and feed fodder was one of the most pertinent questions of the meeting, and it is to be placed down as a prophesy that from now on the area of corn cut for feeding on farms where it has been hitherto unknown will show a steady increase from year to year.

It is to be regretted that we did not get a sufficient number by rail to get the usual reduction in rates over the various railroads, and members were compelled to pay the full rate. This is all the more to be regretted when we learn that just enough members travel by mileage, or forget to get a certificate when buying a ticket, to defeat the whole plan.

It is now definitely known that the foreign ports for the most part are closed to our American cattle, and in some instances to the American hog. This is indeed no good news to the stock breeders of our state who contribute a large share of the export meats. While this is to be regretted, it does not follow that the breeder should slack in his energies to breed the best. Nothing of this kind will justify the use of a scrub or inferior animal as a breeder in order to save money. This is the most short-sighted economy, and one that will take years of labor to undo what may have been done in one short moment of impropriety.

TWENTY-FIRST ANNUAL SESSION.

AFTERNOON SESSION.

AMES, IOWA, October 17, 1894.

Meeting called to order by President McClung.

THE PRESIDENT: Gentlemen, you will please come to order. We will now listen to the address of welcome by Prof. Beardshear of Ames. (Applause.)

PROF. BEARDSHEAR: *Gentlemen of the Convention*—I have not had time to commit my extemporaneous speech, and I do not know whether I can read it or not. It is pretty fresh. I will entertain you but a brief time after the close, and here my extemporaneous speech ends.

Gentlemen of the Iowa Improved Stock Breeders' Association:

The poet Browning has an instructive poem in which a Bishop and a man of the world, Gigadibs, by name, discuss at a public dinner place the various callings,

> "We mortals cross the ocean of this world
> Each in his average cabin of life,
> The best is not big, the worst yields elbow room,
> Now for our six months' voyage, how prepare?
> You come on ship-board with a landsman's list."

The program of the Iowa Stock Breeders' Association and I am aboard with the landsman's welcome which, if not the best, yet I hope will be big enough to yield you more than "elbow room." In the rendering of your program their observations may be somewhat verified so that,

> "You find
> In this the pleasant pasture of our life
> Much you may eat without the least offense,
> Much you don't eat because your maw objects,
> Much you would eat but that your fellow flock
> Open great eyes at you and even butt,
> And thereupon you like your mates so well
> You cannot please yourself offending them;
> Though when they seem exorbitantly sheep,
> You weigh your pleasure with their butts and bleats
> And strike the balance. Sometimes certain fears
> Restrain you, real checks since you find them so;

Sometimes you please yourself and nothing checks:
And thus you graze through life with not one lie,
And like it best.
But do you, in truth's name?
If so, you beat—which means you are not I—
Who needs must make earth mine and feed my fill
Not simply unbutted at, unbickered with,
But motioned to the velvet of the sward
By those obsequious wethers' very selves."

I hope you will not often have to be "exorbitantly sheep" and "weigh your pleasure with butts and bleats" either as rams or wethers, and have need to strike the balances of such. Of course you do not expect to be "unbutted at" and unmotioned "to the velvet of the sward," but like good gamesters you'll be up and at it again and "graze through life without one lie and like *it* best." And if you'll watch the dinner of this program out like Browning's English Bishop and Gigadibs "we'd see truth dawn together." Among the pleasantest duties of my official position is that of welcoming the various Iowa organizations to the Iowa Agricultural College, and of them we place your organization in the front rank. It is gratifying that back of the material side of your calling as Stock Breeders there is the higher intellectual that calls for all the thought, common-sense and philosophy each one can command. This side of the stars of heaven, I know no more attractive forces of nature among which to work than the great laws fundamental to stock-breeding, heredity, variability and selection. What a charming mystery in the power of a cutting or even a leaf of a plant to awaken from its few dormant cells a growth and completed structure with the marks of the mother plant or the potency of the bull Favorite or the Black Arabian Studd to imprint himself upon his kind for generations to come.

In the sixteenth century, when heresy hunters were more frequent than now, a poet, John Huntingdon, wrote up the genealogy of heresy as follows:

Biynde obstynacye
Begate heresye,
By a myschaunce,
Of dame ignoraunce.
Heresye begate
Stryfe and debate.
Debate and ambycyon
Begate supersticyon.
Supersticion playne
Begate disdayne
Dysdayne of trowthe
Begate slothe.
Slowthe and sluggyshnesse
Begate wyfulnesse.
Wyfulness, verelye
Nygh cosyne to heresye
Begate myschife.
Father of Wycliffe,
Which ded bringe inne
His grandfather synne.

In your work, whatever its sources, this same "grandfather synne" creeps in and this great law of heredity makes the stock-breeding orthodoxy expect the transmission of splints, ring bones, under-sizes, vitiated constitutions and other weaknesses of the various domestic animals.

And what a law is that of variability in breeding animals, that enables a man to breed where the fats are going to be placed, what kinds of hams and steaks will be ready for the butcher's block, whether food shall make milk or make beef, whether you will have long wool or short wool on a sheep, whether it shall be small or large, whether a horse shall be large, small or medium and how fast he will travel, whether a cow shall have horns or no horns at all, and a dog have a long or short tail, whether a pigeon shall have a tuft on top of its head, or back of its head, what kind of eyes it shall have and the color of its feathers, what will secure one hundred and fifty varieties of pigeons from one rock pigeon, and so on "*ad infinitum* with little fleas to bite 'em." Darwin says, "we may smile at the solemnity of this precept, but he who laughs will win no prizes."

Then there is the law of selection, which, if it does not fully determine all the philosophy of our nursery rhyme, "Bah! bah! black sheep, have you any wool? Yes, master; three bags full," it does decide that this wool shall be all white instead of black and multiplies the bags full. The law of selection relieves the orthodoxy of the poet:

"A thing of beauty is a joy forever."

and embodies it in each new generation with the matchless Artist of nature holding the hand of the breeder pupil in His, as did the writing master of our boyhood days direct our hands in tracing his copies, until nature's own skill appears in exquisite form and loveliness.

I think that these great laws are the ones that we find here at work among us in these animals of higher nature.

Here we have these laws at work in the brains of the men and women of these Iowa homes.

I believe that these laws of heredity, selection and variability are telling in the boys and girls that we find in this school as your representatives.

We find that it is the very law of selection that is bringing about the excellency of the boys and girls of Iowa. Holmes somewhere says that little snapping turtles snap behind the egg shell before they are hatched. We believe that in the decade to come you are going to find among the graduates of the Iowa Agricultural College, not only these little snapping turtles that show heredity's traits, but when out of school and the shell, shall go forth full-fledged and enter into the mysteries of life's work to your credit and ours.

I bid you in the name of the authorities of the Iowa Agricultural College a hearty welcome. I hope you will stay long, abide with us, and come again soon.

THE PRESIDENT: I now wish to introduce to you a gentleman from Minnesota who will respond to the address of welcome; Mr. Sheehan, of Osage. You may think that town is in Iowa, but some claim it is in Minnesota.

HON. DANIEL SHEEHAN.

Mr. Chairman, and Gentlemen of the Improved Stock Breeders' Association of Iowa:

I have been called upon many a time; I have been asked to pray, and I have been asked, sometimes, to preach; but never in my life have I been

called upon to respond to an address of welcome given by the President of an Agricultural College until I came to Ames. It seems strange to me that they should pick a man, as the President said, from Minnesota. Now, this I deny. I am an Iowa man through and through, and I have not words enough to thank the President of this Agricultural College for the hearty greeting we have received today. We have heard a great deal of Ames. It is known throughout Iowa. I believe this is the first time that the Improved Stock Breeders' Association of Iowa ever met in this place, and I do not know of a more appropriate place for them to come together than right here. There is a reason for it; there is a cause for it. There is not an Iowan in the state who does not feel a deep pride and interest in this Agricultural College. Furthermore, if I am not mistaken, and I do not think I am, the probability is that some of the young men that you are sending here, some of the young women that are going to this college, we do not know but what some of these young men will be the rulers of this nation, and it would not surprise me that the wife of some president or some governor is getting instructions here today. It is no wonder that we have a good turnout. I am glad to meet you, and I hope we will all go home feeling better, kinder, and know more about the Agricultural College than we have ever before.

I was pleased with the address. It speaks of rams and ewes, and one thing and another. It seems to me that I had never to go by rams and wethers he mentions in his address of welcome, but now that I reply I do not know what kind of rams he had reference to. But I say to you here that when you take those and raise them to perfection, or any kind of domestic animal you are raising—I differ with some people about that—I think that those you have to care for and care for to the best of your ability, you have to feed them well from the start. I claim that a young animal—call it a lamb, wether or calf, or a good wellbred colt –it is my candid opinion, you Improved Stock Breeders, that you cannot feed them too well while they are growing, no more than you can the young men who are going to this college, providing you give them plenty of exercise, and I suppose at this college you give them enough. You do not want to confine them in a closely packed stall and give them all they can eat. Why, that would ruin a young man or woman to stuff them with feed and not give them exercise. Another thing, he spoke of, sloth. That is high feeding without exercise. There is no doubt but what these boys and girls get lots of exercise. They turn them out on these prairies and this campus, and they get plenty of exercise. That is the reason, I have heard it said, that the young men who come from Iowa and come from this college are larger and more robust; it takes more clothing to make them a coat, according to their ages, than those of any other college in the world.

I will say that I feel a great pride in this college, which we all ought to. Any of us who go out and see these beautiful grounds, see the handiwork of a great man that is gone—Professor Welsh. I am going to tell you what I heard a man say about four years ago this winter. There was a change in this college. There was the gentleman who addressed you today, he was at the head, and the gentleman sitting opposite him was another party to it. There was a friend of mine talking about it, and he said, "I tell you, Sheehan, we have two of God's own men in that college." Now I won't call any names; but there was a man told me that. And after I saw and heard how

we were received and addressed today, I cannot but believe he was correct. Now, I will tell you gentlemen, and I tell it without fear of contradiction, that it is my candid opinion that the Iowa Improved Stock Breeders' Association of Iowa, I fully believe that there is no set of men in the State today that feel a deeper interest in this college than they do. And I hope that while we may differ in some things, while some things we may not see just as you do, yet I think I can say it, and say it without fear of contradiction, and I think I will express the sentiment of all the Improved Stock Breeders in Iowa, that you have their hearty support in everything you do in this college while you keep advancing as you have lately. (Applause.)

THE PRESIDENT: The next thing that I see on the programme is the President's address. I am sorry to have to disappoint you, for you always expect to receive an address from the President, on some subject in which you are interested.

THE PRESIDENT'S ADDRESS.

Gentlemen of the Iowa Improved Stock Breeders' Association:

This is the first opportunity I have had to express to you my thanks for the honor you conferred upon me at your last annual meeting by electing me your President. It is an honor, gentlemen, that any man, I care not what his station in life may be, may well be proud of. It came to me unasked and unsolicited. I was not even at your meeting. It was a surprise to me, and therefore I appreciate it the more. The first intimation I had of any such thing was a little squib in my own county paper, and, do you know, I was just politician enough to doubt that statement when I saw it in this paper. I waited for the stock papers to see the report of the meeting. There came the result of the election, naming me as your President. Then I believed it and was happy until I received a little letter or notice. It was in the shape of the letter S with two perpendicular lines through it, saying such must reach the Secretary before the installation can take place.

Gentlemen, you are expecting to hear a rehearsal of the changes and the prosperity through which you have just passed in the year gone by since our last meeting. Perhaps you think I could say nothing of this year for which we could be thankful, and for that reason have nothing to say. But such is not the case. We certainly can be thankful that it is not worse than it is. Aye, even more. If you compare our situation with that of our sister states and their industries, I think you can find a great deal for which we can be thankful. Think, if you please, of the great manufacturing centers of the east, and what they have gone through in the last year; think of the great railroad strikes that occurred during the summer, the thousands of millions of dollars tied up that ought to have been in circulation; think of the unprecedented drouth through which we have passed, and then think that Iowa is no better. No! If any calamity was to befall any of our

sister states or our cities, and we were called upon for help, we would find we had not only enough for the people of Iowa, but that we would be first to respond. (Applause.) We meet here as a Stock Breeders' Association, but we intermingle with those of all classes of agriculture.

Now there is one class of live stock, perhaps, that I can say nothing of, and that is the horse. How are our markets? Well, they are very much like silver bullion. They are below cost of production, but we are not calling upon Uncle Sam to assist us. (Applause.) We have other industries to which we can turn. The cattle department, while it is not so high as it has been at some time, yet I cannot say that it has not been fairly good. Look at our swine. There is something that within the last year has been a money-maker, and it belongs to almost every citizen of Iowa upon his farm. And in connection with the cattle business comes also the dairy. Who can say that has not been prosperous? And so if you compare ourselves with our sister states and the industries outside of our state, we certainly can feel thankful. We cannot only feel thankful that it is as good as it is, but we can feel thankful that we, the people of Iowa, today are prosperous in spite of the adversities that have befallen us.

Now gentlemen, I do not wish to take up your time, for you are waiting for the production of this program; but there is one thing that I wish to call your attention to. I was not at your last annual meeting, but I understand a proposition was brought before this meeting in regard to the permanent location. Now perhaps I know the reason for that. Did you ever stop to think that this is the twenty-first annual meeting? That we are of age, and have reached our majority. And it is perfectly natural for people at that time of life to look for a home and settle down. Perhaps that is what caused this; but I would caution you, because we cannot all settle down to home life and do the same good we could if diversified. Some of us have to do one thing, and some another. Now I believe it is the intention of these people to do good, not only to themselves, but to reach every other person they can in the state. Now when we think of that more, I think we can do more good by holding our meetings as we have in the past—in different sections of the state. I have not fully made up my mind, and I am open to conviction on this question, and simply make these remarks and caution you to be careful and think well before you act.

With this I thank you for the honor conferred upon me. (Applause.)

THE PRESIDENT: I notice the next thing upon the programme is the appointment of committees. Now if you will give me leave, I will pass that for the present and think the matter over a little.

If there is no objection we will pass to the next paper; "Farm Poultry," by W. K. Laughlin, of Fort Dodge. Is Mr. Laughlin in the room?

MR. FRANKLIN: I received a letter from Mr. Laughlin just before I left home, stating that he had been unfortunate in the state of his health, and that he would not be present; but sent the paper by Hon. L. S. Coffin. Mr. Coffin says he has not got the paper.

HON. L. S. COFFIN: He said he thought he could come, and if he could not he would send the paper. I did not get the paper and am looking for him.

THE PRESIDENT: In the discussion of this paper there is no name given, and if there is a prospect of Mr. Laughlin's being here, I think we had better pass that.

FARM POULTRY.

BY W. K. LAUGHLIN.

Poultry gets the first place on programme of the Iowa Stock Breeders' Association, and our worthy Secretary is right. He, being a breeder of thoroughbred fowls as well as other stock, has learned that poultry is of paramount interest to more people than any other kind of live stock, especially with farmers' wives, and they are, or *should* be, equal partners in all that makes farming the surest and best road to an independent living. No other kind of stock is so universally kept on the farm. With this fact admitted, we will proceed by saying there has been more improvement and increase in this than in any other stock interest within the last ten years. The first census enumeration of poultry was for 1880. As then reported there were over 125,000,000 fowls of all kinds; the number of eggs produced, 456,875,080 dozens. The census just issued gives 285,288,700 fowls and 817,211,146 dozens eggs, making an increase of 150 per cent in fowls and nearly doubling the egg product. This being taken in 1889, five years ago, we might now safely estimate 300,000,000 fowls and 1,000,000,000 dozens of eggs. And I am satisfied that this is an under, rather than over, estimate.

Take for illustration Webster county, Iowa, which is about an average in population and production of the ninety-nine counties of the State. The better, egg and poultry house of Loomis Bros., bought and shipped to eastern markets over 500,000 pounds of dressed poultry in the winter of '92, and nearly as many in '93, and quit buying before the season was over, because of depression in trade. Now, allowing five pounds each an average weight, the number of fowls shipped was 100,000. Saying there are 2,000 farms in this county it would require fifty from each farm to supply the Loomis Bros. Remember, no account has been made of the number consumed within the county. There are few farmers who keep less than 100 hens, and some from 200 to 400, and realize from $5 to $10 per week from sales of fowls and eggs throughout the year. They are not managing as many do—have no hen house, or not more than one—but have their chickens divided in several lots, with houses and runs. Then they see that they are regularly supplied with necessary feed and water at all seasons, and most especially in winter; also introducing pure breeds or crossing and grading. It seems almost impossible to get farmers to raise thoroughbreds exclusively, yet they are

great on crossing which, when well directed, shows marked improvement. They are too easily discouraged if an experiment turns out badly. For instance, a new breed is introduced and an epidemic of cholera soon follows; they condemn the new breed and try some other or more likely lapse back to dunghills.

The following is quoted from *Farm Poultry*, published at Boston, Mass.: "At the packing house of Armour & Co., of Kansas City, Mo., a lot of Wyandottes were bought which, when dressed, were of such nice, uniform shape, size and color that they attracted Mr. Armour's attention and he ordered five cases of 100 pounds each sent to five different markets along with others shipped the same day, and report result of sales. The returns revealed the fact that those five cases sold at an average of 3 cents more per pound than the others."

Now, Armour & Co. are quoted as advising farmers to raise pure bred stock, and *some* will. Three cents, or even two cents advance is a strong persuader. The important lesson is this: Uniformity of shape (which is the paramount test of good breeding in all lines), size, color and good condition will always insure best prices. But a few choice mixed in with a lot of mongrels of all shapes, sizes and colors go with the rest as ordinary stock. The best way to secure this combination of marketable qualities is with thoroughbreds well fed.

We must not forget paying our respects to the turkey, which is the peer of market fowls of America. The census of 1880 quotes Iowa's enumeration of fowls other than chickens, 989,206, and in 1890, 1,749,567, a gain of nearly double in ten years, and turkeys are the bulk of this enumeration—Iowa being *ninth* in the production of them, and Kentucky leading all with over 2,000,000 in 1880. Now Iowa ranks *fourth* and Kentucky third; Illinois *first*, with 2,505,511. Iowa has made a larger increase than any of her competitors. At this ratio of gain Iowa should now rank as second.

It will not be necessary to consume time in telling how they should be raised, since every agricultural publication, poultry journal and weekly newspaper is so overburdened with this particular topic that whatever we might add would only seem superfluous.

The quality of breeding stock is of prime importance, and by almost universal choice the bronze turkey is preferred to other varieties. Always select from the best formed and medium sized of the early hatched, and better yet from the two to three-year-olds. In fact, one-half of them should be two years old or more. The same rule holds good with all kinds of stock, and especially the larger breeds. And I would advise breeders not to "go wild" over monstrous specimens. They may do for Thanksgiving offerings, but don't throw away good money at extravagant prices for them to breed from, as they will most assuredly breed unsatisfactorily. Their young will be leggy and ill-shaped and will not mature or fatten as readily as the medium size of perfect form and vigorous organization. But from best selected stock will guarantee a larger per cent of profit on the investment at a less cost for feed and care than from any other kind of stock; and through them the very numerous destructive insects, especially the festive grasshoppers, are made a profitable product.

THE PRESIDENT: The next we have is "Management of Cattle—Present Conditions," by Richard Baker, Jr., of Farley, Iowa.

MR. BAKER: Mr. President, that theme was taken up this morning and discussed.

THE PRESIDENT: I did not know that we had a session this morning. This is our first session.

A MEMBER: It was read at the Short Horn Association.

MR. BAKER: Gentlemen, this is an imposition evidently. (Laughter.)

THE PRESIDENT: Mr. Baker, will you come forward?

MR. BAKER: I will if you insist upon it. (Mr. Baker comes forward.)

Mr. President, Ladies and Gentlemen: You do me too much honor entirely today. I would like to substitute another subject, but if this is law I will have to stick to it.

MANAGEMENT OF CATTLE.

BY RICHARD BAKER.

All flesh is concentrated plant growths. Hence, the first question is, specifically: What plants are available for the best conditions, growth and development of domestic cattle, for farmers, butchers, dairymen and traders *in all* our markets on both sides of the seas? In history, Genesis 1:xi: "And God said, let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth." And it was so.

And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind; and *God saw that it was good.* This is the first *Law* given to *Man* in *History*. And the very best we have ever known for the best management of cattle of the bovine breeds, little or large. The native blue grass in *old* pastures and very *old* meadows makes the best grass and hay in eastern Iowa that we have known in forty years of farming. For short rotation of crops its seed is so small, the young plant so feeble, that it needs seven years of active growth to become matured. Many farmers will not wait so long a time, because they want short rotations, grass sod, wheat, oats and Indian corn. Timothy grass will mature fully in two years with good treatment. Red clover sown with timothy grass is an excellent fodder for cattle, either in grass or hay, but are costly seeds to buy and sow and are therefore popular. Many claim that *it pays best.* In that case the seed seller gets the cash.

In old pastures overstocking is certain loss for man and beast. Nothing on earth beats a bovine *like the miserable condition, bare ground.* When the soil's surface is covered, the shaded condition *fosters* plant growths. Every plant's roots are equal in bulk to the growths above ground. Hence *wild* lands in possession of Indians were richer in humus before it was owned by American white men *than it now is* in eastern Iowa. The remedy, in recovery of primal conditions, is to keep the sunshine out of the soil with abundance of old grass and new growths. Old grass is an astringent, green grass is a laxative; eaten together like bread and butter is a perfect ration. Grass, plenty for two cattle, one animal on it—large profits result. *Shade* in hot, sunshiny weather is both requisite and necessary to be profitable for man and beast. The animals then congregate in herds from the sunshine. Animal heat naturally measures ninety-eight degrees, *blood heat.* Summer heat in the field seldom rises above eighty degrees in the shade. When the cattle come together in the shade the sweaty vapor rises at blood heat. Thus it creates a vacuum into which the cooler, damp air rushes. The strong breeze then blows away the black flies, leaving the herd of bovines to rest and ruminate in comfort. Pure, clear, cool running water is requisite and necessary in order to have herds well favored and fat fleshed. Winter feeding in sheltered lots out doors is done with fodder corn, *cut, shocked and cured* in cornfields. It is then drawn on low wheeled wagons and stacked, to sweat and soften the stalks for easy mastication, in sheltered yards, so that steers don't miss one feed until fat for market. In clean sod, mangers are not used. Clean husked ear corn is fed in log mangers set on dry ground. Hay, chaff and straw fed at noon alternately. A hiding place from the wind, whenever that is wanted; a shingled roof with air-tight back, capable of sheltering 100 steers. Troughs supplied with salt all winter. A close supervision to watch over supplies, to *prevent* over feeding or scant supplies. Hogs gather waste grain between feeds; not allowed to feed with the cattle. Present conditions.

THE PRESIDENT: This paper is now open for discussion. As there is no one mentioned as a leader in the discussion, it is open to any of you who wish to speak on the subject.

COL. SCOTT: Mr. President, as there has been no mention of discussion upon the programme, and as these subjects run into each other in the discussion, or at least are apt to do so, and as this paper was read this morning in another association, would it not be well to go on with this programme and discuss—for there are other papers listed here—and the discussion will probably, and I think is very likely to bring out subjects in connection with this paper, and I think we had better discuss it in connection with the other papers than to discuss it separately.

THE PRESIDENT: I like the proposition very much, for the reason that we are apt to run off into other lines when we discuss these subjects. The next paper on the programme is "Lessons of 1894," by C. L. Gabrielson, of New Hampton.

LESSONS OF 1894.

BY C. L. GABRIELSON.

Mr. President:

A. D. 1894 will pass into the history of Iowa's agriculture as the most peculiar, in many respects, of any known since its settlement by the white race, and that the season through which we are now passing has furnished object lessons for the farmers and stock-breeders of our state goes without saying, but whether the course of lectures which Mother Nature has delivered in such an earnest and convincing manner will prove effective, generally, is for the future to decide.

In northeastern Iowa, and indeed throughout the entire state, the season of 1894 opened under the most auspicious circumstances. The ground was in excellent tilth from the effect of winter's action where the fields were fall plowed, while only a moderate amount of rain had fallen to compact the soil before seed had been sown. The fields were so fairly dry at seed time that the old world proverb, "A peck of dust is worth a peck of gold," might apply to Iowa. Under warm, sunny days with the traditional April showers vegetation advanced rapidly all along the line. It is true that a severe frost damaged the oats crop in some sections; still it is worth mentioning that, while in the northern part of the state the freeze-up was so great that "pigeon grass," or foxtail, which is the most determined weed we have yet to deal with, was killed while oats were not seriously injured. It seems strange to hear that oats are considered a tender plant by some, for during an experience of twenty-five years on one farm an oat crop has never been a failure on account of frost. There must be different conditions attending a crop of oats which will yield to frost in one section while in another part of the country the same species of plant will endure a temperature which destroys a persistent plant like the common foxtail. Alongside of barley, oats grows and ripens in the northern portions of Norway and Sweden, possibly within the limit of the Arctic circle, sown in soil thawed by the midnight sun to the depth of a few inches only. But it may be learned that these hardy Norsemen exercise as much precaution in selecting and saving their seed as do the most careful American farmers in providing seed corn for next year's crop. While there is no doubt but that the farmers of Scandinavia have fanning mills, still they have a way of selecting seed grain which is novel to us if not entitled to trial. The grain is thrown a certain distance on the barn floor and, as the heaviest kernels travel farthest, only those which fall beyond a certain limit are counted worthy of being reserved for seed. Strong vitality is sought for in selecting breeding animals in order to produce healthy, vigorous offspring, and why is not the same true of all farm seeds? It has been suggested that

seeds of the greatest development may be obtained by rapping the unthreshed bundle over the edge of an open barrel once or twice at threshing time; on the theory that the heaviest and ripest kernels sit loosely on the straw and on top of it. And this would correspond to the New England saying in regard to live stock. "First calf for an ox and last calf for a cow," which would indicate that the offspring of a cow produced when she is in her early vigor would be more likely to become a strong, robust animal than a calf born when the same cow had reached the declining years of her existense. Are there not evidences of a probable truth in this belief—even outside of vegetable and brute life?

It is the easiest thing in the world to stray from the broad highway of one's text into by-paths, but as there are often fairly good heads of grain to be gleaned among the brush and boulders which sometimes line the boundaries of a field, so a contemplation of the minor lessons which the years teach may also add to our knowledge.

The season which opened so auspiciously and continued so promisingly until haying time produced the usual optimistic opinions as to the outcome of the future harvest. Hay that was stacked in the fields was allowed to waste by attacks of cattle and the elements—a drug in the market at the two dollars per ton, in places. Surplus grain was sold—"to be out of the way of the big crop sure to come." May came and went. June passed with it and proved another old world aphorism:

"A dry May makes wheat,
A wet June hay for meat."

For to-day wheat is lower in price than corn, because of its abundance, while hay is a half crop at best, and so far fulfilled the proverb. But the middle of July found the pastures as brown as in March, with neat cattle and sheep confined to winter rations, if not in winter quarters, so that in truth it may be said, there has been two months only of full grazing this year.

If the experience of the present season teaches anything, one lesson to be heeded is that it becomes the part of wisdom to hold in reserve a portion of the previous year's crop to tide over a possible partial crop failure like that of this year. The saving habit or the accumulation of wealth is neither more nor less than the animal instinct which seeks to provide for a "rainy day." At a certain epoch in the history of Egypt that country not only preserved its identity as a nation, but secured a prestige for business capacity by following the advice of a certain young Hebrew who had previously been sold as a slave to one of its great men, and was afterward brought to the king's attention because of his skill in reading the signs of the times. Under the king's authority Joseph formed a syndicate that built great store houses—elevators, they are called now-a-days—all over the land of Egypt, remains of which exist unto this day, and after harvest bought all the cash wheat that was offered for sale. The records of those times do not show that Joseph had crop reporters all over the country to magnify the yield so as to run the price down below the cost of production, but they bought the stuff at a given price. Fortunately for the Egyptians, as subsequent events proved, the foreign demand was light, and besides Joseph was a protectionist, for he believed in a home market, as all who are acquainted with the history of his "deal" will recollect. Joseph went on this way year after

year taking all the grain that the "fellahs" brought in; for he had faith in wheat and considered it good property. Then, when the receipts began to fall off, and the shipments from inland points grew less and less until the grain "in sight," except what was covered by his warehouse receipts, became very small, while the demand for immediate consumption grew more and more urgent there would have been a general panic on the board of trade if a "Keene" or "Old Hutch" had been on the "long" side. But under the wise and liberal policy of Pharoah and his prime minister, Joseph, the industries of Egypt were not seriously affected by the threatened agricultural depression, while the foreign demand for bread-stuffs became such that the balance of trade was heavily in favor of the Egyptians. The influx of foreign capital, together with a stable financial system at home, resulted in a prosperous condition which induced a large number of the better class of citizens from the land of Canaan to immigrate to Egypt. Many of these afterward became famous as manufacturers of brick, an industry which gradually grew into one of leading importance because of the vast building operations undertaken by the government. After a time there was a change of administration, with a far less liberal policy toward the laboring classes, so that a strike among them was inaugurated under the leadership of Moses, who went to the king and asked him to "let my people go," but the vacillating action of the party in power to correct their wrongs finally resulted in a lock-out of the brickmakers' union.

Whether changes in the physical condition of the country which appear to have taken place will permanently effect it, from an agricultural point of view, remains to be seen. That the land is far drier than when it was new, and that the level of soil water has receded is shown by the present possibility of cultivating lands which formerly were impassible except in the driest part of a favorable season, while water for domestic use is looked for at a steadily increasing depth. The average rainfall has not greatly diminished, but drainage has become so active that it is doubtful whether the soil, under existing conditions, will ever be saturated to its former state. The mowing machine and the tread of stock have destroyed the dense, tall, native grasses that heretofore shaded the ground of the intervales which give the prairies their delightful, rolling character, so that now the tender bluegrass and modest white clover, children of sunshine and showers, have taken possession because the trend of the surface is toward the nearest water course, and the soil is drier. Every railroad right of way, every roadside ditch, every dead furrow is now a channel by which the rainfall is rushed to the Father of Waters and the Gulf of Mexico.

The common pasture grasses do their best only when the soil is moist and the temperature is moderate. The grazing grounds of farms in northern Iowa have gradually been narrowing towards the swales, because the experience of owners has been that to use dry uplands for pasture is profitless. This has tended to reduce the number of cattle kept. Are we not drifting toward changes in our systems of agriculture, with indications that a more intensive method will be the rule? The owner of land who holds it because it is a good investment can devote acres for a steer to ramble over in order that he may pick up his own living, because of difficulties which attend its cultivation. But can the young man who buys a farm at current prices, and is obliged to discount the future productiveness of the soil to pay

for it—at least in part—afford to do this? The system of soiling is gradually forcing itself upon cattle owners, and the present season has initiated many into its mysteries who had never before dreamed of getting down to this kind of business. The adoption of such an innovation will imply smaller farms, more neighbors, better schools and a higher education.

For many, many years past there has been a tendency to increase the size of farms, and this has had the effect, in many places, to sadly interfere with school work. For in some instances hitherto prosperous schools have been closed on account of reduced attendance. Then, too, the increased distance has prevented the sending of children to other schools, so that in such cases there must be a check to intellectual advance. If increasing population and a tendency to drouthy soil conditions will change our system of farming from the present extensive plan to a more intensive one, with hoped-for results, then the modification should be hailed as true progress.

The disadvantages of large farms and uncultivated areas in the matter of scant school privileges was a subject of interest during a visit to Virginia last winter. The farms are large, averaging say 500 acres in extent, probably more, and irregular in shape, the terms section, quarter section, etc., being unfamiliar terms to the people generally. A stream or other natural boundary being the usual division between the different farms, and such a thing as a direct road a mile long is scarcely possible. In apportioning money for school houses and their support, the Virginians divide on the color line, with separate buildings for the two races, so that it is well nigh out of the question to conduct successful schools in either case. And this condition is intensified by a rule which only recognizes a school when ten pupils are present. The most discouraging and disheartening incident of that visit was to learn from a bright, well-informed young woman that she had spent three school months in earning one month's pay of $20. And much of her time in addition was occupied in urging children to attend school. The leading families overcome the school difficulty by employing a tutor or governess at home, and then they sometimes arrange to take one or more of a neighbor's or relative's children to stay during the term. It will be observed that under these circumstances the children who most need the elevating influence of a school experience are deprived of it, and under similar conditions the same must be true in Iowa.

Mr. President, the subject with which this paper is supposed to deal has scarcely been touched because of the opportunities to digress, while the time allotted to it is rapidly passing. Others are thinking of lessons which they have pondered over or which may have been suggested by a word or thought expressed here, and are patiently waiting to be heard. The experience of this year in the matter of conserving moisture to growing crops by cultivation; what extent, depth, etc., this should be done; which tools are best to accomplish it; a statement of closely observed or measured results which are the outcome of under-drainage as a means of overcoming drouth; how to surmount the difficulty of securing a stand of grass or clover; the advisability of giving up a portion of our meadows and substituting fodder corn for hay. These and many others come within the purview of this paper, and should be talked of here.

It is to be hoped that no one is so pessimistic as to imagine that the effects of the drouth are not counterbalanced by substantial benefits.

Think of what a season it has been for destroying weeds, and of all the insect life that had to yield to the effect of unnatural conditions! The growth of straw early in the season was such as to cause grave fears that if a wet season were to come the oat crop would have been well nigh a failure, but which, instead, became a magnificent success.

The spores of rust and blight which were hanging around in expectation of favorable conditions for them to increase and multiply came to an untimely end, leaving straw and grain free from germs of infection and the crop likely to be exempt from disease for some time to come. And while the loss to the state of $60,000,000—the ship's cargo which never came into port—is a vast sum, yet the distress growing out of this misfortune is not to be compared to that which followed the failure of wheat crops in 1878 and years following. Then it meant financial ruin to many; while today, owing to the fact that our farming has become greatly diversified, it is only a reduction of one's income for a year. There is no cause for lack of faith in Iowa.

"Strong in her beauty, what cares she
For jeweled cliffs, or hills of gold?
For seats along the sounding sea;
Or storied monuments of old?
Her bonds are strong, her fame secure;
Her praise on lips whose praise is dear,
Her hands, her heart, her purpose pure.
And God in all her landscape near."

MR. GOVE: I would like to call your attention to one fact. If I catch the idea, it was a good year to destroy insects. My own observation is that one class of insects that are a great pest, the chinch bugs, developed better than in any other year.

MR. GABRIELSON: The chinch bugs died; they could not prosper.

THE PRESIDENT: This discussion is to be led by Hon. S. B. Packard, of Marshalltown.

MR. PACKARD: Mr. President, I was much pleased with the paper. The author of it hinted very strongly at ideas which I have entertained, that is the soiling more for summer grazing for the purpose of carrying on stock. I think he might have borne more strongly on that point; for I think if there has been any one thing that has been developed by this dry season it is that we have got to provide some other forage than blue grass pastures; because our blue grass pastures fail, of course, when the rainfall ceases. The general matter of the paper was very interesting. I think with the author, that Joseph was the most successful broker of Pharaoh's time. But that is too far away from us to draw any lesson of profit out of it at this time. But I think that the corn of which the bible speaks—of course it meant wheat, but it called it corn—I believe that here in Iowa our most successful crop is going to be, for years to come.

as I believe it has been for years past, the corn crop. Corn affords forage and it affords grain that is exceedingly fattening. Now with a successful crop of corn we do not lack very much of what is needed for summer and winter feeding. Very early in July, early planted corn is ready to be cut and hauled to the cattle as a fall feed; and certainly you will find that no pasture in the world will make cattle grow better than green corn. I have had to feed all my stock corn this summer, from the time the grass failed in the middle of June, and I have been surprised at the growth that my young stock made, and the flesh my old stock put on by a very moderate feeding of corn. And with a good share of the farms of this state in corn, I believe that we can get along without this weather service that we depend on to get rain. (Laughter.) If we just put our reliance in corn, get a fair amount of moisture in the spring, and one shower about the 20th day of May, I do not believe anybody need have any fear of his corn crop. If we have any dew along in the summer, so much the better. Now I believe that considerable of these pastures might be profitably plowed up and put to growing corn to provide for July, August and September's feed for the cattle. I do not suppose it would be out of the way to say something of myself. I keep about half of my farm in pasture and the balance under the plow, and I get a good return from the land I keep under the plow, and I get exceedingly poor returns for the land I keep in pasture in seasons like this. Therefore I do not like much pasture in seasons like this. Next season I will have more corn and less pasture. That is one of the lessons I have learned, and I believe it will be profitable to me. I believe a good deal can be said about corn fodder that will be interesting, but I do not want to say very much more about corn at this time, but to say generally I consider that this has been a pretty good year for Iowa on the whole. Our corn crop has not been an entire failure; there is the fodder; persons having corn could have it. It was to be had for a little work or little expense; it was there to be saved, and if these corn stalks were saved, you can depend upon it you have a feed that will supply every need. (Applause.)

THE PRESIDENT: Mr. Norton is to follow.

MR. NORTON: In looking over this list I confess that with Mr. Gabrielson in the lead and Brothers Packard, Barclay and Hon. McHugh to follow, I thought there would be nothing left for me to say. Now, Brother Packard has said to us that the

grass has not paid him very well for the last few years, and corn has paid him well. My experience is the opposite. I am like my friend Baker; I like plenty of grass, "grass enough for two and one to eat it." Now, I want to say something about how we handled and raised our corn this year. We have not had one-fourth the usual amount of rain. I think it is a little over seven weeks that we had it very dry. The last rain we had was a hail storm—a stone rain. I did not learn until recently why we didn't have any more corn. It was because we had but very little rain and a great deal of hail. The corn was broken down on many places, and we got only fifteen or twenty bushels to the acre; while those in adjoining counties where the rain without the hail struck, the corn is better. I have a boy up here at the college, and he wrote me that they were mulching their corn. This mulch, he writes, is a dry mulch. You work the corn once a week and follow with your harrow to loosen up the ground, and in that way the corn seems to grow right along. So it is not a mistake after all to have boys up here. We think it is not, at least.

MR. GABRIELSON: May I ask you how you make this mulch?

MR. NORTON: One is a disk with which you can cut an inch or two deep, and which works nicely; and a small harrow with little sharp teeth is used by some. Now, another lesson we learned would be the want of water. We never have suffered in eastern Iowa as we did this year for water. It commenced with a dry fall last year, continued dry through the spring and through the summer, until our wells were a failure so that our stock commenced to get thin for the want of water. Now we are putting down more and deeper wells, and have more and better water. We have got to go down deep and prepare for such years as this has been. The winter pasture has been worth more to us than all other, for the reason that we have had this winter pasture for the last ten years, and this year it is good. We turn our stock into what would ordinarily be called winter pasture and use it up, and now we turn on the winter pasture which has grown eight or ten inches high since the rain. I feared we would have early frosts, but the grasses have partially or actually matured, so that we have good grasses this year to raise cattle. I have not fed any feed only what they got from the grass; and so we say that winter pasture pays. We have not fed any corn, only to the teams we work. We do not calculate to have any of our fields nipped down to the

ground. In looking at some calves in a good pasture, a farmer, on leaving one lot and entering another, said to me: "Now, Mr. Norton, these are plump as those we are leaving." And I said: "Why is this the case? Plenty of feed, plenty of feed on the ground that they have walked over." "I know," he said; "last week these cattle should have been turned into another lot; you see they lack that finish, that plumpness that the others have." So I say that a year like this has been, small pastures divided off, let the growth be what it can be, fresh fields backwards and forwards, would be good advice to follow in the future. Another would be to raise roots.

MR. GABRIELSON: I would like to ask Mr. Norton how many acres of land he devotes to one steer, or cow, or whatever it may be.

MR. NORTON: We have what we call a "horse farm," and we have seventy-five or eighty head of horses that we calculate to have live upon that. And those horses do not get any grain. Even the young colts do not get any grain, winter or summer. I put into market this spring a car load and sent them to Chicago. We took them up the first of February—my son helped me get them into the barn—and the last of March, and in less than eight weeks I had those horses sold in Chicago, broke double and single. I did not know as we could do it, break them double and single, and get them so they would pull like something.

MR. BAKER: Mr. Norton, you have now about two acres per head?

MR. NORTON: Just about that.

MR. BAKER: How about the Shorthorns?

MR. NORTON: Oh, the Shorthorns ought to have a little more. (Laughter.)

MR. VAN AUKEN: One hundred and sixty acres—eighty head on one hundred and sixty acres of pasture?

MR. NORTON: We have pasture here and there that we can turn in on. I can run eight hundred acres with four men and what little I do. We do not work much. We only do headwork. It depends upon the season, and we calculate to have plenty of land to run stock on. We calculate a little less than one hundred head of horses, one hundred and twenty-five head of cattle, one hundred and twenty-five head of sheep on a farm of seven hundred and sixty acres.

MR. GOVE: Will you tell us how many acres of land you run with three men to do the work?

MR. BAKER: Mr. President, I want to make a few preliminary remarks. I have been overlooking this audience. You are a lot of high headed men. There is not a flat head in the crowd. We are now discussing the utilities of extensive and intensive farming. If you had your choice, even these high headed boys would want extensive farming, and they would let the force of the hired hands do the drudgery. You cannot get back of that. That is positive always. Hence, this thing of intensive farming, undertaking to tackle a little lot with a hoe, that might bring intensive farming—might do for the other fellow, but not for me. Not much. A very little of that would do in the garden, and that would be enough for me for the entire farm. Mr. Norton has it so that the force of the hand does the most of the drudgery. He can wear gold bowed spectacles, if he will. He spoke about manual labor not more than ten seconds ago. I do not do much of it. A man's brains are at the top of his head, so that every idea entering them he stands under it, and understands it. (Laughter.) Every statement has an origin and a basis. The true leads to the true, and the false to the false. Hence, give me extensive agriculture; and as our friend Norton truly and clearly put it, have the force of nature do the most of the drudgery, and like Noah and his wife, he and Mrs. Norton may look on. (Laughter and applause.) And now about my status. I will give you a sentence from Homer that commences with a capital and ends with a colon, "Me, too." (Laughter.)

MR. NORTON: If you follow my tracks through the day, you will be tired at night. I want my boys to be educated here, and I want my boys to know how to use their muscle, and they do.

MR. SHEEHAN: They know more than their father, don't they?

MR. GABRIELSON: This extensive farming is all right for Baker and Norton, but can the young man who has to buy a farm now, can he farm it on horseback? I do not think he can. Neither is there land enough for all these boys and girls who have got to have homes to live on. Iowa is the garden spot of the world, and our land will all be wanted for our boys and girls. I have not enough to give each of my boys and girls a piece of land. Where are they to get it?

MR. BAKER: Mr. President, if you please. Mr. Gabrielson is a tried man and true. If we can only get brains enough we soon can buy the Canadian territory lying off to the north of us here.

MR. GABRIELSON: We don't want it. (Laughter.)

MR. BAKER: Yes, we do.

MR. FRANKLIN: I think I have the problem worked out better than that. I think we will have to get our boys and girls married off to those fellows' boys and girls who have big farms, and let them divide up. I have several boys and girls, and not much land. If they want their boys and girls to get acquainted with my boys and girls, let them come west. (Laughter.)

MR. COFFIN: Well, we are having a pretty good time anyhow; but we must not lose sight of some of the important lessons that we can be taught from 1894. I still, as I did in the other meetings, I still—while I have to plead guilty to a pretty large farm, larger than I wish I had—still I stand up for the small farm in Iowa.

MR. BAKER: For the other fellow?

MR. COFFIN: Well, I do. Now four-fifths, probably, of the young men that look forward to be farmers in this state have got to commence as I did—with their hands. I think that is a safe statement. One of the lessons, it seems to me, that we should learn in connection with this matter is, as Gov. Packard said here, to learn more fully the value of the corn crop, and the better way of its being handled and saved than in the past. Now this forenoon we had some talk about the silo. I am still just as firm a believer in the value of the silo to the farmer, especially for dairy work, as I ever was, and with the silo and the corn crop we can keep as many head of cattle as we have acres, and you can do that too. Another question, my friend—

MR. BAKER: How many acres have you got?

MR. COFFIN: I do not want to say.

MR. BAKER: You don't run a wheelbarrow business, do you?

MR. COFFIN: I was accused of that at one of our meetings at Waverly by Brother Grinnell. But, after all, the glory and prosperity of Iowa is going to depend upon the small farmer. Now, we want good schools and churches, and good communities, and you can not have it with these great monstrous farms, where you can not keep but one horse on three acres, or one cow on two acres. If we can learn anything, we can learn the value of the silo and of the corn crop, and that will help us wondrously. It is good to have all this fun, but the time is coming when your boy can not get that rich girl.

THE PRESIDENT: It is that way now.

MR. COFFIN: We, as improved stock breeders of Iowa, want to encourage every young man with the hope of being the owner of a good farm in Iowa; and do not let us advocate the idea that the only way to farm is to ride a horse. I took hold of the plow handles, and I have never got away from them, and I do not mean to get away from them. It is the best life to live. I want to keep on my feet instead of on the horse, and right in close touch with the soil all the time. Let this great Association throw out encouragement instead of discouragement to the young men of this state. Why, there is no state on earth where a young man can start as right here in Iowa. Let us stick right up to that. I have not said what I wanted to, but I am taking up too much time.

MR. BENNETT: I wonder if my friend Coffin will allow me to pay him a compliment. I have been on his farm. It is lovely. I wrote a glowing description of it once, and I did it very well too. And when he was speaking of the silo supporting an animal for every acre, I remember that this fall he had to part with his herd and buy more land.

MR. COFFIN: I will explain.

MR. BENNETT: But in regard to these large farms. I do not like to hear them bear down onto the large farmers so hard. They have been a great benefit; they have brought forth the blooded stock; they have furnished the markets for the smaller farmers; they have helped the country; and, now it is about time for them to die and let the farms be divided up. I say it is exactly as Mr. Coffin has said; the time is passed when we can afford to have Iowa occupied by the large farmers. In the census of 1880 the farms of the United States averaged 133 acres. In the census of 1890 they averaged 136, being an increase of three acres to each farm on the average. That is not bad, and it is interesting because it shows a tendency towards large farms instead of small ones. At the same time Iowa had an average of 143 acres—150 now. The tendency has been slightly towards the large farms. But as Professor Wilson and Mr. Coffin have said, we are coming to a time when it should be the other way, and I think the next census will show the tendency the other way. I think it should be so, because the young man cannot possibly start in under the same conditions today that the older men could awhile ago. I was almost indignant with my friend Gabrielson. I think he is a little like the girl that did not get a certificate when she thought she ought

to have one. Her father explained that the reason why she failed was they asked her things that happened long before she was born, and of course she didn't know. Friend Gabrielson took us back to the time of Moses, and Joseph, and the Egyptians, and then says "Lessons of 1894." Governor Packard eased up a little on it and brought out in prose the sentiment of most of these stock breeders; "I saved my fodder, but lost my corn." But there is one thing in the selection of wheat that Mr. Gabrielson spoke of that seems excellent. We can not always go into a farmer's pasture and pick out the biggest pig and say we have the best one. Now this thing has been tested by gardeners in the east. They took corn, the finest corn, the best corn they could get for seed. They separated it nicely, and took the largest kernels. They got better kernels than the average. They experimented by marking the kernels —where they were on the cobs—and found that it was kernels from the nubbins they had selected that made the best corn. There is a tendency that corn from small ears will run small. It may give a larger kernel. It may be because there were fewer kernels on the head, there was more nourishment. And so it may be with wheat. But we have to look at both sides of these things. We not only want to know the pedigree of our stock, but we want to know the pedigree of our grain.

MR. SHEEHAN: What have we learned from 1894?

THE PRESIDENT: Yes, that is the question.

MR. SHEEHAN: If you will allow me to refer you back, I think 1894 and 1878 are the two most profitable years Iowa has ever seen. 1878, if you remember, was the failure of the wheat crop in Iowa, and I think it the most profitable year Iowa has seen, because we changed our mode of farming. We quit shipping our grain by the bushel to Chicago and other places, and went at a business that paid us far better; we made more money, got our homes more comfortable, and made our families happier. And I prophesy that 1894 will repeat 1878. We have learned something from this year. You have heard it here in this discussion of 1894 that it won't do to depend any longer on blue grass pasture. You can not depend on old pastures. You never could, only in a real wet season. Some of the best farmers you have in this state say you have to shut the gate, have got to put up the bars for about three months in the year, or four, in old pastures. I differ with some things that have been said here in regard to the lessons that can be derived from 1894.

I do not believe that any man can farm successfully in Iowa where he has to depend on feeding cattle by hand the year round. I care not whether it is corn, or clover, or what it is. While wages are as high as they are today, and help as scarce as it is today, you can not afford to raise one hundred acres of turnips, neither can you afford to cut corn up and silo cattle year round, quite, when you have the grasses which you can have if you only manage right. If you have a good farm you can plow it partly up and seed it down; and you take a man this year, in the year 1894, that had good timothy and clover pastures—he did not have to resort to his corn field. If we take the lessons we have got of 1894 and profit by them, I think we will find out that it has been equally as profitable a year to the farmers of Iowa as 1878 was.

Now in regard to those young men they are talking about, going onto thirty or forty acres. I wish to say to friend Coffin, or any other man, that if he will settle his boy, or marry his girl to a young man on thirty or forty acres of land in Iowa today—and I do not care if you go into some of the New England states—he would not be down here at this meeting—nor would Coffin—if he had to depend on the forty or eighty acres; he would have to be at home trying to make a living for his wife and children, or else they would have to do the work and chores while Coffin came down to the meeting. I say to the young man, get forty acres if you can not get more; but as soon as you get forty acres and have it paid for, get another forty, and keep on getting more. And if you join Brother Coffin, buy him out, and send him back onto forty acres of land. That is just what he has done. Oh, I do hate to see a man come here year after year and talk about those small farms when he has pretty nearly all the land that is around him. Why, you have to have two horses to ride over it, and if he hadn't he would be on his farm today, and would not be talked of for two or three of the state positions, if he was on his forty acres of land. (Applause.)

MR. BAKER: I would like to make a few remarks if it is in order. If our boys have to start with their hands—if schools and institutions of this kind do not put brains into the boys' heads to start with—then our meeting is non-utilitary.

MR. SHEEHAN: If a boy has no brains in his head when he comes here, I will guarantee he has none when he leaves. (Laughter.)

MR. BAKER: You and I gather information from environment, always.

MR. SHEEHAN: A little louder.

MR. BAKER: If you will wait a minute you will get the idea. (Laughter.) Sometimes the mental faculty becomes befogged and it takes awhile for sound to pierce it. (Laughter.) But there is one fact; we are educated for a greater usefulness. If we cannot move thought first, and strength afterwards, by sensible action, by a thoughtful course, we will go wrong, and there is nothing on earth so expensive as going wrong. Your boy that is taught and trained in modern ideas is above brute force. That you will not question. We are here for that purpose—to give each other ideas—and impart ideas that are valuable, so that we may devote our few hours for the mutual welfare of ourselves and our own. If a man works thought first, and if his thought is clear and precise, he can take a rule and pencil, draw out a formula, set about and work it out just as easily as can an engineer in the building of a locomotive. That is what we are here for. That is what this institution is doing for the boys and girls of Iowa. What it can do for us old men is a different matter. We are on the stage of action yet, but we may soon pass away. God hath made man upright, and he has thought out many inventions. The brain is at the top to do the thinking, the eye directly below it to see what the brain furnishes, the tongue below that to tell what it has learned from the double process. Hence, just as sure as you reverse the order, you retrograde instead of advance. It is utterly impossible that we should do anything wise against that which is written, that is our belief and faith beyond the power of successful contradiction. There is a future before the brainy boys in Iowa that we old clod-hoppers never knew, and never will know; for it is a fact that every age is wiser and wiser, and hence the demand for extensive territory to manage matters by brains rather than by muscle. The spirit of man can understand the matters thoroughly, so that it can guide the hands to work wisely.

MR. COWNIE: Coming back to the question, "The Lessons of 1894," Mr. Gabrielson referred to Joseph in the land of Egypt, and the inference, no doubt, which he intended us to draw from it, was the fact that Joseph, during a time of plenty, made provision for a time of scarcity. One year ago Iowa was blessed with an abundant crop. The year before had been

fairly good. It would have been wise for the farmers to have stored away their grain as Joseph did, and hold it in anticipation of a short crop in the near future. These matters usually go by extremes. A dry year is very often succeeded by one exceedingly wet, and a wet season by the other extreme. We have all learned that by experience.

A year ago our country was in financial straits. There was scarcely a newspaper published in the state, or out of the state, but what was continually urging the farmer to "market your grain, market your grain," to relieve the financial stringency. Then when they did relieve the financial stringency, and the farmer was left with stock on hand, with prospects of a short crop, these same papers cried "why in Heaven's name didn't you keep your grain last year when you had a large crop. You are the most negligent people that ever lived."

Now, gentlemen, there is one lesson that we should take from 1894; not to believe everything we read, and not to follow all the advice that it given to us, and to mind our own business.

The governor here has a silo. The governor is going to plow up all his pastures now, or pretty nearly all of them, and he is going to plant corn, and is going to raise immense crops, and is going to keep a man and team hauling it to two or three hundred head of cattle; and one man is going to do it all. In fact you can have that man haul all the corn you can raise, and he won't be employed all the time. He is going to impoverish his fields, and carry it away, and it will only be a matter of time, when, if he continues crop after crop, and hauling it off year after year to feed his cattle, when there will be very little raised to haul. The great object in pastures is not in the value you receive from the grazing, but it is in enriching the land. Many of the farmers of Iowa have impoverished their land by the same system the governor is going to commence now. We have all tried it, but of late years we have been depending upon grass. We have been depending upon pastures. And if we have not made as much money for the time being, we have been storing it up for future use.

Mr. Gabrielson wants to know how many acres of grass it requires for an animal. Now we, in the eastern part of Iowa, I can unhesitatingly say, require two acres of the best land we have. That will carry an animal through the middle of May until the first of November, and they will gain flesh continuously. This season, I presume, is one of the worst we have

ever had. I never had better looking pasture. I have it in abundance. My cattle never did better; and why? I had an old piece of pasture, blue grass. It is that high, and as good as it was in the spring. The cattle were not placed on it before the 15th of May. I had plenty of hay and corn; they were kept in the yard and fed until the grass was three or four inches tall. My neighbors had their cattle out several weeks before. Mine were in the yard. They were kept on the blue grass. Blue grass comes early, and in dry weather through June and July it is of little value. Get the good of it early in the spring. There was a timothy field that came next. It had been in grass for three or four years. After the blue grass was closely picked, the cattle were turned into the timothy field. That lasted two or three weeks longer. There was another field that had recently been seeded. It was large clover; that was reserved till late in June. At the time the cattle were turned into it it was knee high; I mean my own knee—pretty well up. It reached my knee and was in full blossom. When the cattle went through it, wherever an animal went there was a path. All through July and August they had an ample supply of food. The blue grass, as these cattle were in pasture in that field for nine weeks, did not show a particle of growth; the timothy very little, but the clover was growing green, and with the old and the new they have lived well and gained rapidly. Gentlemen, it is clover that we have to depend on in a dry season like this; deep red clover, and give it a good growth before you allow your stock upon it.

GOV. PACKARD: I do not know that anybody will be misled by anything that has been said, but I want to set myself right on this. I have not advocated giving up the cultivation of clover and timothy. I have not advocated, as you probably know without being told, the plowing up of all pastures, but I have advocated doing just what our friend says. He has been taking half clover and half timothy and not depending upon the blue grass. He told us he did not feed the blue grass only a little while in the spring, and I suppose we may say he has two acres of that for each head of stock; and after they have been on that three or four weeks he turns them off onto the timothy, of which, I suppose, he has perhaps only an acre, and he grazes them on that awhile, and then turns them into something else—the clover, of which he has, perhaps, only half an acre. Now, how many acres has he left for other things? Why, he has

taken his whole farm to raise a few head of cattle. My plan is this: keep some blue grass pasture; keep as much meadow as you can make profitable, but instead of keeping so much of your land in blue grass I say put part of it in corn where each acre will give you twenty times more forage than the blue grass when it is not growing. It will support your cattle, and if your cattle grow they will pay you well for your labor. I do not propose to put my experience against gentlemen who have lived here for thirty or forty years. I have only lived here seven or eight years, but I have not experienced a wet season yet. I am anxiously looking for one. We started with one in 1892, but it lasted just about long enough in the spring to give us enough moisture to go on. I do not call that a wet season. What I would like to see is a wet season, but I have made up my mind they do not belong to Iowa. They may belong to some parts of the State further south, but they do not belong to the central portion of Iowa.

MR. GOVE: Two years ago from the middle of April to July, in three months we had three feet of rain. We call that a pretty wet season.

GOV. PACKARD: I am sorry we did not have some of it in our part of the state. I planted corn that year in May, and on the wettest piece of my farm I could not go until the middle of June. They laughed at me for planting corn at that date. The corn matured and made about seventy bushels to the acre. Now the best plant for a dry year is corn. It will beat timothy and beat the clover. Where you get a good crop of timothy it is because you have a pretty good moisture to start on. Now, corn you raise, if ever so dry, by cultivation. You can always raise a good amount of forage, whether you get much sound corn or not. You are sure of good forage. Take your meadows; you will find them in a dry season as dry as ashes two or three feet deep. You can not expect grass roots in that dry soil to get any nourishment for growth. Go into a corn field to cultivate and you do not have to go very far to find moist ground. That only teaches that cultivation of a crop in some way or other, either from the atmosphere above or below, brings moisture to the plant. Now I say you can challenge the driest time with corn, and the corn won't fail you. Therefore I say that corn is the dry plant, and Iowa is a rather dry state. So I advocate corn. It is not very expensive to haul corn to cattle. It is planted in convenient places and lots where your

cattle are grazing, and you hand the corn out to them and scatter it along over the grass. As far as enriching the ground is concerned, your corn field will last many times longer, acre for acre, than any kind of meadow or any other growth you can give them. You will have more field, more forage, more corn than any other crop you can raise.

Now, I do not say a word againt timothy, or clover, or any thing that goes by rotation. We can raise corn and rotate it with the other grasses and grain, but we cannot let much of the farm run to blue grass.

THE PRESIDENT: I wish to make an announcement. You will notice by the programme that we are to meet here tonight at 7:30. Let us try and be here promptly at that time.

PROF. WILSON: In regard to these blue grass pastures. The drouth has killed a great many of the blue grass roots. We depend entirely too much upon blue grass in our pastures. It has been a matter of thought with me, and a matter of some investigation, in regard to how we could help out the blue grass during the drouths we are subject to. We have been experimenting some here. We took a disk harrow early in the spring when the ground was quite soft, went onto a well sodded blue grass hill where there was a complete stand of blue grass and cut it up and sowed red clover and harrowed it in. All the cutting we did did not interfere with the blue grass, and we had a beautiful stand of clover throughout that summer. I think it would be worth while to try it next spring in these blue grass pastures where the roots are killed. When the ground is soft—just when the frost is coming out—disk them two or three inches and sow clover and harrow it in. The difficulty with our blue grass is where there is often plenty of it it will stop growing awhile in July and August. It will go to sleep; and then, after the animals have eaten what has grown and what has made hay in the heat, they do not get anything. There is a vacancy there. Something else must be gotten for the animals. In regard to this hauling of corn. It is better to haul out corn when the cattle are not getting enough to eat than to haul out water. But when it comes to the question of growing crops to haul from one field to another, it will be much better for us to turn our attention to some of the leguminous plants that are much better for cattle. Corn is not a complete ration for an animal. If they get poor for want of grass, with corn hauled in from another field, the ration is modified. Grass is one of the

most perfect rations nature has given us. I would suggest that leguminous plants be used for soiling purposes. We have given some attention to that here in our Experiment Station, and we find that the peas make an excellent soiling plant, and that the cow milks admirably well on peas. You can grow a very large tonnage of peas from an acre if you will select and properly care for them. We have inquired further in regard to the plants that have been grown in other countries. There is nothing we need more than leguminous plants, such as are grown in other countries, that we can fit into our system. The trouble is we grow two few plants. Blue grass, timothy, corn and oats have about the same substance. And while that system will do admirably well near the sea coast where they have plenty of rain, it has been found that on the prairies of Iowa which have been fenced into small farms, and where each man depends upon what he grows, that our system of cropping is seriously lacking. Almost all other countries have plants suited to themselves. After centuries of observation they have succeeded in getting those valuable plants that leave the lands richer after you have taken them away than they were before.

MR. JOHNSON: I tell you what I think is a pretty good idea. Around all of your pastures leave a strip of ground which you can put in sweet corn. I just believe it will beat peas and every thing else. In case you do not need it, let it mature, cut it up, put it into your silo, and it will make a good feed in the winter time.

THE PRESIDENT: I think this would be a good time to open our books for new membership.

EVENING SESSION.

THE PRESIDENT: You will please come to order. We will now be entertained by some music, by the College Glee Club.

Music.

THE PRESIDENT: I will now appoint the different committees.

The committee on resolutions, S. B. Packard, E. C. Bennett, Col. John Scott.

Committee on location and nomination of officers, R. J. Johnston, Daniel Sheehan, John Cownie, C. L. Gabrielson, Richard Baker, Jr., J. P. Manatrey, H. D. Parsons.

The first question for discussion this evening is "Heredity," by A. G. Lucas, of Des Moines. Is Mr. Lucas present?

SECRETARY FRANKLIN: I would just say, Mr. President, that a few moments ago I had his paper handed to me. He had gotten on board the train at Des Moines, but just at the last moment matters shaped themselves so he could not possibly be here; but he has sent his paper. Shall I read it?

THE PRESIDENT: Mr. Franklin will now read the paper prepared by Mr. Lucas.

HEREDITY.

BY PROF. LUCAS.

The problems of heredity have occupied the attention, and claimed for their solution the best efforts, of some of the most powerful and acute minds the world has ever produced. The subject has been approached from many different sides. The philanthropist and the moralist have investigated its scope and extent, seeking to determine whether it had any spiritual or moral basis, because of the bearing which the answer would have on human responsibility. Why hold the offspring of a Borgia or a Nero responsible for evil deeds if murder, cruelty and iniquity of every description be an inheritance of which there is no breaking the entail? The physician has devoted to it his best thought in order to ascertain how far, if at all, diseases were transmissable, and twenty years ago he would have said that consumption, cancer, gout, rheumatism and many other ills were the subject of direct inheritance; now, although the inheritance of constitutional weakness amounting to a diathesis, or predisposition to a particular disease, seems to be generally admitted, the number of specific diseases capable of transmission have been greatly reduced, and the child of consumptive parents, if he will but take proper precautions through life, may reasonably hope to die of old age. Indeed, Prof. Weismann tells us that there is but one single disease that has proven to be transmissible; it is the sole instance wherein the sins of the parents have set the children's teeth on edge. Utopian dreamers and theorists have lost themselves in empty speculations and fruitless fantasies regarding heredity, in the hope of discovering some method whereby men might become like unto gods in intellect, with every human passion and human frailty eliminated

from the race and from the earth. Biologists have endeavored to formulate its laws with but indifferent success, and the great and important industry which this association represents has studied its facts in a practical way and embodied their results in a system of breeding which has created the many valuable breeds of domestic animals, bred for a purpose, as they exist throughout the civilized world.

In all these various studies the intelligent masses have deeply sympathized, and it is from this standpoint and not from that of the specialist that I approach the subject tonight. Its fascinations, to those who have given it thought, would be marvelous were it not that we remember how closely it lies to the very origins of life—to that mysterious something which animates us now and shall presently animate us no more forever—a something which no eye has ever discerned, of which no human sense, however highly trained or powerfully aided, has ever taken cognizance. How "life begets life" and communicates to matter the most powerful and at the same time the most invisible of antiseptics, preserving it from putrefaction and decay while it remains, giving it over to immediate putrefaction and decay when it departs, is nature's supremest mystery; how "like begets like," or to use the better phrase of Mr. Galton, how "like *tends* to beget like," is a mystery no less, and one, it seems to me, quite as far from solution. We see the manifestations of life, and we vaguely and dimly perceive a few of its laws, or think we do, although they are subject to exceptions so countless that we doubt whether they can be ultimate laws; we see, also, a multitude of the facts of heredity, and we dimly perceive working through them some semblance of law, but the infractions are so numerous and so striking as to make one wonder whether there ever was such a thing as a law of heredity. And yet, as knowing nothing of what life in its last analysis actually is, and almost as little of its ultimate laws, we nevertheless manage to live, so in equal ignorance of what heredity is, and with no knowledge of any absolutely fixed law governing it save the one laid down in the twenty-fourth verse of the first chapter of Genesis, the large and respectable industry which this association represents has reached no mean degree of success in the practical work of improving, for the various purposes for which they are bred, the live stock of the farm. In this, gentlemen, you are not without precedent. Good results have very often been produced by means of a working hypothesis that is not absolutely true, or, perhaps, not true at all. The astronomers on the plains of Chaldea were able to predict eclipses, although their ideas of the earth's form and of the planetary and stellar systems were utterly and wholly wrong, and the physicians of the sixteenth century and prior thereto were able to alleviate some of the fevers of the blood even though they were as yet ignorant of the chief fact relating to it, namely, that it circulated through the human body.

It is therefore not absolutely necessary, gentlemen, that the principles of heredity shall be settled upon the basis of exact truth embodied in a veracious science before the art of heredity can be successfully pursued. If it were, you and I would not be here tonight, for there would be no Iowa Improved Stock Breeders' Association. There would be no breeders' art for there is no such science. Almost from time immemorial speculative minds have been engaged in the effort to construct such a science, and

some of these attempts have been very brilliant and striking examples of human ingenuity, but none have reached the point where one can say: "This is true!" Charles Darwin only put forward his doctrine of pangensis as a provisional hypothesis, and August Weismann, whose theory of the continuity of the germ plasm occupies at present a large share of attention in the scientific mind, expressly says that any theory of heredity must of necessity rest on a vast number of assumptions which cannot be demonstrated. Much of the ingenious reasoning upon which the various steps of his theory rest, is devoted to proving not that the assumptions are true, but that they are not impossible. So with the theories of Nagell, Spencer, Galton, Brooks, Wiesner, De Vries, Hertwig, Haeckel, and a host of others; they are all devoted to showing how the facts of heredity might possibly happen rather than how they actually do happen. Indeed, the very physical basis upon which all present efforts to explain heredity rest is an assumption. It assumes that the nuclear rods—infinitesimally small even under the most powerful microscope—which occur in the male and female nuclei, which unite by fusion in every act of generation to form the segmentation nucleus from which individual development begins—it assumes that these rods contain the determining impulses which give character to the resulting individual, and that this character is decided by a sort of battle between the determinants derived from the two parents respectively.

Fortunately, however, as has been said, successful breeding does not depend upon the pre-establishment of a science of heredity. Darwin was the first to attempt a comprehensive explanation of all the known phenomena of heredity by reference to a common principle—the first to attempt the reduction of these phenomena to scientific statement; but before him in the practical field were Bakewell, the Colling brothers, Booth, Bates, in Short-horns; Tomkins, Price and others in Herefords; Watson and McCombie in Aberdeen-Angus, and even some years before, Jacob, as a herdsman of his father-in-law, Laban, developed considerable ingenuity in practical goat breeding, although he had probably never even heard of pangensis or the continuity of the germ plasm.

It is therefore the practical facts of heredity, as developed by experience, which chiefly concern us, for there is as yet no science of heredity, and no laws of unvarying application; the breeder must depend upon empirical rules which will only probably result as he wishes.

The characteristics of kind are unvariably transmitted; the offspring of man is man and of animals after their kind; we do not expect figs from thistles; we do expect them from the fig tree.

The characteristics of variety or breed are, in like manner, transmitted by heredity, but somewhat less certainly. The offspring of the Percheron, the Short-horn or the Poland-China may be less distinctively Percheron, Short-horn or Poland-China than its ancestor; a polled breed may occasionally throw calves with "scurs." It may be said that this is one kind of heredity—atavism—yet it proves that breed characteristics, of which, in a polled breed, the absence of horns is one, are not so firmly fixed nor so unerringly transmitted as the characteristics of species; and by a withdrawal of the conditions under which the breed was produced, the pure bred animal of any kind may lose the breed characteristics.

The congenital characteristics of the individual are transmitted by heredity, but still less certainly than the characteristics of breed. It is more certain, for example, that the descendant of a Short-horn will show the Short-horn characteristics than it is that the individual characteristics of a particular Short-horn will appear in his get.

The acquired characteristics of the individual are, I think, transmissible by heredity, but somewhat less certainly than the congenital characteristics of the individual. Here, however, we approach debatable ground. The authority and the theory on the subject which are now exciting more attention than any other, perhaps, deny that acquired characteristics are transmitted by heredity at all. I refer to Prof. Weismann as the authority and "The Continuity of the Germ Plasm" as the theory. The theory is one which I do not hesitate to admit that I find it difficult to grasp in all its details; it is certainly one which my studies have not prepared me to criticise. I am, however, able to appreciate the admirable severity of its logic and the closeness with which it is reasoned out. Admit the postulates and the correctness of the theory must be admitted. Its logic, however, reaches conclusions which, it seems to me, are not in harmony with the facts of heredity as developed by the practical breeder. Prof. Weismann's conception is that the reproductive cells which give the impulse to the generation of the individual have been handed down from his ancestors backward indefinitely—that there is an actual, material continuity of germ, and that these reproductive cells are uninfluenced by the somatic cells, or cells of the body of the individual. To put his position in his own words, he says:

"Neither injuries, functional hypertrophy and atrophy, structural variations due to the effect of temperature or nutrition, nor any other influence of environment on the body can be communicated to the germ cells and so become transmissible."

If this be true, what are we here for? As to injuries, it is doubtless a fact that they are transmissible only to a limited degree. Mutilations which involve considerable portions of the animal structure are not transmissible. But Prof. Brewer, in a series of papers in *Agricultural Science*, has collected a considerable number of cases showing that injuries and mutilations are transmitted. Some may be briefly referred to in order to show their character. A mare in foal had an eye seriously injured by burdocks entangled in the forelock. The foal when dropped had the corresponding eye abortive. A game cock lost his eye in a fight. He was turned into a small flock of game hens, and a very large proportion of his progeny had the corresponding eye defective. The hens afterwards produced normal chickens when mated with another cock. A hunting mare had a split pastern and was used for breeding. Her second foal had "almost an exact reproduction of the mare's unsoundness." A cat had her tail trod on when about half grown, producing a compound fracture which made an offset about the middle of the tail, so that the first half and last half were out of line. In every subsequent litter of her kittens, and there were a number, some of them had the same defect reappearing in the tail. A boy of ten cut his little finger with a sickle producing an obvious deformity. He grew up and had two children; one, a boy, had normal fingers; the other, a girl, had the same defect in the little finger of the left

hand that the father had. A woman of thirty-five had both kneepans broken, and complications prevented the use of the usual surgical appliances to keep the parts together while healing. The result was a pronounced groove along the line of fracture, particularly in the left kneepan, which remained for years, and the precise defect reappeared in her son.

As to functional hypertrophy, the intelligent breeder feeds his breeding animals when young for growth, in order that they may transmit it to their progeny. The deep shoulder and ham and the straight underline he feeds for he expects to reproduce; on the other hand, if he feeds corn from the start, he should not be surprised if in the course of a few generations his pigs degenerate into microscopic grease spots. The wild boar has intestines that are 9½ times his own length; the domesticated pig of which Darwin wrote had intestines which were to his length as 13 is to 1; later, the ratio of the improved pig was 1 to 19; recently Prof. Henry states that the average of, I think, thirty-nine hogs slaughtered by him of which the intestines were measured, was 21½ times the length of the animal. This is functional hypertrophy transmitted. Functional atrophy transmitted finds an example in the long leg that has been bred off the hog that is no longer driven to market, and the experiments of Prof. Sanborn in feeding cattle on grain alone, by means of which he caused the gradual disappearance of the rumen, and in his report of the experiment indicated his belief in the possibility of producing by this means a non-ruminating breed of cattle. As a practical question every breeder knows the importance of selection, but he knows equally well that he cannot improve or even maintain the excellence of his herd by selection alone. The effects of nutrition and environment are relied on to produce transmissible qualities. The effect of lowlands and highlands on the foot of the horse is well known to every horse breeder, and the foot is transmitted to the progeny. The trotting horse that is gradually lowering the record to a two minute gait, is an example of acquired character transmitted, and every breeder would prefer a developed sire for his colts to an undeveloped one of equal breeding. We advise dairymen to breed for milk cows from their best cows—best not not only in breeding but in individual development. Every dog bred for a special purpose is an example of acquired character transmitted by heredity, and in all breeding operations, care, management, feeding and environment must all be looked after in order to increase the acquirement of desirable character and prevent the acquirement of the undesirable. Sheep moved from Ohio to Texas change the character of their wool and the change becomes increasingly greater for several generations, indicating a transmission of the acquisitions of each generation until complete correspondence with environment is attained.

Assuming that heredity does operate upon the lines I have sought to indicate, and with a gradually decreasing certainty from the unerring heredity of species to less positive heredity of acquired character, in what manner does it operate?

In animals that are produced by fission, heredity seems to be absolute and invariable. Every member of the species is like every other member. The offspring resembles the parent to such a degree that it is impossible to tell which is the offspring and which the parent. In fact, no relation of offspring and parent exists at all in the sense that one is older than the

other, or will die the sooner. Accident aside, biologists contend that neither will ever die; that each will grow to the limits of the species, and then divide and these parts grow to their limits and divide again, and so on endlessly. It is this fact that furnishes Prof. Weismann the starting point for his theory of the continuity of the germ-plasm.

In the single-celled animals, as has been said, heredity operates with unvarying accuracy, but when reproduction depends upon the coming together of the two sexes of a species, complications begin to arise; two more or less conflicting heredities, each containing those of many ancestors, meet, and the result can not be predicted with certainty. A leading form is direct heredity from the parents, the theoretical perfection of which would be that the offspring would be an exact blending of the characteristics of both parents. This exact mean between the two parents I have never seen reached; what does occur is that the offspring resembles both parents to some extent, but the resemblance to one or the other will predominate. This preponderance of one of the parents is very noticeable in cross-breeding between races and species. Rush says that when Danes marry East Indian women the children always have the physique and vigor of the European type, whereas it is not so when the cross is with other Europeans. This is one instance of many in the human race. The same thing is observed in the cross-breeding of animals. The Galloway bull is known to impress his color and polled conditions in almost any cross; a Short-horn sire on a Galloway dam usually produces a polled offspring of a blue-gray or mealy-roan color; the cross by a Hereford bull is as a rule polled, but the Hereford markings and color are preserved. In many other cases of cross-breeding there are certain points that are reasonably sure to be always the same; others are less so. In breeding within the lines of the same breed there is the same preponderance of one or the other parent, but it is sometimes the one and sometimes the other, and the causes seem very obscure. Extended experiments made by Giron indicate that the resemblance is usually on the side of youth and vigor, which may afford, in part, a clue to the causes. On the other hand, in nearly every breed of improved live stock there are a few animals which seem to have been especially prepotent, impressing their characteristics to a very great extent in almost any mating, the cause being beyond discovery. Examples of this are Hubback and Favorite in cattle, and Tom Corwin and Tecumseh in swine; no one can tell why. Sometimes a particularly prepotent sire makes a total failure when crossed on a certain family; no one can tell why; we find by experience that there is a failure to "nick" and that is all we know about it. When the dam has a fault we often try to correct it by selecting a sire strong in the particular in which she is weak. Sometimes it succeeds; very often it does not, and occasionally we get the faults of both combined in the progeny.

When the heredity is direct, one parent predominating, it may be either from sire to son and dam to daughter, or it may be cross heredity, the daughters resembling the sire and the sons the dam. It is difficult to say which of these cases occurs most frequently. A great many physiologists have been adherents of both the one and the other form as furnishing the rule. If cross heredity were to rule, it would teach, for example, that if good male pigs were wanted, care should be specially directed to the

selection of the dam; we are also in the habit of speaking of such and such sires as being particularly prepotent, but if cross heredity is the most frequently occurring kind of direct heredity, he could only be prepotent as to his female offspring. What the males were would depend more on the dam than on the sire. The other kind of direct heredity—from males to males and from females to females—also has its adherents, and the books are full of cases to support it, too. I think myself, on an examination of all the collected evidence, that it is impossible to speak with any decisiveness on the point as to which is most frequent.

Another form of heredity is reversional heredity, or atavism, which consists of a reappearance in the progeny of characteristics which do not appear in either sire or dam, but which were present in the grandsire or granddam or some more remote ancestor. Qualities do lie latent habitually when they are sex characteristics, and reappear in the sex to which they are peculiar. The dairyman procures a bull from a good milking strain when he wishes to breed milk cows. The bull has no milking qualities of his own, but his dam had, and in every male the qualities of the female lie dormant, overshadowed by his virility. Capons, in which the dominant male qualities are destroyed, become very good mothers of a brood of chicks, and the game cock transmits his superiority in courage and vigor through his female to his male offspring, while the ancient hen that has passed her laying period tries to crow and put on male airs. But aside from these qualities, latent because they are sex characteristics, there are others not pertaining to sex which lie dormant and reappear from grandsire to grandson, or perhaps after many generations. The scurs in polled breeds are examples of this, cases of off color, and the peculiarities that occasionally appear in all composite breeds which have been long enough established to breed true as a rule. The degeneration of a pure bred herd kept under scrub conditions also affords an example of reversion, and so too the wild uncertainty that results from mating grades, or from continued cross-breeding as in Darwin's oft quoted pigeon experiment. Atavism then asserts itself, perhaps because the blood lines are broken up and there is no influence remaining which is strong enough to control the result.

Collateral, or indirect heredity is believed in by some breeders It is where the progeny resembles some collateral relative, as an uncle or aunt. I am not prepared to deny its existence, for the resemblances do occur, but I am inclined to think that the simpler explanation is that both are cases of atavism, and that the inheritance is from some ancestor common to both.

There is also a heredity of influence, which occurs when progeny from a subsequent service resembles the sire by which the dam was first served. The leading case, as the lawyers say, of this kind of heredity is that of Lord Moreton's Arabian mare, served by a quagga and dropping a colt having the characteristic zebra stripes; subsequent services by Arabian sires produced foals similarly striped. This kind of heredity if established plays havoc with Weismann's theory, for it shows modification of the germ-plasm. He denies the case, and says it was atavism dating back to the remote period when all horses wore stripes. It does not stand alone however. Dog breeders firmly believe that if a pure bred slut be cross-bred, subsequent litters of pure parentage will always show at least one pup having the

characteristic of the out cross. Dr. James Law, of Cornell, has a very interesting paper on the subject, in which quite a number of authentic cases are collected, and a theory based on the pangenesis of Darwin is advanced as an explanation. The paper is incorporated in Sanders' Horse Breeding, which is the only place where I know it to be accessible. I can only refer to it here, but it gives many cases, all tending in the same direction, and proving that this kind of heredity does actually exist. If it does, it is important not only practically, on its own account, but because of its bearing on Prof. Weismann's theory.

There are a few cases which tend to show that this heredity of influence occasionally appears in the male as well as the female. The *English Live Stock Journal* recently reported one in the following terms:

"There is to be seen at Warlaby a cow whose appearance is of unusual interest to breeders, as well as to scientific men. One of the Warlaby Riby bulls—I think Sir Roger Studley—immediately on his return from Chillingham Park, where he had been experimented with upon the white wild cattle there, served a dairy cow. The produce, now a young cow, is white, and its head and horns, peculiar in shape and setting, exactly resemble those of the Chillingham wild stock."

These cases occur so rarely as to be of little practical importance, although they have an important bearing on the theories put forward to explain heredity. If they are true, the Weismann theory can not be true. The effect of the same kind on female breeding stock occurs more frequently and renders it unsafe to cross breed a valuable female.

For the sake of completeness, merely, and without intending to pursue it, I shall only refer to the heredity of imagination, in relation to which there is some evidence. Time does not permit any consideration of it, nor does its practical importance warrant it.

THE PRESIDENT: The first gentleman who is to discuss this subject is Hon. James Wilson.

MR. WILSON: Mr. President, I might begin where he left off. The greatest difficulty we have in studying the question of heredity is the nonsense we have from the doctors who have written books, and this Dr. Wisemann is one of them; and this keeps running on from the schools and will for ages yet to come. Mr. Lucas in preparing this paper says that these conditions are admitted. Dr. Wisemann's theory has no ground. I will give an illustration: in 1890 a mare was bred to a jack and had a mule colt; the next year she was bred to a Belgian horse and had a mule and horse colt, both; and the next year a mule and horse colt. There is no question about it. It is up in Grundy county. Dr. Wisemann's theory will not admit of anything of the kind. I want to speak of the practical side of this. I want to speak about what is practical, about what we know. It is a well known fact that the fast horses of today are from fast sires and dams, and the further back speed is found

in their pedigrees, the faster are the colts. Accidents never happen. No horse was ever taken from the plow that trots near two minutes. It is the same with regard to the one animal that Americans have carried to the front—the hog. If there is one animal that the farmers of the west have been anxious to improve, and never hesitate to improve, it is the Poland China hog, and by doing so we have the finest hogs on the earth. We get better results from that hog than any other hog, simply because attention has been given to heredity, by buying first rate animals and breeding from well bred animals. We know that a number of years ago we were well satisfied, when attention was given to first rate animals, in the Shorthorn breed, there were good cattle. Plenty of men in this audience will rise and tell you that today it is almost impossible to buy a load of good cattle. Cattle became lower, and people did not give attention to well bred animals; they have been breeding from grades, and the result is they have destroyed and deteriorated the grades from that breed of cattle, and all other cattle. The only way we can get them back is to give attention to breeding from animals that come from good feeders, early maturing animals. Animals inherit a great many characteristics. They inherit assimilation. You take a common scrub animal from the plains, put it in a lot and feed it with well bred animals and it cannot assimilate. To begin with, it has not got a hide that promotes assimilation. Its hide is like sole leather, thick and stiff. The well-bred animals need shelter while it might endure storms. The well-bred animal has a fine touch. You cannot get a first-class animal unless it has a fine touch. It is not the saving of the heifer calves at random that insures a good dairy breed. It is well-known that the cow not only transmits good milking qualities to the offspring, but the sire also transmits the characteristics of his dam and grand dam to his grand daughter. The longer we breed in any one given line the more certain we are of the progeny. Take the Merino sheep that for hundreds of years were kept pure and clean under Government provision, they could not be impressed by any other animal. There were no other sheep that you could couple these Merinos with that had equal potency to that sheep for that very reason. Take the Jews, a thorough-bred people, and let any American boy marry one of those girls, and I will warrant you the children will have the hooked nose, black eyes, and will be Jews. Every Jew has remained a Jew, and he can trace himself back

to Abraham, Isaac and Jacob. And for that reason he will breed straight. You can pass from the animal to the human being. If I remember my scriptures—I forget it often—Paul speaks of the faith, that must be in Timothy, the unfeigned faith that dwelt in his grandmother Lois and in his mother Eunice. It came on down through generations. The Georges were mad men down through generations. And the Scotch Stuarts,—history tells all about them. Come back to the original of the James', James I, and go on down to James II, and you find heredity following. They were a set of brave, courageous fools through all the line; and the only good thing they have done is to show us that prepotency in the wrong direction goes just as far as prepotency in the right direction. We are interested in the production of something that can be carried on down generation after generation. Where did early maturity come from? By breeding what had been underfed somewhere And by perpetuating what had been gained, and what advance had been made by the first generation of feeders; they carried it on to a second generation, and to a third, and so on down. A pedigree means the history of good feeding and selecting; a pedigree means speed breeds of horses from generation to generation; a pedigree means fine wool sheep from generation to generation, and careful breeding along those lines; a pedigree means careful breeding and feeding with regard to the Poland China hog away back from the man who began in the Miami Valley to feed, and who finally produced the best feeder. And so it is with the mutton sheep; and so it is with animals of all kinds.

Now with regard to the transmission of injuries: There is no question about it. I recollect when I was a boy a cat lost its tail, and one of its kittens happened to have a tail no more than the length of that of the old cat. We worked a yoke of breeding bulls—there was no other way to keep them quiet—and we put them in the yoke, and the calves had the mark of the yoke on their necks. One case has come to my observation where dehorned cattle produced progeny without horns. It is said: "Why don't we have sheep with short tails?" Now, do we? That is the question. Hundreds of thousands of cattle in Iowa were dehorned before one was noticed that had no horns. And if that animal had been used as a breeder, it is probable that some of his progeny might not have had horns. And if all the people who had de-tailed their sheep would have observed the

consequence, it is possible some one might have been found with the short tail, and if they had bred from that, it is very probable we might today be breeding short tails. I believe I have said enough to introduce the subject. (Applause.)

THE PRESIDENT: Professor Kent will now follow according to the programme.

PROF. KENT: Mr. President, I confess that I do not like to take hold of this subject. In the first place, our paper has discussed it very thoroughly—has told you quite well that we do not know anything about it. Professor Wilson said he would start in where the paper left off, that is, where they didn't know much about it, and I think he came out where he started in. And I have no doubt that I shall come out at the same point, and I think that Dr. Stalker came out about the same place. Wisemann and Brooks and Darwin, men whose imaginations on this subject tower far above ours, come out at this same place. We are simply lost on that subject. It is a subject kindred to other subjects of evolution that are not, as yet, solved. The influence of maternity or paternity in the origin of life is something that is just as variable as life itself, and how that variability comes in we are not able to explain. Neither do I care to discuss it tonight. But discussing the other phases of the subject in regard to maternal or paternal influences, nutrition itself has a great deal to do with the development of all physical formation. There is one thing about which there can be no question; and that is that every form of life, however minute it may be, is dependent upon some pre-existing organism. I think that goes now without any question; but there is some question about how that original organism reproduces itself, as to where the very beginning or germ of life rests. After it has had its beginning, after life has been generated, it is then dependent upon some source of nutrition for its further development, and that source of nutrition certainly modifies physical development continuously.

There is one phase of the subject that was not mentioned very strongly in the paper, and that is the question of extraordinary births. This is an important theory in the discussion of the laws of heredity. There are extraordinary births in all forms of animal life. Some peculiar surrounding, some peculiar intensely vital activity of the parents, seem to infuse a force of life into their offspring that is superior to anything else for the time being, and that superior production sends itself all

along down through generations. There is a great deal of possibility in that theory. We find all our prominent breeds of animals began with births that have been so extraordinary in character as to force their excellencies through all environment, through nutrition, through external influences, despite of disease or exposure. Independent of all these things, such form of life has risen up in its power of prepotency and maintained itself. Now, we have hundreds of them all along the history of animal life. And then we have hundreds of extraordinary births that simply lived out their existence without leaving anything behind them. This is most particularly true of man himself. You see your Charlemagnes, your Ciceros, your Napoleons. They stand up there above the rest of mankind as tall trees stand above the surrounding forest, without reproducing themselves from the intellectual standpoint. That may explain the theory, to a certain extent, that intellectuality is not transmissible, as very few great men follow great sires. There are some noted exceptions.

The physical being is more transmissible than the mental. I am convinced that the mental being is largely developed after the individual comes into existence. Mentality is not born; but it may be cultured. I do not think it so much a matter of brain as it is a matter of activity of brain that makes the man rise up in his intellectual might. There is no man who has become noted in some particular branch of the sciences, but what has set about to work in that particular line and develop it until he might reach the highest round in the ladder of fame. The man that will keep pegging away will get there. I have seen some of these little, wasted, shrunken fellows that we would not think had vitality enough to last twenty-four hours of hard work, become the most distinguished men in certain lines of study; and I tell you that is a great deal of consolation to a great many of us. There is hope yet for all of us when we take these facts into consideration. It is the earnest, industrious, painstaking, never-tiring man that gets to the front. It was the tortoise that outran the hare, not simply because the hare laid down and went to sleep, but because the tortoise had perseverance. Speaking of the evolution of life, of form, of thought, or whatsoever, it was a long time before the Christian world would have tolerated the idea of evolution. Now we have begun to admit the idea of evolution into our theology. Why? Because we have discovered that there is no such thing

as evolution in truth. Truth is eternal. You verify truth, and that is evolution. Evolution is simply a process of eliminating errors; discerning mistakes; finding out faults. The truth that exists today existed two thousand years ago. There is no evolution about that truth; but there may be development in its comprehension and application.

We find out our faults. We eliminate error and call that evolution of thought, and it is evolution of thought. We make selections in physical life, provide increased comfort, care and nutritive conditions and are rewarded with rapid development. This evolution from the material standpoint.

THE PRESIDENT: We will now listen to Prof. Stalker.

PROF. STALKER: Mr. Chairman, I think I can excuse myself just as well from where I stand as from any other part of the room. There is one thing that I am a pretty good judge of, and that is when an audience has had enough even of a good thing. I will not make a speech then, nor deliver a lecture, or make an argument—only make an excuse. And if I should attempt and fail, however, it might furnish this much of an illustration to the point—I inherited it from the speakers who preceded me.

I will say this much, however: It is fortunate that we may reach a great many of the practical ends we have in view without being able to understand all the occult features of this subject. We may not be able to understand all of the minute laws that govern transmission; but in the end, as a matter of fact, we do attain, in a large measure, the practical results we are seeking through these laws. As to whether transmission of acquired qualities is possible or not, a word on that point might be said. Do we know of a single characteristic of any individual that is not an acquirement? If we would let our minds go back far enough in the history of the past, the changes that have taken place in the animal creation are such that we can hardly say there is a recognizable peculiarity in the animal creation that is not acquired. For instance, the undivided foot of the soliped is an acquired quality. I think Prof. Marsh has established the fact beyond contradiction that the undivided foot of the soliped horse is an acquired quality; and yet that peculiarity is transmitted with almost unerring certainty.

As affecting the law of reversion—one of the features of this question, I may say that some peculiar facts have come under my observation which might be pertinent to the present

discussion. It seems to be a fact admitted by thinkers on this subject that qualities that have long since disappeared as racial or family peculiarities are much more likely to be brought back into view in posterity by the mating of individuals that are far removed in kinship. For instance, the mating of the horse and ass is as violent a cross as may be made with fertile results, in the animal kingdom. And if there is anything in these laws, it is in this class of individuals that we expect to see these peculiarities brought out. I have just said that I think Prof. Marsh has established the fact that the horse was at one time a five toed animal. Finally he had only two toes, and in most cases we find him now with a solid foot. But in the case of the mule, several instances have come under my personal observation, and a number more have come to my knowledge through correspondence and reading, of the existence of supernumerary toes. As a result of mating the horse with the ass there seems to be a tendency toward reversion to the peculiarities that existed in the animal so long ago that we can only reckon the time by geological periods. It seems to me that this is a point in proof of the theory that all racial or individual peculiarities are acquired. The other day one of our neighbors, two or three miles from the college, while digging a well came upon a skeleton of an animal that had taken off his flesh and laid down in his bones to rest a long time ago—possibly before the college farm was located. It was evident the animal must have been about the size of two or three four-horse teams, comparing corresponding parts with those of the horse. Now, that animal had to come up against a set of conditions that were not congenial to it—conditions that made it impossible for it to maintain life; and you can search the whole world through and you cannot find its counterpart anywhere. Surrounding conditions—atmosphere, food, etc., determine the changes that are taking place.

These are the conditions that start peculiarities, that make peculiarities. They make individuals establish their essential features, and these are transmissible. It is impossible to acquire and fix a set of qualities simply by selection and careful breeding. It takes the surroundings, it takes the food, and other conditions in order to bring about any tendency to change. For instance, I think there would be no Shetland ponies if it were not for the conditions prevalent on the Shetland islands from which they originally came; and there would be no

difficulty in bringing a family of Shetland ponies, without the introduction of larger blood, up to the size of the Norman or Clyde horse. I think this could be done without the introduction of blood from any animal that is larger than the pony himself. And the same would be equally true of the Norman or Clyde if you reverse the condition. He can be driven down hill, so to speak, until he reaches the stature of the small pony without the introduction of any small blood whatever. I was out at Leland Stanford's farm, and observed how the little horses were educated. The colts, so soon as they are able to trot, almost as soon as they are able to go after their mothers, are put to the work of trotting; and the fact is that these little fellows seem to come into the world with the trotting instinct. Those little creatures, only a few weeks, old were trotting around the circle with as much interest and enthusiasm as if they were old campaigners. That sort of training makes a peculiarity. You cannot transmit a peculiarity that does not exist. We make peculiarities and then they are transmitted. And I believe that peculiarities are all acquired and may all be transmitted.

As to the practical results, it is hardly necessary to discuss that question before this intelligent audience. It is not necessary to tell these breeders to select good animals to breed from. Along my own particular line of observation, a good many facts have come to my notice that convince me that defects may be transmitted just as well as perfections. I have known a number of instances in which a particular family of horses showed, at about a given age, a development of some particular form of ailment—ringbone. I knew one family that at the age of one or two or three years, a large proportion of them, developed ringbone upon their phalanges. I say it is hardly necessary to discuss before this audience the necessity of selecting such type of animal as you want to perpetuate. So much has been accomplished in that direction that a person may now almost draw a picture of what he desires, mark the very spots upon it in the particular place he wants them, and by careful selection, breeding and determination of surroundings, produce the counterpart of the picture.

I said I was not going to make a speech, and I will make that promise good. (Applause,)

THE PRESIDENT: Is there anyone else who desires to discuss this question? If not, we will pass to the next subject,

"Feeding." On this other subject we had Hon. James Wilson. We will now have the other Wilson, Prof. Wilson on this.

MR. COFFIN: I want to beg leave to introduce a resolution here and have it acted upon now, if the association will allow it. I leave tonight and I would like to have this resolution brought up before I go away.

THE PRESIDENT: We will hear the resolution, and decide then whether it is in order or not.

(Mr. Coffin here reads resolution.)

MR. SHEEHAN: I move that the resolution be referred to the Committee on Resolutions.

Motion seconded and carried.

THE PRESIDENT: We will now proceed with the next number, "Feeding," by Prof. Wilson. I am told, ladies and gentlemen, that at the close of this topic we will have some more music.

PROF. WILSON: *Mr. President, Ladies and Gentlemen*—I wish you would step out before you go away, to the west side of the campus and college grounds here. I think you will find there thirty tons of turnips to the acre. Now, we can grow those things here even in a dry year. We have probably that amount of mangoes growing on the acre. If you will consider what can be done with those things, you will see the absolute necessity of adding to our list of farm crops something of that kind. We have abundance just now of corn fodder. We have a basis of ration in corn fodder that other people do not have; but the cow will not milk on corn fodder; the steer may grow, but will not fatten upon it. We must buy bran for the cow, and we must grow something that will supply us with the equivalent of bran to feed that cow. These roots that we are growing here have perhaps ten per cent of dry matter, and that ten per cent is not very far then from that. It is pretty much the bran equivalent. Now, if you can grow twenty tons to the acre we have the equivalent of two tons of bran, and that is worth $28.00. My idea is that the Iowa farmer should grow everything of the kind on his land that our climate is best fitted to. We can grow them, as they grow them further north. We are compelled to plant later in the season here and cultivate completely; but if by so doing we can furnish the farm with the bran equivalent, why then save paying out money to the people in Minnesota. Another thing I wish to call your attention to is this: Why should we permit the people living beyond the Mississippi and beyond the Alleghanies, beyond the Missouri

river to buy and ship wheat and bran to the Dakotas, Minnesota, etc., and why should we let $8,000,000 worth of oil meal go from the United States across the Atlantic to enable those people to make the same prodect that we expect to market? We can feed with more profit than they can. We can better afford to buy that eighty million bushels of wheat than any other people on the face of the earth. And yet the people in Illinois, the people in Indiana, Ohio, the people in the eastern states, the people in Great Britain, and the people in Denmark—yes the people way up in Lapland are sending down here across the American continent in order to get these by-products so that they can make butter and meats and meet us in the world's markets with them. (Applause.)

FEEDING.

BY PROF. JAMES WILSON.

The breeders are formed for discussing current questions, and I will speak of feeding from the standpoint of present conditions.

A series of dry seasons culminating in the excess of 1894 is calling for different ways of feeding the plants we have, and for the addition of new plants to our farming system. If 1894 is repeated many of our old customs will vanish and the Iowa farmer will be put upon his mettle, both with regard to what to grow and how to feed it. Cheap feed and dear labor in the past indicated western farm systems that were extensive, rather than intensive.

One man with mower, tedder and horse fork could put up more hay on our smooth meadows than he could elsewhere; but the growing of hay in extreme drouth waits for solution.

One man with seeder, harvester and steam thresher could grow more grain than he could anywhere else on land as long farmed as ours, but the growing of grain in long drouths waits for consideration.

One man with gang plow, planter and cultivator could grow more corn on our readily worked fields than he could in other lands, but after cutting much of our corn at the silking stage the growing of corn with 48-day drouths presents a new problem.

We have made growth, milk and meats heretofore, from pastures, cheaper than our competitors, but the drouths of the immediate past have dried up the grasses in our pastures and confronts us with new problems that will not wait if animal husbandry is to be profitable in our state.

New plants must be introduced that will require the adaptation of new machinery to handle, as well as a knowledge of how to feed them. We have relied upon oats and corn, wild hay and timothy hay in the past, with blue grass and limited areas of clover; and so kindly have soil and climatic conditions been that the Iowa feeder has reveled in abundance, and our abundant products have caused continual changes in the systems of competing farmers east of us, as far as commerce extends eastward.

During all the years of Iowa development in so many directions that we like to speak of, the very abundance and consequent cheapness of oats, corn and hay have rendered unnecessary additional crops that are imperatively necessary in other lands. An enterprising dairyman may have fed bran, or an inquiring meat-maker may have fed oil meal now and then, and both have concluded that these by-products are excellent, and they could justify their use from results and from authorities; but 25-cent corn was a terrible temptation; it would find its way to the steer and milch cow, and to the pig, calf and colt, to the exclusion of all other grains. It was so handy. The meats of export were made from it; the meats of home use were made from it, and so were the dairy products for home and foreign demand. It is the one best grain Iowa ever grew. But the drouth of 1894 compelled us to cut much of it in the silk. What then?

During these years of abundance people living east of us have bought the by-products of the western wheat, corn, flax and oat mills to make meats and dairy products in competition with us. The bran, gluten and oil meals that could not hold out against our 25-cent corn were a boon to eastern farmers who must feed to make manure, to maintain the fertility of their soils. The United States exported $8,356,382 worth of oil cake and meals on an average for the past five years. These by-products are worth more to the western feeder than to anyone else because he has the cheapest coarse fodders to feed with them and transportation is less upon the finished product than on the raw material. Our corn fodder is better, pound for pound, than when cut at the denting stage, but it requires something additional to make milk or meats. Dakota wheat is as cheap to us now for the making of these products as our eastern competitors ever buy grain. We are protected by the cost of transportation to New England, Old England, and to the continent of Europe. The lack of 80,000,000 bushels of corn will have to be made up by buying grain or we will cease to produce. The opening up of new lands in our own country, in South America, in Africa, in Siberia, and in Australasia will make wheat cheap for some time to come. Dry countries, as these mostly are, grow wheat. It will be profitable to the Iowa farmer to consider wheat as a stock food this winter, and for some years in the future. Corn fodder and wheat make a good ration for any meat or milk producing animal.

But what of July and August next year if drouths continue? We should grow what animals require on the farm, particularly in the summer months. Our pastures are always good until June if we have been at pains to have good pastures, and as far as our station has made research it does not pay to feed grains of any kind to make meats or growth with pasture grass. Farmers throughout the world have for centuries grown leguminous plants for feeding man and animals. The lentil that Rachael wanted from Leah's son; the pulse that Daniel preferred to meat and wine; the beans and peas Rogers tells us were farm crops in the fourteenth century in England; the vetch of Europe; the angled pea of Russia; the Egyptian bean, and the

alfalfa of Colorado are illustrations of the adaptability of leguminous plants to farming in all countries, and especially to farming in dry countries. Recognizing the necessity of a legume in Iowa farming we set ourselves to work here to get something in addition to the clovers that could be planted in spring and be at its best in July and August. None of the vetches we have tried were suitable to our conditions. Extensive trial of garden peas have given us varieties that yield abundantly for July, and we are satisfied that further inquiry will discover others that will mature later and extend green feeding over August. Legumes from warmer countries that mature slowly here are suggestive. The southern cow pea comes to blossoming when the first frosts kill it, but that is an advantage as we want just such plants to follow those that ripen earlier, and the plant is most digestible at that stage. It is entirely practical to import seed from the south. The Japan bean, in its earlier and later varieties, is promising. We can have green luscious feed from the corn fields in July and August, but corn is never a perfect ration either for meats, milk or growth, and for that reason we must look to the legumes. There is no doubt that we will be able to fit some of the legumes of the world to our conditions. I have the assurance that our station will soon receive a consignment of the grains of Russia from the high, dry lands of that empire similar to ours, and among them varieties of legumes that are very successful in other sections of our country.

We have been feeding under experimental conditions here for a few years, and find that we can make a pound of gain from as little feed as is found on record elsewhere. We find also that this gain is put on with feeds of a wider nutritive ratio than has been authoritatively recommended in standard text-books. We find that the steer will eat corn as his main feed for nearly a year and gain about 2.5 pounds a day with an average nutritive ratio about as wide as shelled corn, it being only necessary that his other feeds, such as corn stover, clover, hay, bran, oats, oil meal, or whatever he is fed in addition to corn, average no wider than the corn; or, in plain terms, the steer will make as good gains as the average reported, with the equivalent of muscle-forming material of shelled corn. For beef making, corn and clover hay are not easily equaled.

I would urge better feeding of horses and sheep. Our low-selling horses are those that are not developed. The American horse is finding his way into the old world, and as far as his weight goes he pleases everybody. We can develop him better by feeding him better. We can rear a good horse here cheaper than he can be reared elsewhere, and there is no reason against our furnishing Europeans with horses if we will offer them what they want rather than what we think they should buy.

The finest farming lands in the old world are profitable when grazed with mutton sheep. They have been developed by generous feeding. We have not reached that position yet. The majority of us feed nothing well but hogs and team horses. We feed too little beyond the ration of support to cows, horses, sheep and hogs. We must get rid of the notion that scant feed makes a tough and therefore a desirable animal. Underfed animals bring little profit, and are not necessarily healthier. We might get a lesson from our Iowa boys and girls who are well fed, and fully grown because they are developed physically and intellectually. Of twenty different states our college boys are the largest and our girls the handsomest.

The Maryland station sent to Iowa for stock steers and corn, to Dakota for bran, and to Alabama for cotton seed meal. The object in feeding was to make a manure pile to grow corn fodder, so that by sending west and south for stock steers and feeds to combine with Maryland corn fodder more manure could be made to grow more corn fodder to feed more steers to get more manure to warm up the Maryland lands with. That is enterprise that we might well imitate.

MR. GOVE: Mr. President, there was one committee appointed at the Short Horn meeting for the purpose of locating the next meeting. I would like to have them say where they will meet, and when.

THE PRESIDENT: Mr. Johnson is chairman of that committee, I believe. The committee meets here to-morrow morning at nine o'clock in this room.

Music. Meeting adjourned.

MORNING SESSION—OCTOBER 18, 1893.

THE PRESIDENT: If the Secretary is ready he may make his report.

MR. FRANKLIN: This is the Treasurer's report. Last year was a very unfortunate year for us. We struck a bad week at Corning, and the attendance was very light; only forty-one attended the meeting, and since that time about that many more have sent in their names.

TREASURER'S REPORT.

FOR THE YEAR ENDING OCTOBER 1ST, 1894.

Expenditures.

1893.			
Dec.	7.	Paid stenographer part payment	$ 20.00
Dec.	7.	Expenses of secretary to attend Corning meeting	11.47
Dec.	16.	Paid postage on 300 notices to old members	6.00
Dec.	16.	Circulars and letter heads	4.00
Dec.	16.	Postage for December and January	1.12
1894.			
Jan.	26.	Paid stenographer balance	48.00
Jan.	26.	Paid postage for February	.06
Jan.	26.	Paid postage for March	.12
Jan.	26.	Paid postage for April	.21
Jan.	26.	Paid postage for May	.18
Jan.	26.	Paid postage for June and July	1.41
Jan.	26.	Paid postage for August	.40
Jan.	26.	Paid postage for September	.38
Aug.	8.	Paid freight on box of books from State Department	.34
Aug.	8.	Paid postage on programs sent out	6.00
Aug.	8.	Paid envelopes, letter heads and programs for 1894	8.50
		Total	$108.19

Per Contra.

1893.			
Dec.	8.	By fees received from 42 members	$ 42.00
Dec.	8.	By fees received since meeting, 47 members	47.00
Dec.	8.	By one book sold to E. E. Kauffman	.25
Dec.	8.	Balance—Treasury overdrawn	14.94
		Total	$108.19

THE PRESIDENT: What will you do with the report, gentlemen?

A MEMBER: I move that the report be received.

Motion seconded and carried.

THE PRESIDENT: It seems to me that it would be proper to refer that to a committee which would adopt some plan to raise funds enough to replenish the treasury.

A MEMBER: I move that the report be referred to a committee appointed by the President for the purpose before referred to.

Motion seconded and carried.

THE PRESIDENT: We will now listen to Prof. Kent on "Economy of Feeds."

PROF. KENT: Mr. President, I am not in the habit of making apologies, but I have not done this subject the justice—I have not given it the attention it deserves. It is one of the most important subjects pertaining to the operation of a farm; but upon pressure of time I had to make a rough draft of a few ideas last night, and I will have to give you the best I have for the time I had for it.

ECONOMY OF FEEDS.

BY D. A. KENT.

The question of economy of feeds resolves itself into a consideration of the commercial value of feeds, their relative nutritive value and their careful handling. There are several minor considerations such as the partitioning of the farm into fields; the manipulation of pastures, and the use of soiling crops.

The commercial value of feeds is determined largely by the market quotations. It sometimes pays to sell one variety of feed and buy another. The breed of animals governs in some measure. For example: Oats are especially adapted as food for the horse; clover hay is especially valuable in the food of milk cows; sheep incline to food having a bitter taste and are capable of living well on coarse fodder with a comparatively small proportion of the concentrated fodders. The various cereals, however, contain a large per cent of starch and each in turn may be used as food for all domestic animals as the fluctuations of the market bring them within the lines of economy.

In consideration of the relative nutritive value of feeds we have learned that in the nutritive processes of animal life there is an interdependence between food factors containing nitrogen and those which contain no nitrogen. This dependence seems to be in the relation of one of the nitrogenized to five of the non-nitrogenized factors, in the case of a milk ration, and ration for a work horse, and perhaps one to seven in the case of fattening rations, and about one to twelve in a maintenance ration, and one to three in a growing ration or ration for a young animal.

About one-half of the animal body is nitrogenized tissue, one-fourth fat tissue, the remainder consists of offal and bones. The fat of the food and the fat derivable from the nitrogenous matter of the food goes to supply energy which is applied first in the maintenance of animal heat and in the performance of work and second in the formation of milk in the deposition or organization of body fat. Taking the nutrient factors as they occur in

the concentrated feeds they are chiefly albumen, starch, fat and crude fiber. The starch protects the fat of the food. The fat of the food protects the organized fat and the circulatory protein, and the circulatory protein protects the organized protein. Organized protein is the last tissue to give away under fatigue or starvation. These facts have been deduced by different experimenters, and they are observable in a large measure in the ordinary management of our domestic animals.

The nutritive processes of the animal system require that digestible starch or its equivalent in fat and crude fiber, must be mixed in the proportion of about five to one of digestible albumen in order to maintain economy on both sides of the ration. An excessive quantity of starch causes waste of that nutrient and leads to indigestion. Excessive quantity of albumen causes waste of that nutrient and leads to complication of the renal organs All of the fodders have these four nutrient factors in their composition: but the cereals are all limited in their protein content, and in the case of long periods of feeding or in the development of the young animal it is necessary to supplement the feeds rich in starch by admixture with other feeds rich in albumen. Unfortunately, the Iowa farmer has not found the concentrated fodder that he can profitably grow for admixture with his corn, wheat, rye or barley. He is driven to the by-products of the mills, where he finds gluten meal or linseed meal and bran; and into creamery establishments for skim milk and buttermilk. Bran is the cheapest of all these by-products and just as valuable as a food admixture as any of them. Linseed meal has grown unreasonably high and gluten meal is falling into the same objection. The great need of the Iowa farmer is some concentrated fodder rich in albuminoids that can be cultivated with the same facility as corn and thus bring the by-products within the economy of the farm. Such an acquisition would not only contribute to the profit in feeding but would heighten the health and vitality of all our domestic animals. The question is often asked which should one buy, bran or shorts? The answer is bran, for the reason that the starch in shorts can be obtained much cheaper in corn. The economy of the pasture field requires that there should be a division of the pasture into different fields and that there should always be a heavy coat of grass to protect the grass roots and conserve the moisture. It is poor economy to turn too many head per acre or to turn all kinds of stock into one pasture. The animal odors of one animal are offensive to another; and different animals require different conditions of pasture. The hog for example cannot eat the long grass which is adapted to the prehensile organs of the cow, and if they run together in the same pasture the hog will soil the grass for the cow. Pasture fields should not be occupied in the spring until the grass is about six inches high. They should never be eaten bare. Such a pasture withers under the blighting influence of the summer sun and they perish with the winter's cold. There is as much science in the management and tilth of a pasture as in the care of any other crop. Taking into account the droughty conditions of Iowa climate it seems that the economy of the farm would require that all the grass should be turned to account as pasture and that corn fodder should be substituted for hay. Shredded corn fodder can be baled and thus handled in the city markets with the same facility as hay. The economy of feeds appears again in fencing the fields with tight fences. A great deal of feed wastes because one part of a field lies idle while the crop of another part is maturing. Stubble pasture wastes because there is corn on one side of the field. Aftermath wastes for the same reason. The pigs die in a dry lot because there is no tight fence around any of the large fields. The lambs and calves pick away at poor pastures and grow thin, when, were the fences tight, they might be out in the corn field growing fat by picking off the lower corn blades, cleaning out the fence rows and keeping down weeds. More pasture can be obtained by dividing a field in two and pasturing the fields alternately.

The question has been raised as to the most economical method of wintering our stock with the present scarcity of feeds. The fact is, there is no scarcity of feeds in Iowa. The eastern farmer would be glad to take our stock and feeds to go through the winter. However, the Iowa farmer cannot stand the waste that he usually suffers, this winter. He must feed with the hand of economy and then he will be all right. There was enough corn fodder and straw raised in Iowa to winter all her stock, and with the addition of a little bran the stock can be kept in excellent condition. To make the most of it the corn fodder should be threshed, so as to make it all available and then fed in conjunction with the bran, although corn just now in many parts of the state is the cheapest feed. In places it is selling as low as thirty-five cents per bushel, which is only about $12.50 per ton. These figures come under the price of any other feed on the market. Twenty-five pounds of good hay or its equivalent in stover will constitute a daily feed for an ordinary sized animal, and this will amount to two tons for the winter's feed and at the present price of hay it will cost about $12 to winter an animal. Four hundred pounds of bran is about the amount to be fed with a ton of corn fodder.

We conclude by saying that the economical feeding of an animal requires a thorough knowledge of the nutrient factors of feeds and the nutritive processes in animal life. And only those men can succeed in running the wonderful animal machine, who have mastered the subject from the scientific standpoint and acquired practical knowledge in addition to those who have taken the subject up from the empyrical standpoint and followed the feed box and the manger until by long practice they have acquired a sort of intuition which makes them masters in the feeding and management of stock. Somewhat as the novice begins with an engine and lives with it until he becomes familiar with every sound and motion and mechanism, and, therefore, master of the machine. Aside from the many masters that sit before me in this distinguished convention, we may vote Collins, Blakewell, Cruikshank, Booth and Bates as representatives of the one class, and Voit and Pettinhofer, Henneberg and Stohman, Lowes and Gilbert Atwater, Armsby, Stewart and Henry as representatives of the other class. These men mark the annals of history with a degree of greatness parallel with the greatness of the hero, the literateur, or the humanitarian.

THE PRESIDENT: Gentlemen, if you please, if you desire to discuss this question that you have heard, you will please make it known by starting your theory and let us hear it.

MR. GABRIELSON: Mr. Chairman, in our meeting yesterday the corn fodder was somewhat discussed. Now, Prof. Kent, in his paper, speaks of threshing or shredding the corn fodder.

I confess that I have come to the point where I believe that for some time to come any way, the cheapest machine for shredding corn fodder is the steer's jaw. That the management of machinery, the cost of running the machine, wear and tear of it, more than equals the waste from the ordinary way of using corn fodder. I am not speaking of the way of wasting it in feeding it in such surplus quantities that the cattle simply pick off the bright leaves; but feeding so that they will be, in a measure, compelled to eat up almost the entire stalk. I remember well the first year—during the year 1887 I think it was—when our hay crop failed, and we were entirely dependent upon the corn stalk. We found that by feeding it first to the cows, they would eat I think, fully seventy-five per cent of it. We took what was left in the mangers and carried it out to the colts, and they cleaned up seventy-five per cent of that. And I think in that way we overcame the expense, and really utilized the corn fodder to better advantage than by going to the expense of cutting and shredding it. I will say this much in regard to the value of the silo; that much of the advantage of the silo comes in the compact way in which the material is stored. It is convenient and done more cheaply than you can handle the rough fodder, and there is no real advantage unless it is in the succulence of the food, and that is one thing which the chemist has never discussed in comparing the dry fodder with the silo. I believe the greatest advantage lies in furnishing someting akin to roots. But it is a question of advantage or economy of the silo or other prepared foods for animals that I wish to speak of.

MR. FRANKLIN: I wish to call the attention of the members to the fact that we have a paper on corn fodder.

MR. NEEDHAM: I would like to ask the question, which would be the best and cheapest food to feed for fattening steers in connection with corn at fifty cents per bushel, wheat at forty-five cents, bran at fifteen dollars per ton, or shorts at eighteen dollars a ton, and what proportion of each should be fed.

PROF. KENT: You are getting figures pretty close together. Corn is a little cheaper at fifty cents a bushel. It takes about thirty-six bushels of corn to make a ton. It takes about thirty-three bushels of wheat to make a ton—a little over thirty-three—I give you the figures so that you can figure it out yourself when you get home. You will find that when corn is fifty cents a bushel, and your wheat is worth forty-five cents, the grinding

of the wheat puts the two feeds in equality in commercial value. When bran is about fifteen dollars a ton, the bran and the corn makes the cheaper feed. So far as the nutritive value is concerned, I think the corn mixed with bran is just as valuable as corn and wheat. The nutritive ratio of bran, four and four-tenths per cent; corn ranges from eight to ten; a mixture of equal parts of wheat and corn or bran and oats will give you a nutritive ratio of about six and seven-tenths—pretty close to an ideal fattening ratio. Oats at the present price, bran as you have named it, I would guess, without saying that it is absolutely correct, that the most economical compound would be one hundred pounds oats, one hundred pounds bran, one hundred pounds corn mixed together. The bran is the cheapest to feed in connection with corn.

PROF. WILSON: He asks what you would feed with the corn. Bran, or the wheat or shorts, in connection with corn?

PROF. KENT: Why, the bran.

PROF. WILSON: I do not agree with Prof. Kent in regard to his ratio of feeding steers. He makes a serious mistake, and it should not go unchallenged before this convention. He gives it as the authors give it to us in the books, that is true; but we have been doing something ourselves here, and have managed to get as large a daily gain as is often experienced in the world anywhere. Day after day, steers that we fed nine months on the average gained 2½ pounds a head. We fed eleven months and got 2.44 pounds on another bunch of steers. The Ohio station made comparisons of the gains made at the different feeding points, and found none of them had fed near as long as we did, and none of them exceeded our gain. Now, the question is, "how did we feed?" and that is an important point. There was constant gain. Our nutritive ratio was 1:10-1.

MR. SHEEHAN: Will you tell us at what period you made the greatest gains?

PROF. WILSON: I will when I finish this question. The German experimenters, for short periods, have given us a standard food ratio, the best in the world today. But the Germans never feed our corn for a long time. The Wisconsin station took that question up from the standpoint of the dairy cow, that instead of 1 part protein to 5.4 parts digestible carbhydrates as practiced by the feeders of a large majority of the states in the Union, 1:6-9 would do. Now, that is a point I want to bring up before the convention. We fed two different

herds of steers for this length of period and got good results, results that cannot be questioned as far as a high gain is concerned. You do not get 2½ pounds steady gain in nine months very often, gentlemen. We fed it on a nutritive ratio of 1:10–1. This is what I want to call the gentleman's attention to. What will I feed with my corn? is the question. You feed fodders with the corn, we will say; you feed some clover; perhaps corn fodder this winter will be the very thing you will feed. Now then, feed some of the by-products of the mills to bring your corn fodder to the same nutritive ratio that corn is. We have fed only two lots of steers, but that is the conclusion we have come to. You can feed the products of the Iowa farms for beef at this ratio. You can grow clover to balance down your corn fodder and you make that gain on your cattle. If you have not the clover, feed bran; if you cannot get bran, get oil meal; if you cannot get oil meal, take gluten meal. All we have to do, as far as our experience has gone, is to feed it, and keep the fodder balanced down to the nutritive ratio of itself.

THE PRESIDENT: We are hardly in line with the program. This matter was given to Mr. Bennett.

PROF. KENT: I would like to reply to Professor Wilson, because he has challenged me with a mistake. Corn fodder is utterly sticking out all around us like sauer kraut around the Dutchman, but I want to get rid of this subject. I want to say in the first place that the Professor makes a mistake when he challenges my mistake. He said he fed those steers on a ratio of one to ten, or ten and one-tenth. Now I challenge the Professor that he cannot prove that proposition to begin with. In the first place, he knows he did not do it. In the second place he is mistaken when he says that the lowest nutritive ratio that is known in the matter of corn is one to ten.

PROF. WILSON: I did not say any such thing. The gentleman labors under a delusion regarding what I spoke about.

PROF. KENT: Well then I misunderstood you.

PROF. WILSON: Of course you did.

PROF. KENT: And then I want to say that when you state that you fed steers on a nutritive ratio of one to ten and one-tenth, you have not the facts to substantiate that proposition, for the reason that you did not conduct any analysis and do not know the nutritive ratio of the feeds fed. He himself went to the tables just as I did. And, if I am wrong, he is wrong, because he is gathering from the same fountain-head. So far as the German feeds are concerned, so far as the American feeds are concerned, they are all variable; and if a man wants to lay down a proposition before this or any other convention, he must make analyses and set out his principles by demonstration, or else his propositions will be worth nothing. They are only approximate. Now, when a man takes up the records and reasons from them, he is reasoning analogically, and his reasonings may be approximately correct. But there is not sufficient reason for him to be so specious in challenging me with being guilty of an error. That is a point I wish to make, and I am justified in making it.

PROF. WILSON: I said with regard to the nutritive ratio. I said I did not agree with him in regard to his nutritive ratio of one to six-sevenths for feeding a steer.

PROF. KENT: No; I announced in my paper a nutritive ratio of one to seven.

PROF. WILSON: You can feed on one to ten and one-tenth. We did so feed successfully, going to the same digestive authorities that you did. You speak by the book, I speak from actual experience in feeding.

PROF. KENT: Now, where is our disagreement. I do not think there is much disagreement. You are the fellow that is challenging the mistake.

PROF. WILSON: You say one to seven, and I say one to ten will fatten a steer, and that we have done it at that rate. My paper read last evening is pending. I am appealed to by the questioner.

MR. SHEEHAN: At what period did you make the greatest gain—the fore part, middle part, or latter part? About what time? You fed eleven months. The first three, the second time, or the last—what time in the eleven months?

PROF. WILSON: It is my recollection we made the greatest gain in the last three months. Bulletin twenty shows exactly what we did.

PROF. KENT: Is not the palatability of the green corn in October much larger than it is in the summer?

PROF. WILSON: I think so.

PROF. KENT: There is more digestible protein in the greener food than in the dryer?

PROF. WILSON: I believe so.

PROF. KENT: That would make an arrower nutritive ratio?

PROF. WILSON. I am advising—

PROF. KENT: Are you advising for a fattening ration?

PROF. WILSON: I am advising a fattening ration.

PROF. KENT: Well, you and I have a right to differ.

PROF. WILSON: That is what I thought.

MR. STOUT: I desire that we allow Prof. Pammell to place in your hands, after we get through, a Russian thistle. I came from Minnesota and northwestern Iowa, and came here last night. I did not know what the Russian thistle was until I saw it here.

PROF. CURTIS: Mr. President, allow me to say that we have had a bulletin on the Russian thistle.

THE PRESIDENT: Do you want to go into the discussion of this Russian thistle? If not, I will appoint Messrs. Crawford, C. W. Norton and A. V. Stout as a committee on treasurer's report.

Prof. Pammell exhibits Russian and Bull thistles.

THE PRESIDENT: Economy of feed is what we were on. Has Prof. Curtis spoken on this subject? Is Prof. Curtis in the room? If he is not, the question is open for general discussion.

MR. WILEY: I would like to ask this convention to help me out on the practical problem of the economy of feeds that I am hardly competent, and do not feel myself able to solve, so as to have the balance on the right side of profit and loss. I am carrying on practical feeding now. This is stock that does not eat corn fodder. We will say fifty odd head of spring pigs. I will give you the history of how they have been raised to the present time, so you will better understand how to proceed with their feed, which is a problem to me now. Fifty spring pigs from April to the 15th of May. Their dams were kept on an eight acre pasture of bluegrass with the clover. Their grain feed was corn and water—six miles west of here. When the pigs were from six weeks to two months old, they were weaned and turned on this same pasture—there was plenty of grass in the spring—I do not allow my pastures down in the fall—and the pigs' feed, since they were weaned, has been whole corn and water, supplemented with a very little bran put into a barrel and water turned on, and that has been their drink. At the present time they will weigh from two hundred and fifty down to one hundred and seventy-five pounds. There are several men in the convention who have seen them recently. Their weights will be about two hundred pounds. Now, when Prof. Kent spoke of the price of feeds here, he did not give the correct prices of our feeds at the present time. We cannot buy feed in our neighborhood, old corn, for less than fifty cents a bushel, nor new for less than forty cents. You cannot get this hull bran for less than $16 or $15.50 here at Ames; and the fine bran will cost you in car load lots $16. I have recently bought four tons of fine bran of shippers, and I paid $17.50. They paid $16 for it in car load lots I am sure, and then have to handle it and store it. I have recently bought four tons of fine bran at $17.50, and hauled it from Ames to my place. Now there is no more grass on this pasture, and I am feeding this bran as a slop; and their feed is bran, corn fed with this bran slop. Now, the question with me is, what shall I feed them? Wheat cannot be laid down there at less than fifty-five cents at the nearest station. Now, the question that I ask you men to solve is, what shall I do from now on with those pigs that will weigh two hundred pounds? There is not a runt in the lot; all thrifty, hardy fellows. This is a question that these farmers, ordinary farmers, are interested in, because that is our condition. I am one of these fellows that are in the hole on this corn business. I had from sixty to seventy-five acres sowed in clover and turned under last fall and this spring, but it dried out; and I have not corn enough to feed my stock. That is why there is no corn stalk in this business. Please solve this question.

MR. JOHNSON: Have you been feeding whole corn?

MR. WILEY: Yes, sir.

MR. JOHNSON: Wheat and corn have been experimented with so much; there is little difference in the bushel. I would advise you to buy corn at fifty cents a bushel, soak it, and finish those hogs up.

MR. GOVE: I think if you can raise pigs that will weigh two hundred pounds in that time, I do not think you need a guide board.

A MEMBER: How much did you feed those pigs?

MR. WILEY: I fed them all they wanted to eat. I cannot tell how much they eat. Unless we are going to carry on an experiment, farmers have the corn and give them all they want to eat,—push them and get them to market as quick as they can. The dams of these sows, as quick as they were weaned, I didn't miss a moment in crowding them to market, and get them off my hands so I would not have to feed them fifty cent corn. How long shall I keep them, gentlemen?

A MEMBER: About twenty-four hours.

MR. HENDERSON: The gentleman calls for advice in regard to how long he should keep those hogs. I live about twenty miles from Cedar Rapids. Nearly all of our hogs are marketed under six months old. Scarcely a farmer has hogs eight months old, at Cedar Rapids, and their weight is from 175 to 225 pounds. The premium hog at Cedar Rapids is often a 175-pound hog. Now, I think that any farmer here in this convention will state that this gentleman should have sold his hogs a few weeks ago. Considering the price of corn, you cannot make a cent by keeping them; and my advice would be, sell them for what you can get for them. Of course, the market may raise ten cents, but it is just as likely to go down. You have kept them too long now, and I would sell them.

MR. WILEY: That is what I wanted to know, gentlemen.

MR. SHEEHAN: I move that the question of the sale of those hogs be referred to Mr. Wiley, and that we go on with the program.

THE PRESIDENT: The next on the program is "Agricultural Education," by John Cownie, of South Amana.

MR. COWNIE: Mr. Chairman and Gentlemen—About a year ago I received a communication from the Secretary of this Improved Stock Breeders' Association, requesting me to prepare a paper to be read at the meeting at Corning. He suggested several topics. I replied that my choice would be Agricultural Education. This was satisfactory to the Secretary, and it was so published in the program of last year. Sickness of a relative prevented me from attending that meeting. The paper was never delivered, and the Secretary requested that I send it to him and allow it to be published in the proceedings. I declined to do that, for the reason I did not like to throw a shot and send a ball, and then run. I preferred that there would be an opportunity given to criticise it. I expressed in that paper my own opinion, my own convictions; and everyone is at liberty to criticise it to the fullest. I hope that by keeping it until the present time it may prove like wine, better for its age. (Applause.)

AGRICULTURAL EDUCATION.

BY JOHN COWNIE.

Mr. President and Gentlemen:

The subject to which I would call your attention for a short time, is one of the most important now before the public mind. With the rapid and steady advance in land values, methods in agriculture, that a few years ago were fairly profitable, are now found to be the reverse, and the farmer who performs his labor in a careless, haphazard manner, and whose stock show no improvement from year to year, is fast finding the practice of agriculture unprofitable business. But unfortunately, there are many farmers who have become wedded to methods learned from others no better qualified than themselves in the science of agriculture, and in consequence, improvement is slow, and too often imperceptible.

And this condition is not to be wondered at, when we take into consideration the circumstances surrounding the great body of western farmers for, without experience or training, they embarked in a business of which they knew little or nothing.

To the mechanic and laborer alike, the cheap fertile lands of the west offered an opportunity to secure a home at a nominal cost, and what mattered it that they knew nothing of agriculture, either in theory or practice; a forcing climate and an unequal soil insured liberal returns for the most indifferent cultivation.

To men whose early lives had been spent in other callings, with little or no hope of bettering their condition, the ownership of a farm and a home which they could call their own, proved an incentive to embark in a new avocation, and with the energy of men determined to succeed; the great majority proved successful.

But conditions were favorable for success; the virgin soil that had been accumulating plant food for centuries needed but a light furrow, and if its course was uncertain, and its depth and width ever varying, it answered the purpose for which it was intended. No matter if the seed was unevenly distributed, and the field, with its spots and streaks, resembled the star-spangled banner; still at harvest time the difference in the crop was scarcely perceptible.

The fertile soil had made amends for the uneven seeding, and the thin sown grain tillered so much, that no importance was attached to the quality of the work in the uneven distribution of the seed. Pasture was abundant, and hay could be had for the labor in securing it; so that food for domestic animals was not a factor in the economy of the farm.

Under such circumstances that the farmer prospered, his acreage increased and his stock multiplied, is not to be wondered at, and he became

convinced, that his knowledge of agriculture, theoretical and practical, was all sufficient. And why not? It had brought to him success, and what more did he desire? True, he had labored hard, utterly regardless of hours; his wife and children had suffered privation with him, toiling on and ever, even depriving themselves of the necessaries of life; but they were successful, and a farm free from debt and a comfortable home rewarded them at last.

But this success cannot truly be attributed to a scientific or practical knowledge of the principles underlying successful agriculture; for of these the western farmers as a class had no conception, and their work attested the truth of the statement. Cheap land, full to overflowing with fertility, hard labor and strict economy by every member of the family, were the prime factors in achieving this result. But a new generation is appearing upon the scene, times have changed, land cannot now be purchased for a few dollars an acre, but values have increased fifty and one hundred fold. Not only this, but land, while advancing in price, has been deteriorating in quality, until its intrinsic value is far less than when sold by the government, at the uniform price of one dollar and twenty-five cents per acre.

With such conditions confronting the young men of to-day, is it any wonder that the practice of agriculture is not an inviting field, and that the city has a fascination for the ambitious country boy, entirely wanting on the farm. And the boy is not to be blamed for desiring to bid a long adieu to the farm and its surroundings, and to seek a field where talent and painstaking work will be recognized and appreciated.

Of agriculture he has had enough in his youth, and his recollections are far from pleasant. His only knowledge of the subject has been derived from his father and the surrounding neighbors, and neither of them ever had an opportunity to study agriculture as a science. In all the work upon the farm, quantity not quality, was the chief consideration, and from the digging of a post hole, the plowing of a field or the building of a straw stack, skill was not considered necessary.

What inducement then, can the farm offer to the ambitious young man who realizes that although raised upon a farm, and its labor the only kind he knows, were he to seek employment, his wages would be no more than the amount paid to the newly arrived emigrant, ignorant alike of farm labor and the language of the people.

On the other hand, should the young man with limited capital determine to lease or purchase a farm, his knowledge is not such, or his ability so great, as to give assurance that he will be successful, for rent is high, and with an exhausted farm the payment of the purchase money is often impossible with the methods of labor now prevailing. To insure success, and in fact to put it beyond all doubt, the penniless young man who would succeed in purchasing and paying for a farm from its products, must of necessity pursue different methods from those now common on the farms of Iowa.

He must be able to do each and every part of the necessary work, in the best possible manner, to the end that no loss or waste may occur as is too often the case at present. He must have a thorough knowledge of the principles underlying the successful breeding and feeding of domestic animals that he may carry on this indispensable work with pleasure and profit. In

a word, he must be educated, not in theory only, but also in the practical work of the farm, and this alone is true agricultural education.

An educated man has been defined as, "One who knows something of everything, and everything of something." And surely he who in addition to the wide fund of general information, has a thorough knowledge of the science of agriculture, in all its bearings, with an ability to perform the practical work in the best manner possible, can truly be called an educated man.

To the young man who desires to enter either of the professions, schools and colleges open wide their doors to receive him, and whether it be theology, law or medicine, there is no lack of facilities to acquire a practical knowledge of the desired vocation. Agricultural Colleges also, have not been wanting, for as far back as 1806 Fillenberg founded an agricultural school in Switzerland. The pupils of this school were largely of the poorest class of peasants of whom their benefactor said "that having no other property than their physical and mental faculties, they should be taught how to use this capital to the best advantage" by a combination of "discipline, study and manual labor." This school was for a time highly successful, and since its establishment, numerous schools have sprung up in Europe where agriculture is practically as well as theoretically taught. In 1847 an agricultural school was opened in the United States, and in 1862 Congress passed a bill which became a law, appropriating about ten millions of acres of government land to all the states, to be divided according to the number of representatives in Congress. The money derived from the sale of such land, to constitute a fund, the interest of which should be devoted to the support and maintenance of at least one college in each state where the leading object should be to teach such branches of learning as relate to agriculture and the mechanic arts.

But notwithstanding this magnificent endowment and the establishment of agricultural colleges in nearly every state, all receiving further appropriations from the national government and the respective states, the fact is undisputed that few of the graduates of these colleges are found afterwards in the practical application of agriculture.

With the graduate of divinity, law, medical, business and other colleges, the case is entirely different, and the young man having secured his diploma from either of these schools, has no other thought or consideration than to embark and continue through life in his chosen calling.

For this condition of affairs there must be a cause, and my object at this time is to call attention to some of the reasons, and also to suggest the remedy.

In the first place there is no doubt that to many, farm labor is irksome, onerous and monotonous, and the isolation necessary in the operations required to properly conduct a farm does not prove an inviting field to a young man, fond of associating with his fellows, and spending his evenings with congenial friends. And there is no denying the fact that much of the work on the farm is largely physical, requiring hard manual labor, combined with exposure to the rays of a summer sun and the extreme cold of a northern winter. And when to this is added the disagreeable work of caring for and feeding stock during the spring time, is it any wonder that the farmer boy longs for the city with its excitements, roofs, floors and sidewalks, for of necessity the farm must remain without either of the latter.

Capital, also, is required to operate a farm, and a salaried position in a city proves alluring to inexperienced youth, looking only to the present, with no thought of the future. But with all these drawbacks, the fact remains that an Iowa farm properly conducted, offers to the well qualified young man, opportunities to display his ability and genius, and at the same time secure a home, a competence, and an independence, utterly lacking in any other avocation.

But there are other causes besides those enumerated for the student of the agricultural college having no desire to return to the farm after graduation. No one knows better than the young man himself his own capabilities, and he realizes, only too well, that his education has not been sufficiently practical to enable him to excel his father or neighbors in the practical work necessary on a farm. He has been taught the principles of heredity, prepotency and atavism, and is familiar with the German tables of food values, and can talk learnedly of protein and carbohydrates, but this knowledge unless supplemented by a thorough acquaintance with the practical part of farm economy will avail him little. And here lies the weak point in an agricultural college education, for it largely consists in instruction from books, lectures and school room work, omitting in a large measure field labor, which is an essential requisite.

When a young man desires to learn a trade, be it carpenter, mason, shoemaker or blacksmith, he expects to be at once presented with the respective tools, and taught their use. His duties are simple at first, and easily accomplished; gradually more difficult work is assigned to the apprentice, but he is taught how to perform it and use his tools in a proper manner.

Law students have their moot courts in addition to their text books, and every facility is extended while they are at school to acquaint them with the practical workings of the bar. The medical student has the benefit of the clinics, and as I have seen the eager interest of the pupils, when a surgical operation has been performed, the thought has occurred: why could not a like interest be created in teaching the practical part of agriculture.

Of late years dairy schools have been established in connection with our agricultural colleges, and the student in addition to theoretical work is required to perform each and every part of the practical labor under the eye and with the instruction of the professor in charge. All must admit that the practical application of the hands must be combined with the necessary instruction, to properly qualify the student to successfully conduct either a creamery or a dairy.

It being admitted that practical work is absolutely necessary to the student of divinity, law, surgery, business or dairying, why is it not equally necessary to the student of the greatest of all sciences, agriculture?

Oh, but says some one, there is no parallel between farming and the professions you have cited. The young man when he enters college for the study of divinity, law or medicine, knows absolutely nothing of these subjects, while the boys who enter the agricultural colleges were born and raised upon a farm. And, says the father, I did not send my son to an agricultural college to be taught how to build fences, hold a plow, adjust a mower or reaper, stack grain, hay or straw, or to do any farm labor. I can teach him that myself; and the young man cordially agrees with his father on this point at least.

A neighbor of mine—a native of Europe—by nature what is termed "handy," had for many years repaired the boots and shoes of the neighboring farmers and their families. Long years of practice, and general satisfaction with his work, and especially his prices, had given him confidence in himself, and when a city shoemaker advertised for a man to do repairing, offering steady employment, our country cobbler promptly responded. Terms were soon agreed upon, and the country graduate took his seat and was soon handling waxed thread, knives, awls and hammers to his own entire satisfaction. A pair of fine boots had been given him to patch and half-sole, and when their owner called, and they were handed to him, a volley of oaths greeted the ears of the astonished shoemaker. Carrying the boots to the head of the house, the customer demanded a new pair for those which he said had been ruined, and the proprietor was well satisfied to sell him a pair at half price, and humbly apologize for the incompetency of his new workman. It is almost needless to add that the cobbler was promptly relieved of his position, and after an absence of less than a day, he was to be found at the old stand, where his patrons were less exacting.

And the great majority of the farmers of Iowa are in the very same condition as that cobbler. What they know of farming has simply been derived from their own practice, and the methods of their neighbors—equally as ignorant of the science of agriculture as themselves.

On this point I will not dwell, but place upon the witness stand the farms of Iowa, and their mute evidence will substantiate the assertion in language louder than words.

But practical work upon college farms has been tried time and again, in the hope that students would become interested, and all to no avail. These young men were there to study, listen and recite, but not to perform manual labor. And were they to blame, knowing as they did that they could perform it equally as well as it was being done by their preceptor? When the Yale divinity school was established, the leading ministers of the gospel in the United States were engaged to deliver a series of lectures before the class; and the men who have won distinction at the bar and proved themselves to be the peers of any in the profession, are eagerly sought for by the leading law schools, as instructors. In like manner, surgeons and physicians who have demonstrated by their success that they have large knowledge of their art, are chosen as instructors in medical colleges, and quickly succeed in making the practical work of the clinics far more interesting to the students than the theoretical study of the class room.

Admitting that the student of agricultural science does not become enthusiastic in the practical part, may not one reason for this be found in the fact that many of those who are charged with the duty of instructing farmer students are not themselves proficient in the work, lack the necessary enthusiasm to make them successful teachers, and have no liking for the manual labor of the farm, although equally as necessary as the handling of the knife and saw by the operating surgeon.

When agricultural colleges were established, there was no lack of men willing to assume the duties of a professor, and there is no doubt but they considered themselves amply qualified for the work. The early days of many of these men had been spent on a farm and with a collegiate educa-

tion, what more could be desired? Had a school been established where the science of practical ocean navigation was to be taught, it would not have occurred to these men to offer their services, and yet, in many cases, they would have been as well qualified for the one position as the other.

In my opinion a great mistake has been made in the methods employed to teach the science of agriculture, and in consequence the results have fallen far short of the hopes of those who looked to the agricultural colleges to send back to the farms graduates who would elevate and ennoble their calling, and in their community stand like a beacon light pointing the better way for the neighboring farmers.

Agriculture is at once an art, a science and a business, its pursuits affording scope for the acutest minds, and requiring energy, industry and diligence to insure success. It can not be taught from books alone, nor as largely as can some of the professions, for the reason that it partakes largely of the work of the mechanic or artisan.

But let no one conclude from this that I am opposed to higher education for farmers; far, far from it. But the common school instruction must be the foundation, and all after education liberal in the fullest sense of the word. Then with a thorough knowledge of the sciences applicable to agriculture, and an ability to perform all the practical work of a farm in the best possible manner, the young graduate endowed with energy and grit, although penniless, would soon be the owner of an unincumbered farm. His stock would improve in quality from year to year, and before him continually would be the highest standard, and his sole aim would be to reach it. When once on the right road, practice would soon make him an expert in the use of farm tools and machines, and the work that was formerly drudgery would become a pleasure. His eye would feast day after day upon his own handiwork, and the necessary labor would be no longer irksome, monotonous or isolated, for he is an observing student, and has the companionship of nature and his own thoughts. The city, too, has lost its attraction for him, and he looks upon the business or professional man, whom he formerly envied, with complacent pity. His home is, as it should be, the happiest of all, and with a true affectionate helpmate, and dutiful children, life to him will be a continual pleasure, and the world will be the better for his having lived in it.

In conclusion, allow me to say that for the farmers of Iowa, I have the kindest feelings, and what I have said has been uttered with no want of respect for the most humble farmer in the state. I have spoken plainly but also sincerely, with no other thought but to better the condition of my fellow farmers, and to enter my emphatic protest against the present method, or rather lack of method, in agricultural education. In a sincere desire to elevate the condition of agriculture and also the welfare of the farmer, I yield to no one, and having myself, at least, had fair prosperity in the work, I would fain have every farmer in this, the greatest of all agricultural states, make a like or even greater success. And if in the future some or all of you young men, now before me, shall return to the farm and win for yourselves a name as a promoter of all that is good and great in agriculture, and who will place the educational banner further forward and higher up than it has yet reached, no one will encourage you better, nor stand by you more steadfast than he who now addresses you.

Gentlemen, I thank you for your kind attention.

THE PRESIDENT: Mr. Sheehan is to follow in the discussion of this paper, if he wants to.

MR. SHEEHAN: Mr. Chairman and gentlemen of the convention—I will tell you to start on that I am lost. It ought to have been a good paper. It was written by one of the best farmers of the state; and if you notice, he has taken two years to write it. (Laughter.)

MR. COWNIE: And forty years to think about it. (Laughter.)

MR. SHEEHAN: But an agricultural education, or a college education, is something that is beyond the masses of the people of Iowa, the young men and young women of Iowa. Yet, I would not have you believe for one moment that it deteriorates one iota from the young man or young woman to go to the Iowa Agricultural College to get an education. I would say to these young men, as to my own boy—and he goes to this college—I will say this: I would not want him to go out in the field and plow. Why? Because I think I know how to plow just as well as any man. Neither would I want to pay out money to have him do any part of the farming. You find that these young men that come from farmers' homes to take an agricultural education, that they come home and get that knowledge cheaper than they could at college; and every man knows that there is a great majority of those that take an agricultural education return home to the farm. We have them in our county. They are better farmers, even though they did not hold the plow or milk the cows and feed the pigs. When they come home they are far better farmers than when they go away. (Applause.)

I will drop that subject. There is a time in every man's life that he feels proud. Gentlemen, I can tell you that these meetings that I have attended—and I have followed this association for twenty-one years—it is the pride of my life. It is the proudest time I ever saw. I will go home rejoicing that I came to Ames, because ten or twelve years ago, up in the northern part of the state, nearly all of your scientific men could talk of nothing else but blue grass and corn. We told them that the time was coming when they would have to depend upon something else, and this year has taught them the lesson. They told you here in this meeting that they have got to depend on the clover; the blue grass has gone back on them. They are coming to it. These are the things you can learn by following these meetings up. You can see the changes that have taken place and are taking place in these men; and, as I told you yesterday, I think

the year 1894 has been the best lesson the farmers of Iowa have ever had, with the exception of probably 1877 when they lost their wheat crop. I was pleased with the remarks of Prof. Kent and Prof. Wilson about their feeding, when they were talking about the feeding—I think 2½ pounds, Professor, was your gain on those steers?

PROF. WILSON: Yes, sir.

MR. SHEEHAN: I thought then at that time—I asked the question at what period of the feeding was the greatest gain on those steers; and the professor told me that it was in the latter period. Now about a year ago—yes, a little later than this, about the first day of November, I took a car load of yearling steers, they were past a year, coming two, and I took a notion to feed them. I put those steers in the feed lot. I weighed them when I put them in the feed lot, and they weighed 820 pounds on the average. Now I don't know whether you call that good weight. I am not saying anything about the weight, whether it was good or poor, but that is what they weighed. Well, I don't know what a balanced ration is. I read the German table, but I never was able to follow those. I fed those steers until the forepart of April—I think it was about the fifth—I sold them and weighed them, and they weighed on the average 1,260 pounds. Those steers, I will just tell you what their feed was. I don't know whether it was a balanced ration or not. We have made a practice on my farm for twenty years—just as we have followed up the clover—of cutting corn early in the season, when it is setting ears, shocking it up, tying it up in bundles and putting it in stacks so it will keep good, and that is what we fed them once a day; and I tell you, you can feed that without waste. We fed it successfully on the farm without waste. We feed it—in the first place, in the morning we fed those steers some of that corn. They ate it, or as much of it as they wanted; and next came the cows and they ate what they wanted, and after that we turned the hogs in. After that we had no waste; it was all eaten up. At night we fed in mangers; we had two racks; in one clover and timothy, and in the other the fodder. We took wheat and oats and corn combined, ground it up as coarse as we could and fed it to those steers, and that is the way we got those gains, and in the first period of the feeding, too. I believe that the money that has been lost in the state of Iowa has been from the lack of agricultural education in feeding our cattle and hogs too long. We should

make it a practice in getting them from the feed lot to the block as quick as possible. We do not do it quick enough as my friend Henderson stated here a few minutes ago. I will say this: there is no man, I believe, in Iowa that admires an educated man more than I do. We all ought to. Yet the average farmer of Iowa is not an educated man. The time is coming when he will be. We will have better farmers then. Every man owning a farm, to be a thorough farmer, ought to know what every bit of his land is adapted to. If he is a practical man, after living on that farm for a term of years, if he can analyze the soil, there is some way he can learn what every bit of that farm is adapted to. Those are the men to-day that have made a success of Iowa. I will say one thing and make another statement here. I noticed in the paper the other night that we are not a prosperous people. There is no other people on the globe educated as well, in my opinion, as in the state of Iowa to-day, where there are so many engaged in the calling of farming. I can show you more men in the part of the state I live that crossed the Mississippi with good muscle, a fair amount of intelligence, and any amount of grit as went up there, and they are the most prosperous men we have in our country to-day. So do not be discouraged about your farming. I would say to those young men here, if it is congenial to you to go on the farm, do it. But for God's sake, if you do not like farming, if you are not adapted to it, if you think there is another calling you can go at, do not return to the farm. (Applause.)

THE PRESIDENT: Mr. Stout comes next on the list.

MR. A. V. STOUT: Mr. President, I wish it to be understood that I do not want to take up the time of this convention, and I would give way to this gentleman gladly. I will try to say what I have to say just as briefly as I can, and to the point. The question of agricultural education is one that we must consider as one of the broadest topics that interest us stock breeders of the state of Iowa; and feeling as I do upon this question—having lived upon the farm all my life—the education I have had has been limited. The opportunities of that class in my boyhood days was not what it is to-day, for the boys that have grown up. I have felt that the average farmer coming up as I have, has come up under conditions that have not made him the equal of his business fellows. Notwithstanding this, gentlemen, I recognize the fact that the farm has been the school to me, and to many of my class, the best school that there is

under the high heaven; and so feeling, feeling that the opportunity is there for that education, to obtain that knowledge that would tend to broaden the character and enlarge the ideas of man, and give him the proper understanding of his relation to his fellows, and his purpose and existence in the world. So feeling the pride that I have in the calling of farming, and the ideas that should come from this discussion of this subject, I think the agricultural education should be the broadest education, and that it needs to be that broad education. No man in any other occupation or calling has the opportunity of following up that education as the farmer in his avocation. And so feeling, I say that the opportunity is growing, and the changes are coming on, and to-day the opportunities for the young man that is growing up on the farm, with the common school facilities, and going back to the farm, creates enthusiasm and interest in our calling. The ambition, the desire to be to the front, is the idea and the axiom that should guide and be the motto of every true farmer. And one word more. I want to say that the farmer needs the education of the theologian. The blessings that come from the Almighty come nearer to him than to any other man. His condition and surroundings make him endeavor to understand God's purpose and plan; and if he is that broad minded man he must become enthusiastic in this direction, and he has the broad open book. There is no branch of industry, no science in which a man can stand, but in what a farmer has deep interest, and has to come within the range which shall make him a man in a larger measure, which shall make him understand some of the other professions. He must become a man that understands something of the laws of government, the laws made in relation to his fellow men. We have to deal with questions of title, questions of traffic, questions of mechanics and arts; we have to deal with these things, and so I say it is necessary. We have to deal with the question of chemistry, and there is no question that is asked about as much, that there is so much interest in, or that the farmer should have so much knowledge of to-day as that particular branch; and in relation to the condition existing as to the veterinary science, the producer of Iowa to-day who is producing the stock upon the farm, produces his milk, his meats, etc. He is confronted by the condition existing all over the country—the inspections taking place that condemn his meat products, that inspection which says his milk products are impure. He places these products upon the market, but does not know whether these things are true or not. This thing of saying he is sending unclean meats to market, sending unclean dairy products from the dairy, leads him of necessity to understand his position in this direction. We have a necessity of understanding the natural laws which govern the growth of plants; and I want to say that the opportunity for the young man to obtain that agricultural knowledge and education to-day is so much better than in the days when we were young, it makes me wish I might be a boy again so I would have the opportunity of the boy of to-day. I am made enthusiastic by virtue of the interest I see manifested in the advance of educational work in this direction. I want to say to you that the education I have obtained in this association has been one of the great things that has helped me in my life. I feel that every one of the gatherings we have had as farmers, has been an educational one to me. And I want to say that I recognize every other interest equal to ours, and I want this advance in common along the whole line. I want men and women that will go out from this institution, from my home and yours, to go out and take the rank of men and women along side of other fellows; and when that day comes, you will find that the farmers are one of the greatest classes of men that God ever made. He has opportunities that other men have not; and when my son comes back to the farm enthusiastic, full of the knowledge and ability and feels that others are interested in the work he is doing, I say to myself that this will be a grand age in which to live. God speed the day when the place the farmer occupies, he shall occupy truly. (Applause.)

THE PRESIDENT: The next man on this discussion is Mr. C. L. Gabrielson.

MR. GABRIELSON: I have been interested in the question before me because I began farm life coming from the city. It was with me a struggle for existence in more than one sense. But I am happy to say that I am here with health gained from farm life. I think one of the greatest difficulties with which the farmer has to contend, which disgusts him with farm life, is the long hours which he is compelled to endure. When I first came on the farm it was impossible for me to do this long-hour work. I was compelled to husband my strength; and I found that by so doing and using a lot of my brain power that I could economize my work at the same time. I think it is fully possible

for the work of the farm to be done in a number of hours less than it is now being done on the average farm. The lagging foot is what extends the farmer's work. I would like to see the brain, which both Mr. Cownie and Friend Stout spoke about, carry out the higher parts of farm life which may be understood from a study of the plants on the farm. I think this should be carried into the schools. I think every boy and girl should be taught this from the beginning. It should be a part of the school work to educate them to see the beauties of nature—the tuition of our teachers. I think they should be educated so they could educate our children and teach them the first principles of farming as part of their study. In regard to the Agricultural College, I will say nothing. I do believe, however, that whoever comes to take part—to take the farm course—should be instructed, and should take actual part in all the work that is carried on. We expect that there are improved methods, and improved ways, and improved means for doing farm work; but without taking actual part in these it is impossible for them to have full knowledge of it. (Applause.)

PROF KENT: I want to say that Mr. Cownie's paper opens up the question of what should be college work in collegiate education. Now, shall a student be required to go out and learn to build a straw stack? You know how much time it takes to build a straw stack. Can the student afford it? Can he afford to come here and pay his expenses, and spend his time to learn how to build a straw stack,—a lesson his father should have taught him a long time ago? That is one of the questions. You may run through the whole details of farm work, and you will come out at the same point. As a matter of economy in education, can young men come here and spend three or four years' time and energy studying the things their fathers should have taught them at home, and then go away from this institution without that broader and higher education which gives him his peerage among his fellow men. Can he afford to come here and fool away his time building straw stacks, digging ditches and post holes, setting fence posts,—things he knows by intuition because he has grown up upon the farm. I raise the question simply from the standpoint of economy, simply from the standpoint of efficiency in an education. The higher and broader education that is spoken of here does not consist in the broader education that is spoken of here does not consist in the practice of the handicraft of the farmer, but in a comprehension

of the principles that underlie all farm practice. Now, going back in the history of agricultural education, what have we? We find Baron Liebig standing up behind the subject of agricultural education, the father of agricultural chemistry. We find that he gave the world a new inspiration, and we find that he gave that inspiration by teaching the world the process of plant nutrition; by teaching that potash, nitrogen and phosphoric acid have nearly all the elements needed for fertilizing. We find that Voit and Pettinkofer have discovered the laws of nutrition; that Henneberg and Stohmen have deduced the force value of nutrients; that Dr. Babcock has discovered the chemical process by which fat may be separated from milk, and then measured. We want our young men to learn these principles in college, and then even after they know these great laws the work is easy. It is easy to travel along when the way is lighted by the lamp of reason. He fails who gropes without the compendium of principles. The man without principles is always in the dark. I believe that this is the work of the college. You might as well talk about the medical college, the theological institutions, the institutions of law, or of any other branch, leaving out the principles of their education as to talk about an agricultural college leaving out the principles of education. I speak of this so strongly because the gentleman scoffed at the idea of plant nutrition and the German tables. He made a mistake in this departure, and it is the only thing I feel like criticizing in the paper. I could have echoed back every sentiment had he left that out. When laws and principles are understood a man is prepared to go into the laboratory, he is prepared to go into the classroom, he is prepared to go into the field or into the studio, and take up the books that explain the laws, or the implements that apply them. A thorough knowledge of one principle may give rise to a thousand applications.

MR. PHELPS: I say if any farmer here sends his boy off to an agricultural college who does not know how to build a straw stack or dig a post hole he ought not to have the honor of being father of those boys. I have three boys and three girls, and I want to tell my friend when they come to this college, come here from home when 14 years old, if any of you come to my house, my girl 14 years old will go to the kitchen and cook a meal of victuals good enough for anybody. My boy, when 14 years old, will take a team and cut grain; if he does not do it as

well as his father does at first, he will learn. If we do not educate our children in such things we are not doing our duty. I cannot afford to pay $150 a year for things I can teach him at home. I cannot afford it. It is the duty of parents to teach them such things at home. If they have learned these things at home then they can come here and get the experience of those that have gone through this higher education and put their knowledge to practical use.

THE PRESIDENT: I would like to say as an observer that there are a great many fathers who cannot build a straw stack.

DR. BEARDSHEAR: This is the first time in four years that I have ventured to speak in your convention. There are many excellent things in the paper; but the paper assumes the position that when a man takes clinics in a medical course, he goes out and knows all about doctoring. But the great Frenchman who had been commended upon his success in treatment of the eye, after several years of practice said, "Why, do you not know that I destroyed one hundred eyes to get this?" There is a theory in a medical college that does not wholly disappear in the dissecting room. It is not until a man goes out into the world, gets his saddle and bag, advertises for business, goes up and down the highways and goes to work that he obtains the breadth of a successful physician. He gets something there that the medical college never can give him. And so it is in theology. You can get the theories from schools and books; but to be successful, a man must practice it well.

Let a graduate of any of these schools in medicine or theology go out into active life, like recruits in the army home for a ten days' furlough in a brand new overcoat, thinking they know all about soldiering, they will come back with their feathers dropped mighty quick.

Take a man teaching school; take him out of one of the best normal colleges in the United States, and I will warrant that when he goes out and practices, it teaches him more of the elements of practical teaching than all the four years of study he got over and over in that line. So in an educated farmer; he can not get entirely free of theory until he puts his trousers in his boots and forks manure off his own dung heap. Then I will venture to say that Mr. Cownie has observed with me that some of the greatest theory riders in the world have been farmers who never attended an agricultural college a day in their lives.

Another thing as to the boys on the farm. I am now speaking from experience. I grew up on the farm within four miles of a large city until I was nineteen years of age. One mistake that we make as farmers is that we talk too much about the hard times we have on the farm, and how we are down-trodden and down-ridden, and what a hard time we have. Young men, when they hear that—I am speaking from experience—think, if we go off to the city to be clerks or something else we will have an easier time than we have on the farm. And the truth is that no one works harder than these very clerks, standing back of the counter from morning to night, and who have less left for their work after they pay their board and clothes. I tell you many of them work at times till midnight, and some of them work with the drudgery of slaves, in order to get up in the various professions in which they have engaged. And after all it depends largely upon the common sense and hard wit that the man has in him whether he is going to make a lawyer or a merchant. And that is just the way it is with the farm. A young man must have that uncommonest sense of common sense and wit before you can make much of a farmer out of him in college or out of college. You have got to have common sense and adaptability on the part of the one you are educating to the thing you are educating him for. Please put that in your mental farm pipe and smoke it a little some time when the chores are done in the evening.

Another thing. I do not believe we have enough amusements on the farm.

I believe I was on a good farm. It was an old-fashioned family, and we had a whole circle of relatives near by. But many a rainy day I walked to town wet to the skin, a distance of four miles, to see something going on. I think we ought to look to more amusement, any good, wholesome amusement; let the youngsters play everything that is not mean. Let us gather them in occasionally from the neighborhood; have entertainments at times to help as a spice during the rest of the work. If you do not get something going on for these young men they are going to get something with motion in it for themselves. And I would rather have it under our eyes than back of the saloon screens. We must have a little bit of home-made fun for our boys and girls in order to keep them contented on the farm or anywhere else.

THE PRESIDENT: Mr. Baker next.

MR. BAKER: Gentlemen, we have heard a great many excellent things. What our boys and girls all need is more lightning and less thunder. You will want to know how I define the term lightning. When I was a boy and had leisure at school in a murky atmosphere, and the light was dim, and darkness reigned so I could badly read, I memorized a page written by Ben Franklin, one of the cutest Yankees that ever stepped onto these shores: "The way to wealth is as easy as is the way to market. All you have to do is to take the road, keep going, and keep the road until you get there; and you are just as sure to get wealth as you are to get to market when you start out and do this thing in your journey." You will want to know how you shall get working ideas. By reading the English classics and compelling yourself to stick to a single article, having the ideas you wish to gather, until you can quote it fluently. When you can do that, you can take a pencil from your pocket, get a rule from your bench—if you have one—and draw out and work just exactly as the theory indicates. The feeble minded man cannot endure; but there is not a man here who cannot read the English classics if you have the disposition to acquire them, by settling down and compelling yourself to read them. Mind you, these are written for the education they impart to the careful reader. There is not a bit of stuff in the classical education, not a bit. Whenever you have learned a thing so you can quote it and see clear through it, that is the lightning; because it enlightens every man that cometh into the world. I thank you, gentlemen, for your attention. (Applause.)

Motion to adjourn until 1 o'clock seconded and carried.

AFTERNOON SESSION.

Meeting was called to order by the President at 1 o'clock.

Motion of Mr. Johnston to limit time of speakers leading discussion, first speaker five minutes, and those following three minutes, prevailed.

MR. BENNETT: Mr. Chairman and gentlemen—We have a little different opinion in regard to corn fodder in our section of the country, northwestern Iowa, from that which is entertained here and in some other portions. On some of the general

points we will, of course, all agree. We look at it from different views and standpoints, and therefore we have not yet come to the same conclusion. I might give the conclusions we have reached, and the reasons why. We intend to save our corn fodder hereafter no matter how good the hay crop is. I met a gentleman here yesterday who told me that tenant farmers in his part of the state would have a pretty hard time of it. They may need help next spring, if not now. That condition does not prevail with us. Our farms are small, averaging about 123 acres. I know of but one large farm there. It is prosperous there this year, as it is every year. Tenant farmers are not in need of assistance. I know a young tenant farmer, married three years ago, who told me that in three years more he would buy a farm of his own. Those who work their own farms put some money in the bank every month. We save our fodder and turn that into this money. There are raised in the United States 70,000,000 acres of corn. If we increase that value one dollar an acre, we get $70,000,000. We get it ourselves. The circulation is increased and put right among the farmers. Iowa has about one-tenth of this amount, or about 6,600,000 acres. If you would increase the value of that one dollar, we have that $6,600,000. If we increase the value five dollars an acre we would have $33,000,000, an amount equal to the output of all the silver mines in the United States. Now, this resolution in the platform about the coinage of silver ought not to worry us much if we throw away that amount every year, and exceeding that if we can save five dollars an acre by saving the corn fodder. That increase, equal to the products of all the silver mines of the United States, would go to Iowa alone instead of to the whole United States—to Iowa alone, paid to the farmers of Iowa alone and put into their own pockets. Now, it is some work to save that fodder; it is some work to dig the silver; it is some work to save money in any way. Let me give another illustration. The dairy product of Iowa, according to the report of the commissioner, estimating all we eat as well as all we sell, is $33,000,000 a year, just equal to what we throw away in our corn fodder. It is some work to produce that butter, to feed the cows, to milk, to save the cream, to make the butter, or get it made, and all that trouble, if we throw it away. Having made the butter we do not throw it away. You can get a little of them, you can get a little out of our corn fields by leaving it to bleach and waste in the corn fields. It is the same per cent

in each case. It is about ten per cent of the value of the corn field to save it—it is about twenty per cent of the value to save it. The way to save it is an open question. It can be done by hand. We think it is a job. It is a job to make hay. I would rather do the labor of providing feed for my cattle for the winter by going into the corn field and cutting it with the corn cutter than by going into the hay field with the improved appliances. I do not mean I would rather do it myself in the corn field than by the sweat of the hired man in the hay field. I would rather do it with the corn knife. This may not apply to all of you, but it does in our part of the country. Our farmers are prosperous. Our farms are small, and farmers are all prosperous, not one towering way above another and the rest coming up and striving after it. Whatever they can cut by hand that they will cut. They have the Legg cutter. A man can cut three acres a day with the Legg cutter. I know a young man who, at 75 cents an acre, averaged $2.25 a day. They have cut corn with the ordinary twine binder, and that has given them good results, as the stalks when bound in bundles are more easily handled. If there are ears on them they can husk them out by hand. If they are husking by husking machines as some do it, they are handy to dry and feed through. If they are feeding entire, which is the most profitable, they are handy to feed. But if they are left in shocks, we do different from what is done in other parts of the state. We make small shocks. Small shocks cure quickly, dry quickly, and are stored away quickly. My little boys, twelve and sixteen years old, are saving the last of it while I am down here. That is early in the season, of course. It is not spoiling; you need not worry about that. It is all right because the shocks are small and are cured through. But the foremost thing of all to us is the corn harvester which binds it as the binder binds oats. That is what we want to get to. We do not want silo. We do not want it, because we want the ear corn to feed to the hogs; and the corn harvester commends itself to us in that locality very strongly. We have tried the ordinary corn harvester, but I hear that in some parts of the state the grasshoppers eat the bands. The corn can stand a little later if you have a machine to cut it, because you can do it faster. You do not have to cut it green. If you cut it green it gets brittle when dry. If it is cut green you will find that you will have to haul in the forenoon and plow in the afternoon—do some other work

in the afternoon—because it will be so brittle and dry it will trouble you. This works admirably with the small farmer. The small farmer—you need not weep for him or shed any tears on his account. You need not bother yourself about that. It works with him admirably. The question comes up, can the small farmer afford to invest in machinery? and the surprising fact is he can afford it better than anybody else. Now, the membership of this association has large farmers, and they look at things from the standpoint of large farmers. They are overlooking the fact that the little fellow can beat them if they do not look out. He has not been crying "hard times" this year or last, the entire year. He does not lay aside so much money in hard times, but he is not suffering, and his bank account grows a little all the while. The point is that by having this machinery he can raise more on an acre and be sure of of it, and have the profits from it. By doing this, by saving—I will say that the average farm of Iowa, Mr. Sage says, is 150 acres. The statistics I saw some years ago give it as 143, and 35 acres in corn. So the average farmer has 35 acres of corn. By saving the fodder he saves the hay, by saving the hay he increases the acreage to put in corn and pasture; and he saves these $5 at least, and he saves buying that much extra land so he does not have to run in debt. The machine saves him that much. The advice has been given to commence with the small farm and keep on buying more and more. You cannot do that. For instance, my neighbor, a young man who has just started, bought 80 acres of land. He went in debt for it. My neighbor on the west has, perhaps, 300 acres; he won't sell; and his boys won't sell. They won't sell, and you cannot force out those little fellows, either. You cannot do it, and we think it is a pretty good thing. You cannot only raise more corn and butter to the acre—

MR. GOVE: Do you produce butter by the acre?

MR. BENNETT: Butter by the acre. The grand object in farming is not to see who can raise the most cattle and get the most money, but to develop the most men and women—to afford the best living for the most men and women. If one man should come here and succeed in driving away those small farmers, where would those fellows go to? Would our schools be better for it? If three men farmed two hundred acres would it be better than if twenty men farmed it? I think not. The number of farmers who are farming eighty acres or more in Iowa is

about 160,000. All of those can use the improved machinery in corn work from first to last. The riding plow to plow the land; the corn planter to plant; the riding cultivator to cultivate, if they want to use it; the corn binder to bind, and the corn husker to husk. Not all can own the corn husker. They travel around with these husking machines so it is not necessary. But when a good year comes for hay, we will let the corn fodder go; we will again throw away the value of the silver mines in the United States, and the value of the butter of the state of Iowa, the entire produce, and go back and drop that.

Now, I have no paper. I thought I would simply introduce the subject and let you discuss it as you wish.

THE PRESIDENT: The gentleman who was to lead this discussion is not here. The next is Hon. S. B. Packard.

MR. PACKARD: Mr. President—I cannot take issue with the gentleman who has presented this subject. Of course he has presented it from the standpoint of the small farmer; and the way which he says they have adopted in his section seems to be the best way of managing. He agrees with me precisely with reference to the value of the corn fodder. Since I have been farming in the state, since I began to raise corn, it is only about seven crops in this state, I have cut up each year all the corn I have raised, shocked it. It has been an average of about one hundred and sixty acres; this year about two hundred and seventy. I have had considerable experience, of course, in the common ways of handling and using it; and each year has confirmed me in the opinion that I could not do without it; and that every farmer makes a mistake if he attempts to do without his corn fodder forage. It is really better in my judgment than timothy hay as forage. Now, I do not attempt on my farm to handle that amount of fodder; that is, to stack it and put it under cover. The first year I did and husked my corn out of shock. A portion of it I hauled and stacked and my experience with it was not satisfactory, and I did not find it an economical way of handling it. The waste was entirely too large. If you attempt to husk corn as dry as it is now the waste would be a percentage so nearly one-half in handling it that it is not to be thought of in my judgment.

I was told by a dairyman of experience that if I would let my shock stand in the field until I wanted it that I would find those shocks would go through all winter without loss. In other words, if I could get to them to use them I would find them as

valuable the following April as I would find them in the fall immediately after they cured first. And that has been, I am glad to say, my experience. I have never seen a shock of corn fodder set up that did not open up as good in the spring of the year, baring of course, mice and gophers in some of the shocks. But so far as the weather was concerned, no injury to the corn fodder was done. Much of the injury to the corn fodder is received in the first month or six weeks it is set up. Now, in moving a season's fodder, if you have to depend on corn fodder as I have to this year, one must provide against bad seasons in the year when you cannot get to the corn fields. In that case you have to put a portion of it in barns or stacks to provide against that. But in ordinary years when we have straw and other forage we can go to, we let the corn stand. We find that we can feed it all out readily before spring comes, and get the best and most out of it. I husk out most of it, of course, and grind it. Now, with reference to the small farmer, if he had no great amount, I should think he would want it in his barn and have a cutting box and cut it up to be fed to his cows. But I say on a beef farm where you haul it out and spread it broadcast in the pasture on the top of frozen ground or snow you can move it readily. If you wish to have it husked you can send your man out and have him husk it, put it on the sleigh, feed it in the feed lot and they will eat it all up. If they are cut in the right time there won't be enough of the stalk left to be worthy of any consideration. You can rake it all up in the spring—the feed of fifty head of cattle—on one single load.

THE PRESIDENT: Mr. Baker comes next.

MR. BAKER: Well, the cattle like it best as it grows, and if we get it up and feed it just that way, they will eat it up and look for more; they will lick themselves, run the loose hair off against a tree, and go and lie down and puff. I got some information once from a hired man that you would perhaps like to know. When I crossed the railroad going to Dubuque with my last load of cheese—my wife quit the business and, of course, I had to—I was going with my last load of cheese to the city of Dubuque. I had forty steers that I did not know what to do with. I could not feed them, because in working out the problem at the end of a pencil there was nothing left. I picked up a man out of mere charity, told him to throw his satchel into the wagon, get in with me on the cushion and ride. He said, "I have no money, sir." I told him "I have enough money for two, sit

still." He told me he had been working for Jacob Strong feeding cattle. He reduced my cost of feeding steers $12 per head right there and then. I was angry all over. An old man on the road beating an old farmer out of his boots on the theory of feeding cattle. But I had to submit to it. When I came back home I thought over the instructions, and they were better, clearer than anything I could formulate. Since that time I have put two thousand cattle into Chicago in twenty-four years. I have never suffered a loss in feeding cattle. Maybe you won't believe a big story. When cattle went to nine cents a pound, we sold $15,000 spot cash of the stuff off the farm that one year; but we do not do that now. But we put that cash where it would keep, and have the results just the same. You know very well that there has to be three conditions in the cattle ration: fat, fibre, and water. Fat to fill out the animals as well as for food; fibre to distend the stomach so that the gastric juices may have free access to the food before the stomach gets tired, and then they can lie down and rest; water, as a matter of course, to quench their thirst and to dissolve the ration in their stomach that digestion is easy, and that it may move on to the passage in the animal until the exit is reached for the used up ration. You cannot possibly improve on natural law.

MR. GOVE: You did not tell how he told you to save the $12 a head. You said he told you how to save it.

MR. BAKER: I have ability enough to know when I could save $12 to save it.

A MEMBER: How did you save it? You might as well tell it, for if you don't I will.

MR. BAKER: I heard a great deal of the Gothic churches in London. There was a great vacant space from the ground way up nearly out of sight. I built a barn after that method; put the stuff on the ground, and the hay actually filled the barn up. Then I had side stalls for cattle—on either side—I had figured up what it was worth to feed, and I got these things, and it ended up in a sum total of $12 per head. The other fellow told me cattle were made to eat things off the ground. He said they got the stuff on the ground. He told me it was a great deal better to let a thing run itself, if it could, than to run it. That year those forty head of cattle were sold to Murphy for $54.50 a head. And from that time to this I have put two thousand cattle into Chicago. I never grind corn for my cattle, for this man told me they had a mill of their own. I heard afterwards

that the old man died in the mad house; had made $250,000 in this business of letting steers run and giving them plenty of feed, and letting them grind it as best they could, and let the rest go to grass if they could. Time is up, gentlemen, thank you.

MR. GOVE: If you will allow me about one minute, I would like to say something that is useful in that business. What I wish to say is explaining a table that a hired man I had a year ago, a young man that came in and helped finish cutting corn. When I was done he said he worked several years in Michigan, and said they cut corn up there. I hired him for a month. The first thing he did after I hired him to husk was to go to work and build what he called a "husking horse." He took pieces of six-inch boards, ten feet long for the side pieces, and I should judge about twenty-eight inches across for the end pieces, as the foundation, and there were legs to it. These legs had to be braced strongly lengthwise and crosswise, and after this foundation was built with crosspieces, there were two pieces put into the middle of one end, I should say about two and one-half feet long. One in here, (using table to illustrate), one through there, and a piece under here, flatwise under there, with this short piece raised all through, leaving an opening here. When he got ready he turned this table right down towards the shock of corn, within about seven or eight inches of it, and pushed the shock of corn over. The table stood right on its legs, was pushed over, and he stood in here and husked. He had first cut the string—binder twine—the right length, with loops to tie it in bundles of the right size. When we came to hauling the fodder that we did not husk, he did the same way exactly, only I let a boy go with him to help to tie on the tables and put the strings in; and he would tie it as fast as that boy could make the loops in the twine. I think he would tie 150 hills of good corn into bundles in one day. It was not hard work, but lively work. He knew just how much of a grab of fodder to make to make a bundle. There is no more trouble in handling it that way than to handle a sheaf of grain.

MR. STOUT: I was not in, gentlemen, and Mr. President, when the discussion opened upon the question of corn fodder. As Mr. Baker has explained about this subject, I want to say I took my first lesson in raising and cutting corn in the region where Jacob Strong lived; and I have been cutting corn from that day to this. I think this year is one of the most valuable

years of any ten years past, and of any ten years to come, for the reason that we were compelled to take the position to use this product we have heretofore thrown away. My experience, your experience, and everyone's experience in this direction has taught us to utilize this product in the future, and the consequence of it is that there has been a vast step in the direction of progress and improvement. This year I am cutting my corn to my satisfaction better than I have ever done before in my life. I have my corn cut, bound in bundles, and expect to thresh it on my farm as I did in 1887, and as my neighbors have done from that day to this. I have cut off the area for the raising of my hay crop. My corn is cut and bound with the corn harvester, with a single man driving it, and it is in nice shape. We have the corn threshers and huskers, but the machine that cuts and binds it is the best part of it. It is the Deering Corn Harvester, and it has bound that corn to my entire satisfaction, as completely and as successfully as my McCormick harvester has bound my wheat and oat crop. I feel so well satisfied in this direction that I never expect to return to the hay field for the purpose of getting that product that will feed any horse or cow or fat cattle. I say to you gentlemen, looking over the state of Iowa, while the vast fields are cut, that there is not the amount cut that there ought to have been; but in the future I expect to see this corn fodder put up in this way, and I am satisfied from my own experience that for the dairy cow there is not a better product when it is put through the threshing machine that shreds it, puts the shelled corn in a bushel and leaves the ear in the wagon box and shredded corn in your barn or stack. That can be done successfully, and no better feed have we got in Iowa. The saving of this way for pasture to me and to you is of immense value, and will bring our dollars and cents out of the experience of this year, I believe, as nothing would have done except the drouth.

Now, another idea in regard to this matter. I came to this convention from Minnesota, having been upon the Round Lake farm. Seeing alfalfa grow, seeing twenty head of calves—twenty little doddies—raised on dry alfalfa hay or Minnesota silo, getting nothing else. I went upon this alfalfa field, dry rolling land in Minnesota with the sheep feeding and have fed upon it after the alfalfa was taken off. I want to say to you gentlemen, respecting our future, that with the fodder problem

we will look for the corn crop for our fodder and silo, and that that will give us the best returns for our labor. I was on the Lakeside farm yesterday where I saw rape growing, ten acres of it. That is a corn fodder plant. I was well pleased with that as a fodder plant for helping us through the drouth. As I travel around among our neighbors and see the work done in this direction, I think I am safe in the assertion that this year is the best of any of the ten.

PROF. HENRY WALLACE: Did you notice the soil where this alfalfa grew?

MR. STOUT: Yes, I did.

PROF. WALLACE: Do you know anything about its character?

MR. STOUT: It was a clay subsoil.

PROF. WALLACE: What kind of a clay subsoil?

MR. STOUT: Well, seeing the excavations made in the towns of that vicinity, it was a yellow clay to a blue clay, the blue clay within six or eight feet from the surface, and a gravel underneath.

PROF. WALLACE: Was there any blue clay along that field of alfalfa?

MR. STOUT: The lake bed indicated to me that it was a clay subsoil. The soil around the lake itself, instead of being a sand bed, was a clay bottom, and I would rather believe there was a clay subsoil lying underneath the alfalfa.

PROF. WALLACE: This is a very important matter to determine. In Kansas, Nebraska and Colorado I have never known them to succeed in growing alfalfa with the hard clay. They tell me when the alfalfa roots strike that clay they go sideways. It is impossible to grow it, I believe, where you have a subsoil that the roots cannot penetrate, and go way down. Hence, I say it is a very important matter in these experiments we are making, to know the character of the subsoil, otherwise men are apt to take up an entirely wrong status.

MR. STOUT: That alfalfa has been growing there for five or seven years, and gives two or three crops a year.

PROF. WALLACE: Mr. Herbert, of Greene county, sent me this week a sample of alfalfa about three feet high, sown in 1890, with clover and bluegrass. He neglects to state the very facts that are important for us to know; that is, the character of the subsoil and the conditions under which it will grow. I have no question, gentlemen, but that in this state anywhere

where there is no hard clay or very coarse gravel or stone between the surface of the soil and permanent water we can grow alfalfa, and grow it successfully. Whether you can cure it for hay when it is cut as it must be to make good hay when the blossom is one-fourth in bloom, is another question. It is just like cutting clover when it commences to bloom. There is no fodder on earth its equal, and the only thing needed is the condition to properly cure it. Hence, it should be experimented with wherever it is possible and under conditions where it is likely to grow.

COL. SCOTT: I desired the floor yesterday afternoon; but I was rather late for it, and the discussion closed on the subject of "Lessons of 1894." I, at that time, desired to bring up the question which has just been brought before the association mainly by our brother Stout, and other remarks that have been made in connection with this matter of corn fodder. What I wanted to say then I can say now, partly, and partly I need not state it. The proposition I would have made in regard to "Lessons of 1894," are the lessons belonging to the whole year —the agricultural year 1894. That discussion was largely taken up with the discussion of the summer of 1894—of the lessons from that. Instead of this subject being limited to the summer months, the agricultural year 1894 begins with April, 1894, and ends with April, 1895, and the lessons of the year are not written out; they are not placed upon the board; they are not demonstrated until we have had the close of the year. But I think in the mind's eye we can see some of them. Our friend in his paper referred to the fact that here we are not saving our corn fodder. Assuming that these gentlemen have told us the value of corn fodder, and told us truly, assuming that, that corn fodder when properly saved, husbanded and fed is worth five dollars an acre, you farmers of this neighborhood look around you and see how many of these acres we are wasting here in Story county. We can see it now, for the time has passed for the securing of it. The frosts have come already and cooked it. The rains will come after awhile and will wash it and soon bleach it, and the four winds of heaven will take it and scatter it, whither we know not; and before the first day of April next we shall find the tenant farmer asking his landlord to cut his rent in two, because of the failure of his crop this year from the drouth. It is already so. The tenant farmer is asking his landlord to cut his rent in two, for he has but a quarter

of a crop of hay, and his corn crop is cut at least two-thirds. Now we shall find the small farmer wasting his fodder, and before the first of April next, feeding hay that if he bought he would have to pay, or if he sold he would get $15 or $20 a ton for, from those who are short. He is using this hay in the place of corn fodder which he is wasting upon the winds of Heaven.

I wish these remarks to be carried back to "Lessons of 1894," discussed yesterday. I want to say another thing or two, that we shall not have these men doing that, but we shall hear them uttering pitiful wails of "hard times."

MR. PAUSER: In regard to this alfalfa I want to say this: I lived on the Pacific coast a few years, and of course was very much attached to alfalfa. I came back on a visit and brought two bushels of seed with me, sowed it on my farm, a few miles west, and it grew very nicely the first season. The winter killed it. While I was back here I had talked it up enough so that two or three other farmers tried it, and it killed out. When I came back from the coast again, I thought I would bring back some more seed and see what it did myself. I lost that. It starts nicely, and grows nicely. We must all experiment, and as the gentleman over there said, it is right to experiment, and we should find out why we are failures; but do not any of you go into this alfalfa business too extensively until you know under what circumstances it will live, and know if you have those circumstances. There is no feed in the world that is as valuable as alfalfa. You can keep stock hogs all winter on dry alfalfa. So you can, gentlemen; and if there was any possibility of raising it here, I certainly would not hesitate giving a hundred dollars in getting a five acre field started. When Capt. Stuart came to this station, I talked to him about it. He made an experiment, and it proved a failure. At this station here now I think they do not believe it can be raised here.

MR. STOUT: You were in the west where they raised alfalfa?

MR. PAUSER: Yes, sir.

MR. STOUT: It was raised by irrigation?

MR. PAUSER: Yes, sir.

MR. STOUT: Did you, when raising alfalfa, try irrigating at all?

MR. PAUSER: No, sir.

MR. STOUT: Wouldn't it be a good experiment to try and irrigate?

MR. PAUSER: Mr. President, I did not intend to say as much as I am going to say, or have said. I will say this, that in the west where they want to kill alfalfa—it is a hard plant to plow out—I found by close examination that when they want to plow up a field of alfalfa they turn on the water late in the spring when they know it will freeze, and that kills the alfalfa. My conclusion is that the rains in the spring kill the alfalfa.

THE PRESIDENT: The subject is corn fodder. If the members of this association want to talk upon this subject, all right.

PROF. STALKER: Mr. Chairman—Speaking of corn fodder reminds me that we are to have a banquet to-night in this institution, and to our visiting guests who are members of this association we give a cordial welcome to come and break the fast with us. If tickets are not provided before you come to the dining room, they will be supplied to you at the door. Our friends who are fortunate enough to live in Story county, you are cordially invited to come and bring as many of your friends along as you like. Supper will be served this evening in the dining room at half past five instead of six, the usual way.

MR. BAKER: Coming back to this matter of corn fodder, you will find plenty of sugar in the pith. If you want to get that corn sugar out of the field, it can be done now. The leaves amount to but very little. Animals, when they can get the pith of the corn stalk, will get fat at any time in the spring or winter if they have plenty of the pith with the corn sugar in it.

MR. KEGLEY: I want to ask a question. How much of this fodder, either shredded or cut, can be packed in a building safely and kept through the winter without spoiling? If there is a gentleman in this house who has tried it, I would like him to give the amount.

MR. BAKER: That depends upon the condition of the fodder. Water and sugar at the temperature of the earth's surface will ferment and sweat and fire if you do not watch it. If the stuff is dry, you cannot possibly pack in a hundred tons and get it on fire in that condition. If you take it at the stem and twist it, if you can twist it without having any moisture to ooze out from the crevices, it is dry enough to keep in any amount. If you can twist out water, you will have to look out for the premises.

PROF. KENT: Mr. President—That is a very important matter. If the gentleman has ever baled hay, I can answer him by saying that his corn fodder must be just as dry as hay must be in order to put in bales. And another way of answering that question would be to say it must have about eighty-five per cent of its water out. That is to say, it should have only fifteen per cent of water in it.

MR. BAKER: Yes, sir.

PROF. KENT: Another way to determine it is to take up the fodder, and if you find it brittle and dry so you can break it up. If it is moist enough to be tough, that fodder will heat. As there is no kind of thing on the farm that is as dangerous as corn fodder, it is desirable to state that spontaneous combustion is likely to take place and set the barn on fire. I have seen it just slightly moist, and it got hot enough to char. It would smell hot, and the smell would adhere to your clothes for days if you touched it. And even in the silo, if the fodder is partly dry it will nearly fire.

Again, there are men to-day threshing corn in Iowa that the greenness has not entirely dried out. I was on a man's farm the other day where they threshed, and you could smell the moisture. You must let the greenness get out of that and then it will keep.

I want to make one suggestion further. I want to say that the corn fodder of Iowa to-day is the best fodder that has ever been put in shock in the state; for the reason that the protein matter which goes forward to make up the ears still remains in the stalk, and it is worth a dollar or two more a ton than if it had gone into the ears.

MR. BAKER: One of my kinsmen packed his corn fodder on the top of hay in the barn. He was a young man, had just married, and the young couple had started out in life fresh. They were in their twenties, and had secured everything—at Albany, Nebraska—and they were insane enough to cut corn green and put it in the barn. It got hot; spontaneous combustion followed and burnt up their barn, and reduced the youthful pair, in their start, to absolute poverty. It is really pitiful.

A MEMBER: As to storing corn fodder. A year ago we stored forty acres into a bin on top of the barn floor. We cut the fodder with a Keystone cutter. The bin was about thirty feet deep. That fodder kept perfectly. But in our neighborhood, up to the time when I left home, they were not yet able to cut and store corn fodder. The gentleman spoke as though he thought it would be an easy matter to store it. It is not. The fact is they cannot store it as yet, because there is juice in the stalk that we did not find last year. Last year with forty

acres in a pile, it kept perfectly until the spring. We put it in in October—this month—or probably a little earlier, and it kept well.

THE PRESIDENT: We have given fully as much time to this subject as we can spare to do justice to the other subjects; and we will now take up the next subject on the programme: "Swine—Value of State Fair Premiums, and Boom-Priced Sires." This is by Mr. Howard, of Jefferson.

VALUE OF STATE FAIR PREMIUMS AND BOOMED PRICED SIRES.

Mr. Chairman and Gentlemen:

I was asked by our worthy Secretary—Franklin—to prepare a paper to be read at this meeting, and while I debated in my mind what it should be about, and was unable to settle on anything that I thought could be of interest, Franklin solved the problem and sent me a printed programme with the above assigned to myself. The subject is broad enough surely, and in order for proper perusal of it for a short time, we will divide it into two parts, namely: First—value of state fair premiums. Second—that of boomed priced sires.

Fairs for a good many decades have been held for the purpose of bringing together the products of the soil, the mine, the loom, the machine shop and for the exhibition and comparison of the skill of the artist and also for a comparison of the individual merits or demerits of the best individuals of the different breeds of stock. That these comparisons have been a prime factor toward the improvement of the different breeds I guess will not be denied. We might possibly imagine a fair without an awardment of premiums, simply a bringing together of a lot of stock to sell, or for the public to look at. A may think this animal the most worthy, and B that one. And the general public would have a very small idea as to which were the superior animals. But we have fallen into the way so long established, of looking for and expecting an awardment of premiums. Their value we think on the whole, almost beyond computation. The ribbons when placed, are supposed to be on the best individuals, and generally are, if the judge is a critical and honest one; but if he lacks judgment, he makes about as bad a muddle in placing the ribbons as though he were the best judge in the world of the qualities of an animal and yet was dishonest enough, for one reason or another, to put some of them in the wrong place. Generally speaking, the judge at our state fairs satisfies both the public and the exhibitors that he knows what he is about, and the slight mistakes in passing, if mistakes they be, are overlooked. And the animal receiving the first premium in his class is considered, at least for the time, to be the best. There are numerous ways in which these premiums are of value.

Some of them we will mention. A sire may be of merit enough to be awarded a premium; if the first, he is there the winner. He is carefully examined by breeders. His breeding is studied in all its lines and if he stands the test, his blood is injected into numerous herds. Then if he is able to be the producer of premium winners and of animals he is superior, his value to his owner is very great, and to the stock of the country and the owners of stock almost beyond calculation. The end of it all is the block, and any improvement that will produce the most money with the least outlay is for the benefit of the breeder and feeder. The premium is the beacon light pointing to the best animals and to the sires of premium winners. Sires soon pass the age in life of being able to enter the show ring, but if they are producing animals worthy to enter the ring their value increases. And if it were not for the fact premiums were offered so that their progeny could be offered in competition with other stock, even their owners might scarcely realize that they were the possessor of a great sire or dam as the case may be.

Proper mating, good care and careful feeding is always necessary in the production of a premium winner. In fact it is all that is necessary, and about the only thing that worries the breeder is whether his judgment is guiding him aright all along the line from the breeding pen to the show ring. There are a few instances in which a premium has been awarded an animal either in class or sweepstakes, in which the benefit to the breed has been of trifling importance, and I think in some cases, a damage. But these cases are comparatively few, and may, on the whole, be a benefit to breeders, for it tends to make them more careful in the selection of fresh blood, especially if it is a direct out cross. Sometimes the owner of a sweepstake or first or second premium animal revolves the matter over in his mind until he thinks he is the possessor of something very superior. In fact it becomes sort of a mania with him, and whether he has the best thing on earth or not, he has worked himself up to such a pitch that he really believes it. Then he undertakes to make the public think as he does, with more or less success. If the progeny of "his great sire" satisfies the public that his greatness is not in the imagination of a brain diseased or a mind unscrupulous, he has made a happy hit. If, however, the sire is not able to sustain the reputation he has gained through the premium awarded and the use made of it by his owner, in the quality of his get, he is soon forgotten and his owner has been seriously injured thereby. Far better had it been for him not to have a millstone hung about his neck, but to have been sure of the quality of the get of his winner. For in case of failure he has lost the confidence of the public and he will be in better position to succeed in raising stock for the shambles than he will in the production of it for breeding purposes.

The premium given in the show ring is the stamp of excellence placed upon animals in competition, and is the incentive for the live breeder to exert all his energies and judgment in the production of animals good enough to win these laurels. Who does not know that stock descending from a long line of premium winners is better and more reliable than stock promiscuously bred. The breeding of the trotting horse has got to a point that small chances are taken in breeding for speed. All the breeder needs is to make the proper mating, of which he can easily inform himself. So in

the breeding of swine. The proper mating of animals of premium winning families will produce winners, and no other manner of mating is safe.

We will now consider briefly the second part of the question—boomed priced sires. What is a boomed price? In the ordinary matter of trade and commerce it is called bulled prices, or inflating prices beyond the limit of the law of supply and demand. In trade this usually results in the damage of both the producer and consumer. Sometimes to the flattening out of the bulls; for when the bears begin to get in their work someone gets hurt. Probably as often the bears get a taste of the bitter cup. There is quite a difference between a boomed priced sire and a high priced sire. If a breeder sees proper to pay a long price for a sire, I concede that it is no one's business but his own. No man, it seems to me, could be so insane as to pay large money for an animal simply for the name of having paid so much. He does it, I infer, because he thinks it worth the money to his business, and that in the matter of the improvement of his herd and in the production of stock to better suit his customers, he is worth far more to him than a cheaper animal. If his judgment has been good in making the purchase he has made a valuable hit both for himself and his customers. If the reverse, he will be the greatest loser; for the time has past when stock raisers are so gullible as to purchase the produce of a high priced sire unless the stuff purchased shows the marks of good breeding. A boomed or fictitiously priced sire can result only in damage to the parties to the transaction. It matters not how much money is said to have been paid for an animal, if that animal cannot be the producer of stock, that in the minds of stock raisers, is the equal of what is expected of such a priced sire a smile passes round, and that breeder's business falls flat. For he has nothing to fill the demand, and he goes to the same level of the owner of the ordinarily bred and common producing sire which by some accident was "struck by lightening" in the show ring. Any sire must be the producer of winners if he sustains himself in a boom started by reason of a premium or a long price paid.

THE PRESIDENT: This paper is to be discussed first by Mr. B. R. Vale, who is not present, followed by Mr. Geo. Prine. Mr. Prine is not here. The next one, Mr. R. J. Johnson, is with us.

MR. JOHNSON: I see we have a large program, and I won't talk long. If you can get a hog, a winner, that will reproduce himself, you cannot place too high an estimate upon him as a sire. As I say, if he is a winner and will reproduce himself he is worth ten or fifteen times more than any other, and is a very valuable animal. But take an animal that wins a premium, and is only an ordinary breeder, I think it is a detriment to a man instead of anything else. Now, as to the boom-priced sires: I do not think I wish to say anything on that subject. A boomed sire, unless he begets good stock is worth nothing. The more influence a man has in any business the better will he succeed. The first thing any man wants is the confidence of

the people. Now, if he had a sire that was a good sire, instead of trying to boom him I would show his get. And I would say there is no better place to show him in the world than at the Iowa State Fair. It is the greatest hog show in the world, I don't care where you go.

THE PRESIDENT: Next I will take up a little business matter. It is an amendment to the constitution, proposed at the last annual meeting, to be voted on in this. The constitution cannot be changed without a formal notice. I will read the resolution:

> The annual meeting of this association shall be held at ....., beginning on the fourth Tuesday in October of each year, and continuing three days, at which time all officers shall be elected by ballot, and they shall hold their offices until their successors are elected and qualified.

There is a committee to report upon "Permanent Location," and that does not come under this head. That will not interfere with this, because it is left blank as to the place. Are you ready for the consideration of this question?

Motion to adopt resolution as read in regard to the change of time, seconded and carried.

THE PRESIDENT: The constitution is so amended.

(Resolution is again read at request of some of the members.)

THE PRESIDENT: "That the annual meeting of this association shall be held on the first Wednesday in December of each year." This part, as adopted, reads: "On the fourth Tuesday in October of each year."

PROF. CURTISS: I was a member of this committee at the last meeting. It was the intention that the association should insert the place. I do not know what the report of the committee on permanent location will be, but it seems to me that unless a permanent place is fixed, we ought to modify this so it will read "at such place as the association may decide," and let them decide each year.

MR. BROWN: Mr. President, I move that we reconsider.

Motion of Mr. Brown to reconsider seconded and carried.

MR. FRANKLIN: The annual meeting of this association shall be held at ——, beginning on the fourth Tuesday in October of each year and continuing three days, at which time all officers shall be elected by ballot, and they shall hold their offices until their successors are elected and qualified.

COL. SCOTT: I offer an amendment to this resolution: Strike out so many of the words—"fourth Tuesday in October"—as

are necessary to insert the Tuesday preceding the full moon in October, or Wednesday, if same is preferred. Wednesday.

PROF. CURTISS: Leaving that blank there as to the place, and insert, "such place as the association may decide."

THE PRESIDENT: The question is on the adoption of the resolution as amended:

The annual meeting of this association shall be held at such place as shall be selected by the association at its last meeting, and that the time of such meeting be the Wednesday of or next preceding the full moon in October, etc.

Are you ready for the question?

Question, question.

THE PRESIDENT: All in favor of the adoption of this resolution as amended will signify by saying aye. Motion carried.

THE PRESIDENT: Now gentlemen, I would like to have the report of the committee on location, and nomination of officers.

MR. GABRIELSON: Your committee beg leave to report as follows:

A meeting to arrange for the officers and location for the association.

Mr. Johnson was elected.

Mr. Parsons advocated Newton.

Mr. Smith advocated Vinton.

Mr. Topper in behalf of Osage.

On motion Osage was recommended and carried, and October the month and time to corrrespond with the time of this meeting.

On motion, R. J. Johnson, president; Geo. W. Franklin, secretary and treasurer; J. P. Manatrey, Fairfield; John Cownie, South Amana; R. Baker, Jr., Farley; D. Sheehan, Osage; C. F. Curtiss, Ames; W. W. Vaughn, Marion; J. R. Crawford, Newton; C. C. Norton, Corning; C. L. Gabrielson, New Hampton; Ben. Elbert, Des Moines; B. F. Gove, DeWitt.

THE PRESIDENT: You have heard the report, gentlemen, what will you do with it?

It is moved that the report of the committee on location be adopted. Motion seconded.

MR. SMART: I was going to say, gentlemen, that quite a number of the members discussed the matter of holding the meeting at Osage next year, and as far as I learned every one regretted it very much that it was taken way up in Minnesota.

THE PRESIDENT: Those who are in favor of adopting the report of the committee on location will please rise.

Motion carried.

THE PRESIDENT: What will you do with the report of the committee on officers for the ensuing year?

Motion to adopt report of committee on officers seconded and carried.

THE PRESIDENT: Gov. Packard will please let us hear the report of the committee on resolutions.

GOV. PACKARD: The committee on resolutions submits the following report:

WHEREAS, This is the twenty-first annual meeting of the Iowa Improved Stock Breeders' Association and the organization is now at the age when its right to existence may properly be challenged and decided by its past record and its future plans, therefore

Resolved, That the rank of our state and dairy products and the rank of those products, the wealth derived from the fact that it outranks all other states in the production of pork, its greatly increased number of prize-winning animals, including several world-beaters, its unequaled advantages for producing the grains and grasses needed for the highest development of our domestic animals in lines of strength, weight, speed and general excellence, and the part taken by this association in assisting in these several lines of industry and the need of continuing the work, are a sufficient justification of the wisdom and foresight of the noble men who, at the sacrifice of personal convenience and no little expense of time, labor, and even money, organized this association, and now that the added burden of twenty-one years has been laid upon them and is depriving us of the active assistance of most of the surviving originators of this organization, we pay a loyal and reverent tribute to those grand old pioneers.

Resolved, That this Association feels a deep interest in the work of the experiment station, and it is gratified to know that it is pushing its work into those lines of labor by which we are to gain our subsistence, improve our farms, elevate our standing and leave the world better for the part this association has taken in its activities. We are glad to see so many of our young people attending the college that they may be instructed and trained for life's duties, and we hereby express our approval of the college management; and

Resolved, That this association recommends the State Agricultural Society, in the next premium list, to offer prizes in the horse, cattle, sheep and swine classes at the rate of fifty, twenty-five, fifteen and ten per cent, in four premiums, and that no entry fee be charged, believing that such liberality will stimulate more numerous exhibits of domestic animals, and thus through other sources of revenue provide for the slight increase in the amount of money awards.

Resolved, That we earnestly request our members to prepare the best specimens of their flocks, stables and herds, and exhibit them freely at the next State Fair as the best means of advertising the excellence of Iowa's breeding stock.

Resolved, That the heartfelt thanks of this association are due and are hereby tendered to the officials of the Agricultural College for courtesies extended and the pains taken to minister to our pleasure and to enable us to become acquainted with the college in its practical workings.

L. B. PACKARD,
E. C. BENNETT,
JOHN SCOTT.

GOV. PACKARD: Your committee has also been instructed to report the resolution offered yesterday by Mr. Coffin that the association might take such action as they thought best as to its adoption.

[This resolution was lost by some member of the committee and has never been turned over to the secretary, and the stenographer's notes fail to show it. The resolution has reference to the discouragement of Sunday labor by railroad employes.—SECRETARY.]

THE PRESIDENT: What will you do with the report of the committee?

Motion to adopt report of committee on resolutions seconded and carried.

THE PRESIDENT: The resolution is adopted so far as the committee report is concerned. What action will you take upon resolution offered by Mr. Coffin?

Motion to adopt resolution offered by Mr. Coffin seconded and carried.

MR. CRAWFORD: Your committee on the treasurer's report is ready to report.

THE PRESIDENT: We will now listen to the report of the treasurer.

MR. CRAWFORD: Your committee appointed to examine the treasurer's report will submit the following:

OCTOBER 18, 1894.

Your committee appointed to audit the treasurer's report would submit the following report: Having examined the treasurer's report would say that we find report correct, and vouchers for the same.

J. R. CRAWFORD,
A. V. STOUT,
C. W. NORTON,
Committee.

THE PRESIDENT: You have heard the report; what will you do with it?

Motion to adopt report of this committee seconded and carried.

MR. BAKER: I move that we adjourn until 6 o'clock.

MR. HOWARD: I move that the session continue until half past five, and then adjourn until half past six and continue until time for the banquet.

MR. BAKER: I withdraw my motion.

Motion of Mr. Howard seconded and carried.

THE PRESIDENT: We will adjourn the meeting at 5:30 and reassemble at 6:30.

reassemble at 6:30.

We will next listen to H. G. Codd, on "Sheep—Present Profits and Future Prospects."

MR. CODD: Mr. President and gentlemen—I do not think I will detain you long on this subject.

SHEEP—PRESENT PROFITS AND FUTURE PROSPECTS.

BY H. G. CODD.

Gentlemen: I believe that any man who has good mutton sheep to market will, in spite of everything, get as good returns as from any other class of stock. Yet we quote from a paper which has just come to hand, in an article on sheep raising in New York State, giving the result of twenty years' experience with a flock of pure-bred Hampshires. Mr. James Wood says: "My experience convinces me that sheep can be kept with less cost for labor, with less loss from disease or accident, and with better returns than any other kind of stock. Their benefit to land is universally known. By keeping mutton sheep the price of wool is a secondary matter and the flocks may be profitable without the wool." This is entirely my own opinion, and I shall leave the tariff question out of this paper, feeling assured that my views on the subject are diametrically opposed to those of every sheep-raiser present. What has happened will happen again and again with similar disastrous results as often as this wool question shall recur until it is finally settled.

In considering the first division of my subject, Present Profits, we ought in the first place, I think, to give our sheep full credit for the years of prosperity we enjoyed, before they were transformed into political machines. Every one who had sheep for the five years preceding the last, made money out of them, and it should not be lost sight of, inasmuch as the present depressed conditions of the industry are more largely due to this than anything else. Sheep were paying better than anything, and every one wanted to rush into them, without regard to their own adaptabilities of handling them, or the reaction that was certain to follow. Then came the scare and although there has never been anything approaching to an over production of mutton, the markets were glutted with wool-bearing animals of all sorts and conditions.

This question of markets has a bearing too; although the consumption of mutton has increased so enormously within the last few years and would increase still more if sheep raisers were alive to their own interests by producing a better class of sheep, and feeding better. Still the sheep has never taken the same position as a meat producing animal which it holds in Europe, and more especially in England. In the latter country it is the staple meat, and the relative amount of beef and mutton consumed is probably in inverse proportion to what is used here. Our country butchers

use very few sheep, and not many of them in my experience, know a good sheep from a poor one; the same price is paid for all alike, and they are doing very little to educate the public taste to the appreciation of a better product. This is true of mutton and still more so of lamb. Many of the carcasses sold in our markets being but little less than a disgrace, both to the man who raised them and to the man who sells them. As a result of this limited demand, our stock has frequently to be shipped to some distant point which is no doubt productive of benefit to the railroads, but largely curtails our own profits. At these central markets there is a demand for good mutton both for retail trade and for export, and I think there is no doubt that the latter trade is capable of great developments if the material was forthcoming.

What becomes of the poorest grades? I do not know; but I am sure they brought no profit to the man who raised them. If it is true and I believe it to be so, that, leaving the fleece out of the question, prime mutton can be produced, pound for pound, at the same cost as prime beef, those who have had this kind of stock to sell have no very great reason to be dissatisfied.

The future prospects are not encouraging. We need better sheep and more of them; we are incessantly told by the authorities that we must grade up our flocks to a better mutton standard, and I am convinced that this is good advice. The breed is not particularly a matter of importance. The thing to be aimed at is improved conformation and early maturity, and as everybody claims these points for his own especial breed (and prolificacy in addition) it is probable that one kind is about as good as another. I think, however, that generally speaking, certain breeds are adapted to certain localities. The long wools to rich low-lands, the various downs to more upland situations. Every one probably has some fancy; but I do not think it desirable to be perpetually changing the cross as so many do. Early maturity is an important factor. What wethers and surplus stock are not sold as lambs should be ready for the market at from fourteen to eighteen months; not only are the returns quicker but the risk of accident and disease is largely decreased. Grades from any of the improved breeds could be handled in this way to make the best class of mutton. There is no doubt that the sheep stock of the country is very inferior as compared with our hogs and cattle, and that if we are to court an increased home consumption, and to advance our export trade to a level with that of cattle, very much has to be done in this direction, and I fear that very much is at the present time being left undone. Good stock can be obtained now much cheaper than for many years past and still I am strongly of opinion that prime mutton will next year be as scarce as ever. I will also state it as my belief that not many of us will live to see wool sold as low again.

The question of feed is quite as important as that of breed, and I must confess that it is a question which I have not quite satisfactorily solved. Many of us who had sheep during the past season must have been sorely put to it to take care of them; and though no doubt such a widespread drought as we have this year experienced is a thing of unusual occurrence, we are liable to suffer from dry spells covering a greater or less extent of territory quite frequently. Such conditions are injurious not only on

account of the dearth of feed, but also by reason of the spread of internal parasites. Moreover our winters are long and a greater variety of feed is much to be desired. I am of opinion that the feeding of the various root crops during the winter is impracticable, but that both turnips and rye can be utilized as pasture until the ground is covered with snow.

Where early lambs can be raised at a convenient distance from market there can be no doubt that this would prove the most remunerative branch of the industry.

For various reasons, however, this business must necessarily be confined to a few, and it is probable that a majority of farmers would prefer to have their lambs dropped later in the season rather than go to the extra trouble and expense entailed in feeding and watching the ewes during the cold weather. I think this is a mistaken notion, and that whether the lamb is intended for the butcher or to be kept, the earlier it is the better it will be.

I shall simply be repeating what our authorities have constantly recommended when I say that the course for us to pursue is to cull our flocks, keeping the best of the ewes, and to grade them up to a higher standard by using rams of some one of the improved breeds, making choice of the sire with reference to the class of ewes.

Our farmers need educating as well as the butchers; comparatively few of them know anything about a sheep; some of them are unable to tell a sheep from a goat, at least, I was asked recently whether my sheep were goats, and having in mind some recent correspondence, I applied to our worthy secretary, and ascertained that though some sheep have horns they belong to a different order. There is no doubt that goats' meat is constantly sold as mutton and that those who buy it do not know the difference, and I dare say is just as good as a large proportion of the mutton which finds its way to market. We must raise a kind of mutton that is distinguishable from goat meat.

It is a mistake for any one to suppose that he can make a success of sheep raising without any experience or knowledge of the nature of the animal, and it is owing to want of this that many have failed and been deterred from making another trial. It is, however, most desirable that the industry should be encouraged in every way because no system of husbandry is complete without them. Every farmer ought to keep a flock of sheep, and yet one may travel many a mile in Iowa without seeing a single one; it is not as it should be. But the days for utilizing the sheep as a scavenger are past and gone, and it is not only worthy of a better place but must occupy one if it is to hold its own. There appears to be a general impression that bluffs and hills which can be utilized for no other purpose will make an ideal sheep pasture. I have often heard the remark, "what a splendid sheep ranch it would make," indicating some peak which it would require something more than an ordinary goat to climb. Of course, this is absurd, and if any one expects to raise any of the improved mutton breeds in such a locality he will find out his mistake, though no doubt there are breeds which are adapted to these conditions and on low priced lands the matter of early maturity is not of so much importance.

I believe that the English systems—I use the plural because even in so small a country the methods are very diverse in different parts—can be successfully adopted to a certain extent; I mean especially the raising of fodder

der crops and feeding them off on the land; I am quite convinced it would answer. However, it is not within my province to go into this question at length; what I wish to say is that there are at the present time many signs of encouragement to the sheep raiser, and that if we are to hold our own, we must not only improve our sheep but also our methods of feeding and caring for them. Our recent experiences may prove a blessing in disguise if they teach us this lesson.

MR. FRANKLIN: Mr. President, I have a suggestion to offer, and that is that all you have to do when you get ready to adjourn is to announce a sheep paper, and it will clear the hall.

(Mr. Baker, Mr. McClung having retired for the present, acts in his stead.)

THE PRESIDENT: On this discussion Mr. Coffin is to lead. He is not here, nor is Mr. Edgerton. Mr. L. Smith is the next one.

MR. SMITH: Mr. President, it does not look as if we had many sheep men here. As to present profits—there is not much profit in the business. But one thing I will say as to profits. We will dispose of all our culls now and get a better flock, and then in a few years we will see some profit. Those who stand by sheep as heretofore will see profits. Sheep have been as low as they are now, before, and they went up again. Now, when you see about twenty thousand sheep going into Chicago almost every day—last week there were twenty-nine thousand went in—I think it will soon clear up the surplus amount of sheep, and then I think we will see better times.

MR. FRANKLIN: Mr. President, it is just as I said about the sheep question. It is an uninteresting question just now with the people. But I heard a gentleman make a remark a little while ago that I would like to see touched upon. He touched upon one subject in speaking about sheep in another country that I would like to hear discussed, and I believe you would like to hear it. The man's name is Henry Wallace.

THE PRESIDENT: Mr. Wallace.

MR. WALLACE: I do not usually need to be called out on any question before this association. But I think the sheep question needs to be more fully discussed than it has been. It seems to me the farmers in the west are doing an exceedingly foolish thing in disposing of their sheep, as I understand they are doing. I remember one year—probably eight or ten years ago—when we had this sheep question up it was a matter of ridicule. The sheep had not a friend in this association that I know of, but one man, and he said: "The reason I am talking is because

my sheep have scab and I want to get out of the business." If you will pardon me for saying it, I have spent three or four months over in the country where the sheep is almost king—where sheep are kept by the thousands—where the sheep are uniformly good, no matter of what breed they may be, and there is no strife among the herdsmen that I could hear of, or disputing as to which shall be the best sheep or depreciation of the others. The fact is, Great Britain from end to end, from side to side, is covered with sheep, and you can scarcely find a farmer without them. It has developed a great many breeds without thinking about it; in other words, environment. By that I mean the soil and climate have determined what kind of sheep farmers will produce. The only difference there is between the breeds is the difference of local environment. The farmers over there are complaining of low prices, but they are only low in comparison with the past. When a man can sell a spring lamb for 36 shillings—32 to 36, as I saw them sold at Belfast by the hundred, $9.00—when he can get 40 shillings for a yearling, or 45 perhaps, if very fat, he ought not complain; and these fed only on grass and no grain at all. Wool is no higher than with us; rents are about twice as high. There is no earthly reason why that country should not take the surplus of our sheep but this, that we have but very few sheep fit to send there. Last year I believe there were no sheep shipped to Glasgow. This year they are going in at from 2,000 to 5,000 a week from America. They are just beginning to find out that we can raise good sheep, and if we have sheep good enough there is no reason why our sheep would not find a market on that side of the water. Now, you asked me—I was talking with Mr. Franklin—another thing I must say, that the sheep of that country is uniformly better than any other class of stock. I mean sheep as a whole are better than the horse as a whole, and better than cattle as a whole, and better than hogs are as a whole. Why? I take it simply because farmers there are particular about the kind of rams they breed. I went by invitation to a ram sale, to see the quality and prices. Rams sold at from £5 to £10 each—many of them apparently off the grass, some tolerably fat, and nearly all of them good. I saw but very little difference between the prices of the breeds—of the recognized breeds. For instance, there were Shropshires, there were Roscommons, there were Hampshires, there were Border-lesters and Lesters. Those are the sheep in Ireland, with

the Shropshire as the favorite in the south and the Lester the favorite in the north. The Roscommon is a great big, coarse sheep, which seems to me to be a Cheviot, taken from the hills of Cheviot, and put on the rich level lands of Roscommon. I find when the Roscommon is taken through Dublin, on over to Galway, he becomes a poor Roscommon. When he is in Kildare, the Roscommon improves and becomes a good Roscommon. So I do not think there is a place where you can study environment as you can in Ireland. Now, the sheep that are kept in the mountains are the mountain sheep, the black faced sheep with which our friend Franklin has had some experience that he would not care to repeat here; but they are not grown anywhere else. They are grown on the mountains. The kind of sheep a man over there selects depends upon the kind of land he has. If he has rich land, he can grow big sheep; if he has poor land, he must take the kind of sheep the land will produce. Mutton is higher priced there than here—about nine cents a pound higher—eighteen cents, about the same price as Irish beef, about two cents higher than beef when sold as American, about the same price as American beef when sold as Irish, English or Scotch. Now, I do not see any difficulty in the way of the sheep grower, except the fact that he has not good enough sheep. When you come home and go into a hotel or restaurant and call for a mutton chop, you are not slow in finding why people do not eat mutton. It is simply because our mutton is not fit to eat. One word of encouragement I wish to say is this: If you will grow sheep good enough, people will soon find out it is good, and we will then have plenty of consumption of mutton. There is no reason why we should not succeed here just as well as they do there, and get better prices. The difference in rents between that country and this is more than equal to the difference in prices.

THE PRESIDENT: Are there any remarks you would like to make gentlemen, on this excellent statement? I know what he said is true, for I have been there and eaten that mutton too.

MR. NORTON: I do not want to let the little lamb go by without saying a word in its favor. It has been some fifty years or more that my grandmother gave me a sheep. Through these years—thirty-five of them—I have been trying to make a living for myself, and I have never been without sheep, cattle, horses and swine; and I have never seen the time, excepting during the war, when all of these four classes were high, and

when they were all low. There was a time during the war we got good prices for everything. And yet when you take the money of those days, it took three dollars of one of to-day. I went back, pretty nearly, on the whole lot—the lambs, cows horses and swine—when I was over in Chicago with a car load of shorthorn cows that had failed to produce any more, and some steers with them. I said to my commission man, "I guess I had better send up all the sheep I have got." He said, "I will look the market over and write you in a few days." It took pretty nearly a week before he had made up his mind; and before that I had made up my mind to stay by them. I said to my man when asked what I was going to do with those shorthorns, so many of them, I said, "Take better care and raise more of them." The last few years we had no trouble to sell shorthorns at seventy-five dollars a head. Let me say right here that the last hour before I left home, Mr. Gove, my great big neighbor over here, and another man as large as he, and another neighbor named Sullivan, dropped into my place a few hours before taking the train. They said they came to buy a buck. I sent my little boy, thirteen years of age, out to the barn to take the gentleman, Mr. Sullivan with him, to see if he could not sell him a buck. I told him, "Now, those are not for sale," two out of the three, and left them. I hope the boy succeeded in selling the buck, and that he has gone his way rejoicing with him. Well now, the question of wool our friend Wallace said nothing about. Three years ago I sold my wool in Philadelphia. I never sold wool for less than twenty-five cents a pound, and I was bound I would sell that wool anywhere in the world rather than drop the price, and so I sent it to Philadelphia where I got twenty-seven cents. I think a year ago I could have sold my wool for twenty-three cents. But for some very good reason it has dropped down to thirteen cents. I cannot afford to sell wool for thirteen cents. I suppose it must be from over production or on account of the drouth. Well, I see my friend here wants to talk sheep worse than I do.

PROF. WALLACE: One fact I overlooked, and that is that England does not require sheep to be slaughtered at the port of entry. Unlike cattle they can go inland; and I suppose it will be so until our exports are very large, when they will find some disease and require them to be killed. But at the present that is one of the encouraging features of the sheep business.

MR. KEGLEY: The thought strikes me very forcibly that possibly this very thing of the price of wool has been the cause of us neglecting the quality of the mutton; that we have only one thing in view too much at all times, the price of our wool, and that by so doing we have sacrificed the very thing that we ought to have been building up. I have a flock of about one hundred and forty sheep, and to me it looks as if there is more money in selling those sheep at three cents a pound, to say nothing of what I get out of the wool, than there is in selling cattle at present prices; because I believe I can raise mutton cheaper than I can beef. This must be taken into consideration, that whatever we get out of the wool ought to be clear profit. We have to raise the hair upon the cow and the horse and get nothing for it. The wool on the sheep is simply a protection for it; and it does not matter much what we get out of it, it is all profit.

MR. NORTON: You must not speak of protection. We must keep out of politics. (Laughter.)

MR. KEGLEY: And I want to say this, that if it is true that we have been neglecting the very part that we ought to have been encouraging I think it is time that we begin to give our attention to mutton and build up something on this soil I verily believe is capable of being produced just as fine as in the lands in England. All we want is to try to raise the right kind of sheep, and it will be but a very short time until the wool sheep, the sheep known as the wool sheep, will be sacrificed on the market; there will be nothing left but the mutton sheep, and we will then go to work and raise something that people will call for and demand and we will get good prices for it in the future.

MR. NORTON: What would be a reasonable price?

MR. KEGLEY: Three cents a pound.

A MEMBER: I will say that I have been farming about twenty-seven years, and all of that time, with the exception of about three years, have had more or less sheep on the farm. I can say to-day that the few sheep I kept brought more money than anything else I kept on the farm. Of course, we differ in regard to the quality of sheep and the kind of sheep. I am in favor of a large kind, where I can get good fleece and good money. I bought eight head of Shropshires, mostly thoroughbred, and I am not going to sell them. I paid $85 for twenty-nine head. I think I could buy them for less now. About three weeks ago I was at a sale of one of the most successful sheep

raisers in our county. He is an Ohio man and sold out to go back to Ohio. I want to say there was one lot of twenty-seven yearlings—they are not what they call the Merino, they call them Black Top, and those twenty-seven sold at $1.67 a head, on six months' time. There were one hundred and eighteen lambs; they had been starved, they were small, but good stock, and they sold on the average for eighty-five cents a head. It is simply because people are disgusted with sheep, and cattle are all going the same way. I believe the man who will stand by sheep will be on top in five years to come. I never saw cattle so scarce in Iowa as they are to-day. Every man is selling his cows, heifers and calves down to about three or four milk cows. Down in Wapello county I know of one man who bought some forty head of cows, calves and heifers, some weighing fourteen hundred pounds, all for $20 to $21 dollars a head. We have only half a crop of corn, we have on the average a half ton of excellent hay to the acre, and we have good pastures, and will have for the next nine weeks. There is no need of selling this way. But when one man sells, his neighbor sells, and they all sell. I tell you we are going to have such a cattle, a sheep famine as we have never had before. I want to say, gentlemen, that every man who has got good sheep, ought to keep them, and get more of them, and I believe he will be on top.

MR. BAKER: I know from experience in my boyhood—my first money was in chickens—then I went from that to lambs, and then from that to sheep, and then I got them by the score—rare fellows, big enough to ride. And what beat me in the sheep business was, two of those big fellows got together, and I determined my sheep should not fight, and I tried to separate them; I got between their heads and it gave me such a shock that I never liked them since. (Applause and laughter.)

MR. SMART: I have not had much experience with sheep, but what little I have had has not been very satisfactory. A few years ago I started in with fifty head of good creatures, and then imported a few Shropshires. The first I bought I paid about $40 a head for them; I got six at that price. Then I got nine at $33. But I started in the business too late in life. I had too many other things on my hands on the farm. I had horses and shorthorns and hogs. I dropped the hog for the sake of the sheep, and last spring I started in to get rid of my sheep; not because I was tired of them, but because I had been disappointed in being able to get the amount of fence I wanted.

The first I put up with two foot pine pickets below, and barb wire above. They were no earthly account. Anything would break them. I finally got some white oak from Minnesota and that was the kind I wanted. But the question was whether the cost of the pickets would justify using them. I made up my mind to sell the sheep. I made a contract with a man for my entire flock. The grades he would allow me $8 for, and for my registered sheep he allowed me $25 a head, if I took Dakota land at $27.50 an acre. It took some four or five weeks to close the trade; and before the sheep had left my farm, I concluded to ship them to Chicago and did not make the trade. I saw that if I did not get rid of them they would ruin me. They were going to take every green thing on the farm, and would leave my cattle and horses in poor condition for the winter. I got rid of them in that way, not because the sheep in ordinary circumstances would not be a good investment, but because they nipped off everything, smoothed off everything down to the roots. The bluegrass is nearly all killed out. I have one lamb still on my place, that had a broken leg when the others went, and that is all I have.

Motion to adjourn until 6:30 seconded and carried.

Meeting adjourned:

EVENING SESSION.

THE PRESIDENT: We will open our meeting with "Have the Farmer and Stock Grower Sufficient Protection from Disease?", by Professor Stalker, of Ames.

HAVE THE FARMERS AND STOCK GROWERS SUFFICIENT PROTECTION FROM DISEASE?

BY PROF. STALKER.

Mr. President and Gentlemen:

This is a question that may be briefly answered. If no further comment is presupposed in the query, "No" will answer it. If, on the other hand,

the inquiry calls for a bill of particulars, the case is altered entirely. A complete analysis of the laws looking to live stock sanitation, with all that might appropriately be appended in the form of "doctrine, reproof, correction and instruction," would involve no small part in a course of law lectures. By answering the question negatively I do not mean to imply that our farmers have been entirely overlooked by legislators. They have not. The legislator is always willing to "risk one eye" on the farmer. A good deal has been done in his especial interest; more has been attempted. But in many instances the machinery erected for his protection and the possible results it can accomplish suggest the placing of a battering ram to smash a fly on the wall, while he goes unrelieved of swarms of evils. Much of the legislation intended for the protection of the farmer has been suggested by a single instance occurring under the observation of a representative or a senator, and the patch is made just big enough to cover up that rent while there are unseemly exposures unattended to.

Allow me to illustrate: A few years ago the introduction of what is popularly known as "Texas fever" was of frequent occurrence. In a certain district cattle from the Lone Star state had been responsible for the introduction of the disease, and serious loss. A legislator's constituent had been aggrieved, and the fact suggested the remedy. A bill was framed reciting that "When anyone bringing any *Texas* cattle into this state," etc., etc., and then proceeded by suspending the pains and penalties of an outraged law over the head of the offender. In due time a cargo of cattle was turned loose on one of our Iowa commons. In fifty-two days thereafter, destruction was wasting at noonday. Herds of home-grown cattle were going down like Celestials before the waspish little Japanese. Here was a case under our new law. Suit for damages was brought. The defense showed conclusively that their cattle did not come from *Texas*, but from the Indian Territory. The law was directed against the stock from the one state. The prosecution failed. It was found the machinery was adjusted to smashing a fly on the wall, but for nothing else. The law was afterwards amended, and made comprehensive enough to punish the party responsible for the introduction of Texan fever, no matter from what part of the infecting south he made his shipment.

Much of the legislation for the protection of the live stock interest is of the kind referred to, well meant but inefficient. Protection of the farmer has come to mean, in a large sense, protection against himself; or protection against others of his calling, which in effect is the same thing. A great deal of what the farmer sells finds its way back to his table. He sells milk and buys butter and cheese for home consumption. He sells his cattle by the car load, and buys back a portion of the products in the form of canned meats and single steaks. He empties his pig pens at a single sale, and goes to the retailer for sausage and chops. If he sells infection at wholesale, he buys back disease in the small; if he markets measles or tapeworms and cysts of trichina, the parasite returns to plague the seller. If this system does not prevail always and everywhere it is unquestionably one of vigorous growth in modern times. While the farmer may regard laxity of meat inspection and want of sanitary police regulations as favoring his side of the question, a more comprehensive view of the subject will not warrant such a conclusion. The seller of any form of food has filled the requirements of the law as laid down in section 4035 of the Code, if he informs

the purchaser that the same is diseased, though the infection may destroy his entire family.

Every legitimate measure that tends to the eradication of disease, and the exclusion from our markets of every form of questionable animal product, redounds ultimately to his benefit, as well as to his personal safety.

But possibly someone is sparring for an opening that will enable him to call me to order and remind me that I am taking my topic in an altogether too literal sense That protection of the farmer and stock grower was meant to apply to the protection of his flocks and herds, and not to himself and family; I accept the correction, and will give attention to the outdoor portion of his kingdom.

A number of special acts have been passed, looking to the correction of certain evils, that in part reach their aim, but in a large measure fail of the results intended. For instance, most of our statutory regulations intended to prevent the spread of disease through barter and sale of diseased animals or their products, are rendered measurably in-operative through the criminal-knowledge provision of the act. To illustrate my meaning: Section 4056 of the Code provides, "If any person *knowingly* import or bring within this state any horse, mule or ass, affected by the disease known as glanders," or "Shall trade or offer for sale or trade any such horse, mule or ass, knowing the same to be so diseased," etc. Then come the penalties. The conscienceless wretch who has disposed of such a brute can in nearly every instance evade the punishment of the law by setting up the claim that he is not an expert, that he does not know the nature of diseases; that he does not know the symptoms of the disease in question. The statute simply provides a loophole through which the culprit may escape.

Adequate penalties are provided against traffic in swine that have died from hog cholera or swine plague, or allowing carcasses to remain unburied or not otherwise properly disposed of. But there is no guarantee against traffic in living swine in condition to communicate the disease. I know of a half-dozen farms where the disease was conveyed by a single shipment, but there was no statute to cover the case. I have known a farmer to lose $4,000 worth of hogs from disease communicated through an infected car to a single pig, which contaminated the entire stock of the farm. Yet any remedy under the statute would be very uncertain redress.

I embodied my own notions of a practical system of protection, in the form of a bill which I had introduced in our last general assembly. The bill met the unanimous approval of both house and senate committees, to which it was referred, but complimentary resolutions and other important legislative work kept it so far down on the calendar that a vote was never reached. I present herewith the body—the dead body of the bill:

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. The board of health of any incorporated town or township within this state, is hereby empowered and it is made a part of their duty to provide for the control and suppression of hog cholera and swine plague as specified in this act, and their compensation shall be the same and provided in the same manner as for other services.

SEC. 2. Whenever the local board of health of any town or township is informed of the existence or probable danger from hog cholera or swine plague within their jurisdiction, it shall be the duty of such board to repair at once to the premises where the disease is alleged to exist, and if it is found that such disease does exist or there is manifest danger of its development, it shall be the duty of the said board to establish quarantine over the premises where the disease exists or is liable to exist.

SEC. 3. Whenever a board of health is unable to determine whether the disease in question is or is not hog cholera or swine plague, they shall call on the state veterinary surgeon in the manner now prescribed in chapter 189, section 5, acts of the twentieth general assembly, and it shall be his duty to investigate and report to the said board as to the nature of the disease.

SEC. 4. The local board of health shall have the power to establish quarantine for a period not to exceed six months immediately following the date on which hog cholera or swine plague has existed on any premises, and any violation of quarantine notice shall be punishable by a fine of not less than fifty nor more than one hundred dollars.

SEC. 5. Any person or persons, or any agent, servant or employe of any railroad or other corporation, who shall carry, transport or ship any hogs into or within this state; or any owner, controller, lessee, agent, or employe of any stock yard or other inclosure for the detention of swine, shall receive into and ship, transport or drive away from any enclosure swine which are in condition to communicate hog cholera or swine plague, or shall expose any healthy swine to contagion from bedding or other infected material, shall be guilty of a misdemeanor, and on conviction thereof shall be fined not less than fifty nor more than one hundred dollars, or be confined in the county jail not more than ninety days, and shall be liable for all damages resulting from such exposure.

SEC. 6. The local board of health shall require such disposition of all carcasses of hogs which have died from swine plague or hog cholera, and of all bedding and other infected material as will insure against infection from these sources.

SEC. 7. For the purpose of carrying out the provisions of this act, there is here appropriated out of any moneys in the treasury not otherwise disposed of, two thousand dollars, the same to be expended in the same manner as now provided in chapter 189, acts of the twentieth general assembly, which amount shall be in addition to that now provided by law.

SEC. 8. This act being deemed of immediate importance shall be in effect after its publication in the *Iowa State Register* and the *Des Moines Leader*, newspapers published at Des Moines, Iowa.

The state needs a wholesome law regulating the practice of veterinary medicine. I do not mean by this that all non-graduates of veterinary medicine, engaged in practice, should be put to death without benefit of clergy, nor that all possessors of these talismanic documents should be supported by special tax levied in their interest. But there should be lodged somewhere, in some competent hands, the authority to pass upon the qualifications of veterinary practitioners, graduates as well as non-graduates. A diploma is not a guarantee of qualification for practice. Any man with a livery stable and a copy of "Dadd's Horse Doctor" can begin the work of issuing diplomas to candidates who have successfully passed a practical examination in administering a dose of oil to a skeleton. The state is

to-day quite as much in danger from quacks with diplomas, as from those without such facilities for deception. It is not a week since a case came under my observation where one of this class caused the destruction of a fairly valuable horse, suffering from a decayed tooth, the supposition being that the animal was afflicted with some fearful malady. I have known a non-diplomaed quack to cause the destruction of a valuable team, during a time when the possession of a horse was not a badge of poverty, for a cause equally trivial.

A well considered and judicious law looking to the regulation of veterinary medical practice, would have a most salutary effect in many directions. It would give proper encouragement and recognition to the capable and ambitious young man; it would stimulate colleges now engaged in legitimate efforts to raise requirements and elevate the character of college work, and set the seal of disapprobation on a class of institutions that have no excuse for existence other than the personal benefits that accrue to the management.

THE PRESIDENT: This question is now open for general discussion. Is there anyone who desires to discuss that paper?

MR. BAKER: I would like to inquire of the Doctor if he can suggest any feasible remedy so that we may get justice done in cases of this kind whenever they occur, bringing it to a successful issue according to existing statutes now on record?

PROF. STALKER: I do not know whether I grasp the question.

MR. BAKER: As a remedy for this existing condition of delinquency in the matter of these contagious diseases you speak of in the paper you read.

PROF. STALKER: Yes, I can suggest a remedy. However, the remedy is not quite so easily gotten as suggested. I believe I have embodied in a brief bill a good many of the points that are essential in the controlling of one of the greatest scourges that we have to contend with—hog cholera. It was introduced in both the last house and senate, and one before these. In either one of these they approved of it, and not a single letter of the bill was changed. It was left just as written; but it was never reached on the calendar, and consequently no vote upon it was taken. I would say that in this bill I have attempted simply this: to use the machinery that we already have set up for carrying on civil government. That is to say, to use our local boards of health for the purpose of carrying into effect provisions of the bill. You can not convince the legislature of this state that any new machinery can be built up for carrying out this provision. It seems to me, however, to strike them more favorably, because it dŏes not involve a single cent of expenditure, except in occasional cases where the trustees of local boards of health might not recognize the disease. Then they are authorized to call upon the state veterinary surgeon as they do in horses and cattle. I think this would go far in relieving us of this scourge. Some of the difficulties of which I have spoken have been corrected, and remedies have been added in the way of improved legislation. In other instances the correction has not been. I have not cited by any means all of the difficulties that we have to encounter. For instance, the provisions of the law providing for the destruction of diseased animals is altogether inadequate. For instance, one section I reported of a cumbrous piece of statute, that whenever it becomes necessary to destroy an animal, to call upon the state veterinary surgeon, and he shall notify the governor who shall appoint two other competent veterinary sergeons, and their judgment shall be final. And then it may go into court and we cannot follow and enforce it. But at the same time we have gotten along fairly well, and have succeeded in eradicating some of the diseases in the state and they are greatly diminished. (Applause.)

THE PRESIDENT: Is there anything further on this subject? If not we will take up some of the papers we passed over because the gentlemen were not here to respond. The next will be "Practical Dairying" by Prof. Leighton.

PRACTICAL DAIRYING.

BY PROF. LEIGHTON.

There is at the present time two different methods in which dairying is carried on in Iowa. The old way of raising the cream by gravity and the more modern way of takfng the cream or milk to the nearest creamery to be made up into butter by a skilled maker. The latter has generally given the best satisfaction as it has taken the burden from the hands of the farmers' wives and one man now does the work for the whole community. But both of these systems have their disadvantages, the former from lack of conveniences for raising the cream, causing a great loss to the farmer, and the latter in the great expense of hauling the milk from the patrons to the creamery. The creaming of milk by the centrifugal method is one of the latest improvements adopted by creamery and dairymen everywhere, and that it is a success is proven by the number of machines in daily use. The

separator system has not only raised the quality of butter in Iowa, but has increased the quantity also. A separator, if handled correctly, will pay for itself in one year, whether it be a baby machine with a capacity of three hundred pounds per hour or one of the larger size with a capacity of three thousand pounds per hour. The next great improvement in these methods will be one that will lessen the expense of hauling the milk to the factory, and the baby separator is going to obviate this trouble some time in the future.

Creameries will be managed just the same as at present, only instead of the expense of taking the milk to the factory to be separated, each patron will have a hand machine and will send only the cream. This method has been adopted by Mr. Sutton, of Nebraska, in one of his creameries. He has furnished each of his patrons with a machine and has allowed two cents more per pound for butter fat than the regular price at his other creameries, and I am informed that it is very satisfactory both to the patrons and proprietor. That this system will be a great improvement over the present way there is not the slightest doubt.

The Babcock test has been found to be as accurate in determining the better value of cream as of milk. The only difference in the manipulation is to use a small amount of cream and a test tube with a larger neck.

In some of the northern creameries where the gathered cream plan is used they haul the cream from the patrons to the factory for three-fourths cent per pound for the butter it makes, while in this part of the state with the separator process it costs as much to get the milk to the factory as it does to get the butter to New York and have it sold. This expense could be greatly lessened by the use of the baby separator. Creameries that employ ten or a dozen teams at the present time could gather the cream with less than half that number, as it would only necessitate one trip over the road each day instead of two as at present. It would also lessen the expense of manufacturing, as one man can handle as much butter with the separator. It would also not need as many creameries in the same territory as at present. In some of the dairy countries one gathered cream creamery will handle the same territory that five or six separator creameries do at present.

Another advantage this system would have and undoubtedly one of the greatest benefit to the farmers would be in the better quality of the skimmilk. That is a big item, especially when feed is as scarce as it has been this year. To get the best results from the skimmilk the separator should be started about the same time the milking is commenced, or while the milk is at the same temperature as when drawn from the cow. The skimmilk can then be fed with the animal heat in it and will be found to be equal in value to that in which the cream has been raised by setting the milk in cold water, although the latter will be found to contain considerable more fat. The only difference at present of adopting this system is the price that is asked for the machines. But when they are placed on the market at about what they are worth there is no reason but what every dairy farmer can and should have one instead of only three hundred and fifty of them, as at the present time.

THE PRESIDENT: The discussion of this paper is to be taken up by P. G. Henderson. Is Mr. Henderson in the room?

MR. HENDERSON: Mr. President and gentlemen, if the discussion of this paper takes up no more time than the paper itself, we will certainly be passing along rapidly on our programme. But I quite agree with the paper in nearly every particular, and yet I am not sure that the proposition in regard to the practical use of the baby separator has taken the place of the creamery in a large measure; because the only means we now have of running the baby separator is by hand. Now, it is hardly practical to put this power against steam power, more especially in the denser settled part of the state where milk is abundant. Now, it may be practical where there is only, perhaps, one-fourth of the milk that there is in these denser settled counties where dairying has been practiced for twenty years, like Delaware, Jones, and several other counties in the northeast part of the state. And if there is anything that we must always keep in mind in making any product, it is the quality of it. I think that method of delivering the cream would perhaps deteriorate the quality of the butter; but there is no question but what these things are being solved, and what would be practical in one part of Iowa in dairying, would scarcely apply to the whole state, because we are so large. We know that the system of gathering cream was practiced, and was practical in some parts of the state, while in others it never was and could not be. There is no doubt but what the state is making great progress in the way of improved dairying, and in the quality of the product put upon the market. I believe that within the last five years the quality of Iowa butter, or creamery and separator butter, has been raised perhaps twenty-five per cent. Now, I do not think that it is best at this time, to take up the time of the convention with any lenghty discussion of this question.

MR. STOUT: This baby separator is used by hand power?

MR. HENDERSON: Yes, that is how it is used.

MR. STOUT: Well, is it practical to use a small power—a horse-power we will say, or a dog-power to run the baby separator?

MR. HENDERSON: I think it would be. You would have to use a tread-power.

MR. STOUT: I want to know about the baby separator. I think it should be used.

MR. HENDERSON: Well, whatever we use, we have to consider the amount of machinery we need, and the cost of it—the

cost of such a tread power, if you have to use it for that alone.

THE PRESIDENT: The question is open for general discussion. If there is no one who cares to discuss this subject further, we will pass to the next subject: "Where the Horse is At," by Hon. D. P. Stubbs, of Fairfield. Mr. Stubbs is not present, but the discussion was to be led by Professor Curtiss. Is Professor Curtiss here? Well, Mr. Cownie is here, and he is the next gentleman on the subject.

MR. COWNIE: Mr. President, I do not think there is anything to discuss.

THE PRESIDENT: The horse, and where he is at.

MR. COWNIE: Mr. President and gentlemen—I expected, of course, that Mr. Stubbs would introduce this subject, and then I might have been able to say something in reply in the way of a criticism of what he might say on the subject. We are all aware that the present condition of the horse business has been very unprofitable. While in Chicago last spring I went on the horse market and spent several hours there one afternoon. I had seen buyers in the country purchasing horses cheap. When I went down and looked at the sales, the sales that were being made, I was more than convinced that horses were cheap. Horses were sold, with the guaranty that they were perfectly sound, well built horses, well proportioned, four and five years of age, weighing fifteen hundred and sixteen hundred pounds, for $75, $80 and $85 a piece. Driving horses sold at from $100 to $115 a team. I was sitting there in the gallery where they were conducting the auction, with another cattle shipper, a friend of mine, when they were selling a driving team, warranting them to be sound and broke to drive single and double. Seventy-three dollars is all that was bid. I told my friend, "I am going down to buy that driving team. I will get me a cheap buggy and drive them home." They were up to $74 dollars when I reached the ring. I was surprised at the price paid for horses. One of the largest buyers and sellers in the city of Chicago told me that some days he sold, from Iowa, in the months of January, February and March, three hundred and seventy-nine car loads of horses, and that the market was largely in the south. The low price had induced southern buyers to come to Chicago; and they were purchasing those horses and shipping them south. Now, surely, with thousands of horses taken out of the state, and we know that there have not been as many raised for the last year or two as formerly—the

time must be coming when horses will again bring a better price. It will be precisely with the horse business as it has been with the hog business—when the state is depleted, the price will go up. I believed that just as fully when my neighbors were selling their hogs a few years ago, when hogs were cheap and corn high. I continued raising all I could possibly raise, buying corn when it was high and raising hogs. The time came when the hogs advanced, and the corn declined. Then those who had sold all the hogs they had for little, came around the country paying ten, twelve and fifteen cents for shoats, the very men that sold off the hogs. I am just raising all the horses I can now. It does not take a great deal to keep them, and I am keeping right at it, and I am going to stay at it; I believe that it is with the horse as with cattle and with hogs, that the only way to make a success of the business is to keep at it and keep improving. Now, a few weeks ago a friend of mine—some of you know him, Mr. Shaw who has charge of the Swift horses in the city of Chicago—I have known him from his boyhood—he was back here in our county, up around at my place, wanting to buy horses, and wanted me to go with him, and said he was willing to pay good prices if he could only get what he wanted. But, gentlemen, the great trouble is we do not have what they want. And to-day the farmers of Iowa are more eager to get low priced sire service than they are to improve their stock; and just as sure as we continue to pursue that policy in cattle, horses or swine, we are the losers. You cannot get the standard too high; breed for some particular purpose, and when you get that, and have style and action, there is no danger about finding a market for a good horse.

PROF. STALKER: It is very frequently said to me that the horse market is done, it is ruined; that the bicycle and electric and cable cars have utterly demoralized the horse business for all time to come. That is not true. If there are but few horses raised in the state, they must find sale at horse price. Horses will not be produced at less than it costs to produce them as now. So that if there are some uses to which the horse was formerly put which have disappeared, that class of horses will disappear; but horses will continue to be raised, and at as good a profit as ever. And if I were Mr. Cownie and had twenty or thirty head, and my neighbors would say "Can't sell horses," I think it would be a good time to raise them. It is true that one market for the horse has permanently disappeared

for a certain class of horses, and that is the street car horse. I do not see any special use for him. Of course farm work is to be done; that requires more horse flesh than all other purposes put together, and he can be used on the farm for all time to come; but we have not in view a good market for that class of horses at the present time. The bicycle does not cut any figure. It is not the man who drives fast horses that now goes on the bicycle. It is the individual who went on foot who uses the bicycle. It will require special breeding for particular purposes, as has been stated. A breed of horses for a particular purpose can be sold now. It will require the breeding of larger horses; and I find that the horse buyer will go as far to-day as ever, in order to get a first class heavy draft horse. If he knows where there is a draft horse, a good one, that will weigh from 1700 to 1800 pounds, he will go as far as ever to look at that horse if he knows the man wants to sell it. That class of horses will sell to-day for a price as profitable, for a price that will return just as large a profit as the steer; and I will make this prophesy here, that before the end of the twenty-third annual session of this organization we will see heavy farm horses selling at $200, just as they have in the past, and if this assertion will not prove to be correct I expect every man here to come and tell me that I was mistaken.

THE PRESIDENT: Is N. J. Harris in the room?

MR. HARRIS: The ground has been pretty well covered, and I do not care to take up the time of the convention. I will give way to Professor Wilson.

PROF. WILSON: I merely want to add to what has been so well said—because these remarks conform with my ideas of the horse and where he is at—that I will simply add one thing to it, and that is that we must feed for the coming horse. You can put about the same weight on the horse with the same amount of feed you can on the steer or hog—not perhaps quite as much as you can on the hog. But what fattens the hog is not always what we want for the horse. You must train him to eat something that is nourishing and growing. If every farmer will take as much care in the raising of the colt, give the same attention to good breeding and feeding as you do with your Poland China hogs, you can raise standard horses so that they will bring prices that will make it as profitable to raise them as the steer or hog. Now, whenever you can raise a first class horse, that requires good pasture, that requires good feeding,

and we can raise him cheaper than anybody else can. There is no reason why this should not be. This state of Iowa and locality have furnished the outside world with horses just as much as it is now furnishing the outside world with beef and pork. All the breeding we can resort to will not help us out if we forget to feed well. The well-bred horses of to-day have been produced through generations of good care and generous feeding. Our people are more at fault in regard to that than to anything else I can think of. You will find our people well forward, well to the front, except with regard to feeding. But we are not as a people generous feeders. Our dairymen are at fault in that direction. We have a few good men who are good feeders; but as a people we have not been feeding, and especially our horses. Those that are raised then are just the thing for the street car; and now that the street car is using electricity and smoke, these horses will have nowhere to go.

MR. PHELPS: I am breeding all the mares I have got, and I am going to keep right on doing it. This bringing up the colt, that is where I think a great mistake is. The first thing is in inferior breeding. Now, in regard to colts, I can take you right home to-day in our pasture and show you colts that are much better than those of men who have been breeding to the same horse I have bred to. The way I manage my colts usually is, along in the forepart of September I take my colts off and tie and keep them in the barn six weeks or two months until they are thoroughly weaned, until they tie well, and then I turn them out in the pasture until winter time. I want to say that when my horses weigh twelve hundred or fourteen hundred, in ordinary flesh, my neighbors' horses, the same age, won't weigh 1,000, simply because they weaned them and turned them out as they do cows. Some have as many as twenty, forty and even seventy horses on a farm down there in our county. I believe our township will average ten horses to the farm—ten horses surely to the farm; and half of them are of an inferior quality. If the farmers can get a colt for $3 or $5, that is where they go to breed.

MR. VANAUKEN: Mr. Chairman—I just want to ask a question of any of these parties here. What are the farmers going to do with the surplus horses, some ten horses on each farm; no use for them; have had no use for them the last year or two. What are you going to do with the surplus horses from now on until the price goes up? They are eating their heads off now.

THE PRESIDENT: I would like to ask a question myself. These gentlemen who are going to keep right on raising horses just the same as if the market were good, would you advise other people to do the same thing? Would you advise others to continue in this same thing?

A MEMBER: Yes, sir.

THE PRESIDENT: Would Mr. ——— advise others to keep on selling horses?

A MEMBER: That would depend upon conditions. If he had more than he can use, and feed being scarce, it might be impracticable for him to keep those horses for several years. I am not in that condition. The horses I have are young and will grow into money. I get far better horses to let them run. I do not often tie up my colts, never put a halter on them. Would not allow a man to halter-break a colt of mine. I do not believe in handling colts. I let them run as they will. And as far as having any trouble to halter-break them, I never have any trouble. And in regard to breaking them, I find that they are a great deal easier to break to work if they have never been haltered and led back and forth.

THE PRESIDENT: I asked if you would advise other people to continue raising horses as you do. The point is that you fellows are going to go on because other people are going out.

MR. COWNIE: It is always a safe business to do contrary to your neighbors. When they want to sell, it is a good time to buy. Do everything contrary to the great majority of people, and you are almost sure of success.

THE PRESIDENT: Mr. Baker.

MR. BAKER: We, some time ago, got up a lot of horses from Kentucky. They were beautiful animals, dappled bay and dark brown, with white faces and beautiful heads, and deep creases along down their backs to their tails; and whenever you undertook to caress them they would stand up so nicely. They were well bred and of scarce blood. We have now perhaps twelve or fifteen in the woods. I don't know how many. There are three span of horses that we use for the working men on the farm; but these that run in the woods and blue grass pastures are never fed, winter or summer. They have a hiding place from the wind, and those animals develop the most graceful and symmetrical bodies, and retain the pride and spirit that there is in the original stock that came from Kentucky.

Now, a gentleman wanted one of these horses. I told him he could not manage it. But he was one of those kind of men with a quiet temperament and steady nerve and patient that he could do mostly anything. He went up and patted this horse on the nose, and rubbed it under its jaw a little bit, and patted it and called it a good fellow; and soon the horse followed him off and he put it in my barn. "Now," he said, "I am ready to take off my horse." "One hundred and twenty-five dollars, spot cash," I said, He laid it down.

A MEMBER: When was that?

MR. BAKER: The day before I started to come down here. My horses will eat burr oak bark in the winter time. I do not have to feed corn at all. This man paid me the money, and I brought and left it with one of the store keepers at Farley—$125 for that unbroken colt. Those Kentucky Mambrino horses are magnificent stock. They are beautiful animals. You call them by name, and each in turn comes up to have its nose rubbed, The horse knows his owner, and he asks his master's will. The horse has brains, and reasons a great deal more than a great many will believe. There is one difficulty with our horses. They are entirely too fat to handle in breaking. They will hold a quart of water on their spinal column, and it will stand there until it gets hot.

A MEMBER: And all on bluegrass and burr oak bark?

MR. BAKER: On bluegrass and burr oak bark. (Laughter.)

MR. ELLIOTT: Mr. President—There has been a good deal said in favor of the big horse and the Kentucky horse. I represent a horse that is not big. I represent the small horse, the Shetland pony. I just want to say that he can be kept cheaper than any horse; he will eat anything but a tin can. They run out the year around. Last winter it was not convenient for me to keep them at home, and I wintered eighty head of ponies with a neighbor—kept them out until the first of April, and they came home in first-class shape. Out of my brood mares I have thirty-three colts. I have never sold a colt for less than $75 at weaning time. I have sold 125 of my ponies and got as high as $150 apiece for them through these hard times. Just the other day I sold a two-year-old colt, unbroken, for which I got $100, spot cash. If anybody can beat that little horse, let me hear from you. I want a better horse if I can find him, but I do not believe I can.

THE PRESIDENT: The next will be "Shorthorn Cattle as an Investment," by J. J. Smart, of Humboldt.

MR. SMART: Mr. President—I was in hopes you would not get to that.

SHORTHORNS AS AN INVESTMENT.

BY COL. J. J. SMART.

The subject assigned to me by Bro. Franklin might seem to one used to discuss the transformation of goat meat into mutton a very small affair. But to me it is really a serious matter, for I am tangled up with horses and hogs; and have been with sheep. But we are ready to admit that our investment in Shorthorns is the only investment in live stock we are entirely satisfied with. When we first commenced farming in Humboldt county everybody was wild on cattle, and we purchased young things wherever we could without reference to breeding or individuality, and we got a good many. About that time the scale was turning and we think the prices came down about as fast as our cattle grew ready for market, so that after a year or two's keep we got about what we paid for them, so we lost nothing but some interest and the feed and care we gave them. They were only grade scrubs, but we are out of them and intend to keep out.

We have tried horses, and now have a 5-year-old Onward with a record of 2:18¼. But with all that and the supreme satisfaction of riding after a good team, and throwing dust in your neighbor's eyes as you pass him, they are not to me a satisfactory investment, nor can we conceive that they can be to any man entering the business at 60 years of age.

We have tried sheep, commencing with forty-two head of imported Shropshire ewes and fifty grades, and we cannot conceive of anything more ornamental to a good farm than such a flock; but as an investment for profit, please excuse us. Ours are converted into South Dakota land. We know that we are on forbidden ground, and will say that we know they are a good paying thing for some folks, especially where they are situated so they can use hydraulic rams. In the ardor of our first love for sheep we had almost gone back on the hog, but we have repented us of the evil we had done and again restored the hog to his place as a rent payer. But he is nevertheless a hog.

For a number of years it has been a question if there was any money in Shorthorns, but it has also been a question whether there was any money in anything produced on the farm. Even 3-cent hogs with a cholera scare on did not look like a bonanza. We heard a Shorthorn breeder remark last week that the wheel that stuck on the flat spot is again turning and the flat spot is ascending slowly but surely. The late J. B. Grinnell, after he had been out west investigating the cattle business in the interest of the agricultural department at Washington, some ten years ago, assured us that

cattle were surely on the boom, as the beef eaters were increasing faster than the cattle. And while he was theoretically correct, the hurry to close out the large herds in the west has kept prices away below a remunerative point for beef. It now seems as if the bottom had been reached. Beef is on the rise and is higher than it has been for ten years, and we see no occasion for anyone to be discouraged, especially with the prospect before us of a turn in the political wheel that will revive our productive industries and give to the operative the means to purchase even a piece of soup meat, which thousands of them have been unable to do for the past eighteen months.

A Shorthorn of the best type is "a thing of beauty and a joy forever," and you can never have too many of them because, unless held by a scrub or half-breed man, they are always salable at good fair prices. It would be for the interests of our dairy friends to pay more attention to the Shorthorn, as we believe there are Shorthorns that as a dairy cow will compare with the best. For evidence of this we refer you to the cows our worthy friend Sheehan and Mr. Miller had in the Columbian test, and there are some of the same kind in all of our herds. They are like the Yankee horse in Kentucky—as good on fish as he was on game—they are as good for milk as they are for beef. We regard the Shorthorn the best investment a man can make in anything with life in it, except a good wife, and with that and a few good Shorthorns any well-bred young man is on the highway to fortune.

A paper on "The Horse of the Future" was read by Mr. Harris.

THE HORSE OF THE FUTURE.

BY N. J. HARRIS.

This is an age of specialisms. Every line of work has its specialist. The services of the horse are no exception. Hence the horse of the future must be bred for a special purpose. He must not only be bred for a special work, but more symmetry.

All along the line, from the child's pony to the powerful draft horse—the horses of sport included—horses will be bred so as to better qualify them for the services to be performed. The pony for diminutive size and docility; the saddler for beauty, grace and agility; the race horse for speed and endurance; the hunter for weight, carrying and staying qualities; the coach and carriage horse for style, beauty, grace, superior action and intelligence; and the draft horse for strength, patience, rapid movement at the walking gait, and the same love for his work that the runner or trotter has for his, and not devoid of a certain grace.

The question might pertinently be asked, when, where and how will this great change be wrought? I answer, in the Mississippi valley, in the near future, and by a judicious combination of all the good qualities of the

various so-called coach horses into one representative American coach and carriage horse, and all of the strong points of the imported draft horses into one symmetrical, active, typical American draft horse. Nowhere in the civilized world are the essential elements for the production of the ideal horse so abundant as in the country lying between the Alleghany and Rocky mountains. Iowa is the central point. In the language of the *Homestead:* "We have gathered from every civilized country the material which is lying around the site loose, and it only needs the wisdom of the trained architect and the skill of the builder, to say nothing of the labor of the workmen, to rear the structure that is clearly possible: viz., the typical American horse."

The breeding of horses is probably less understood than any other of the various farm operations. We make two glaring mistakes. First, we do not properly appreciate our native horses as foundation stock; and secondly, we place too much reliance on imported ones. Our native horses were originally imported from the various European countries, and were as good as could be had at the time of their importation. While the earlier importations were not increased much in size, there was an occasional infusion of thorough blood, which was no damage to their courage or endurance. We have no reason to think our common horses would degenerate in our climate, when we remember that the thoroughbred, after a sojourn of a few years in this country, goes back to his native home and takes the cake from his European cousins.

The American trotter, which has been developed by American enterprise and environments, can throw dust in any European's face. We can all remember the grand horses before railroad times that were used to draw those heavy stage coaches over our country roads at the rate of from eight to ten miles an hour, carrying, probably, a dozen persons, including baggage. How much better could our horses of to-day do? We have often heard our ancestors tell about the noble horses they used to drive over the mountains of Virginia and Pennsylvania, hooked to those ponderous freight wagons. The writer remembers of hauling goods from the Mississippi river in the fifties when we would bring from 1,500 to 2,000 pounds to the horse, often without our teams being shod. Not a very bad showing, considering the condition of the primitive roads. True, we have increased the size of our horses by late importations, but often at the expense of symmetry. Many of the earlier importations were ill-shaped brutes, and instead of being a benefit were an actual damage, inasmuch as with size they transmitted a weak spot. Since a chain is no stronger than its weakest link, a big horse without symmetry is not nearly as good as a smaller but more symmetrical one. If a certain sized bone is proper for a horse weighing 1,200, this same sized bone would be wholly inadequate for a horse weighing 1,500 pounds, and the latter's usefulness would be impaired in a like or greater proportion. If the larger horse should have any other one point equally weak, his usefulness would be equally impaired.

This lack of symmetry is what makes some men think a small horse is better than a large one. There is another lack of symmetry that is equally damaging; that is, a horse that can neither pull nor trot. The poor beast is draft in front and trot behind and, of course, is very disappointing. Another blunder is in supposing that all imported horses are full blood and

specially bred. This belief seems to be almost universal, when the fact is they have been bred, as a rule, indiscriminately. This may seem a broad assertion but it will not be disputed by those well informed on this subject. The various stud-books, for the so-called breeds of coach and draft horses, have all been started since the latter part of the seventies, and on such a plan that the would-be breeder has no means of knowing whether or not the horse of his choice is the product of some unsound, vicious, ill-shaped brute, or of a good-tempered, sound, symmetrical horse. If all horses were admitted to registry on desirable characteristics, performing qualifications and points of excellence, as well as blood lines, the published pedigree, as now required by law, would not only be an object lesson to the common breeder, but an index to the horse's real value. The scale of points would show the weak spots as well as the strong, and by a comparison of points the mating could be done intelligently. Not only a more symmetrical animal would be the result, but one of soundness and good temper. No horse possessing an ugly disposition or transmissible unsoundness, or bad conformation, is recorded in the American Register.

Since our horses have been bred so indiscriminately it is often difficult for even a good judge to decide which is the better horse to patronize, a coach or a draft. If the scale of points was adopted as above suggested, these questions could be easily settled by a comparison, and in a very short time every horse would have his proper place among the various utility horses. Then we would have horses for a special purpose, and more symmetrical.

The following letter from Mr. Lathrop explains itself:

IOWA CITY, October 16, 1894.

Geo. W. Franklin, Secretary:

DEAR SIR—Inclosed find a contribution I have made to the literature of our society.

I have been for the past two years entirely out of the stock breeding business, not even keeping a horse or cow, but I have not lost my interest in the business; I had intended to be at our annual meeting but business engagements take another way. Hoping you may have an interesting and profitable session. I am truly yours,

H. W. LATHROP.

A SCRAP OF HISTORY.

BY H. W. LATHROP.

Whence have we come? "Where are we at?" And whither are we tending? Are three very pertinent questions to be asked and as important to be answered.

In an attempt to answer the first of these questions in its relation to the breeding of horses, I do not propose to make the starting point Florida, where DeVecca landed forty-two horses in 1527, and where DeSoto did the

same two years later, or Canada, where the French introduced the horse in 1608, or Virginia, where the English landed him in 1609, or Massachusetts Bay where he was brought in 1629, or New York where the Dutch imported him in 1625, nor Illinois where the French had him in considerable numbers in 1650, but Springfield, Massachusetts, October 19th to 22d in 1853, when the United States Agricultural Society held its first national exhibition of horses.

This society was truly national in character, was presided over by Hon. Marshall P. Wilder, with a vice-president from each of the thirty-six states and territories; Wm. F. Coolbaugh, then of Burlington, being the vice-president for Iowa. The only other recognition of our state in that exhibition, was that in its published proceedings giving a list of the agricultural papers of the country, the names of James W. Grimes and J. F. Tallant appear as editors of the *Iowa Farmer*, published monthly at Burlington.

Horses were on exhibition from twenty states, and the number of entries was but little short of five hundred. There were fourteen classifications made, two of them being "matched horses," in which there were forty entries, each span weighing from two thousand to twenty-four hundred pounds, and "fancy matched horses" sixteen entries.

There were no distinct classes for trotting, running or pacing horses, and no premiums offered for speed at any gait, nor were any horses entered to trot, run or pace against other horses, their speed being shown singly and collectively on a half mile track, and no stop watch used to time them, and no announcement made of their speed. After the horses had been passed upon by the committee, the two classes of stallions, one of thirty-three entries and another of fifty-six, were ordered to pass three times around the track at the top of their speed, and then once around on a walk.

In the entry of stallions seven years old and over, of which there were fifty-six, but nine of them weighed over twelve hundred pounds, and two but nine hundred and nine hundred and fifty, their average weight being eleven hundred and thirty.

Of stallions from four to seven years there were thirty-three entries including one Canadian weighing fifteen hundred and fifty pounds, the heaviest horse in the show.

Draft horses, called farm teams, of which there were four entries, were tested by hauling fifty-one hundred pounds of pig iron on a wagon weighing seventeen hundred pounds. The committee on this class was headed by a clergyman, and the report says: "The trial of these horses took place on the northern parts of the ground, and we cannot fancy a more faithful committee than our friends who trudged for four hours to and fro in the rear of this pig iron, not finishing their labors till long after the crowd had gone home to dinner."

Of geldings there were one hundred and nine entries, and it was stated that some of them could trot a mile in 3:20, a gait considered then quite fast.

There were forty-eight entries of brood mares, and but eleven of them weighed over 1,000 pounds and one but 800. Deploring the diminutive character of the stallions, the report says: "The want of size in the stallions—though in most cases to be deplored—would not cause so much regret, if we could hope for the next generation for the superiority of the

mares to be served by them. But alas! The mares, as a general thing, are unworthy of the smallest and least excellent of the stallions." Such were the horses of the country forty-one years ago.

As an entertainment for visitors, in the place of the speed ring of to-day, there was a grand entree of 400 horses in twelve classes; the whole half mile track was covered with prancing steeds in the fullness of life and vigor—one half mile of animated strength and beauty—twice around the track, it was a maze of eccentric motion bounded by a whirling circle.

Only seven of the horses, and they thoroughbreds, had recorded pedigrees, and the other stallions and brood mares were referred to as belonging to the family of their immediate or near ancestors, as Highlander, Kentucky Hunter, Hickory, etc., but among the brood mares twenty-two were Morgans, eight Blackhawks, and three Messengers. Among the geldings, thirty-one were Morgans, eleven Blackhawks, nine Messengers and four Hambletonians. Among the stallions, fifty were Morgans and twenty-two Blackhawks.

Another committee says: "The small size of our horses is an evil that is great and growing (like a cow's tail, downward)."

The exposition closed with a banquet at which plates were laid for 1,773 guests, and at its close speeches were made by Abbott Lawrence, Governor Seymour, of New York; ex-Governor Floyd, and Hon. John M. Botts, of Virginia; C. P. Holcomb, of Delaware; ex-Governor Colby, of New Hampshire, and others. In his speech the president, Mr. Wilder, speaking of the horse said: "Of this noble animal, probably the world never witnessed a better and more extensive exhibition than it has been our privilege to examine on this occasion."

I cannot but note the changes that have been made and the improvement that has taken place in the speed of our trotting horses and the weight and strength of our draft horses in the last forty years in this county (Johnson).

The highest rate of trotting speed here in 1860, when Green's Bashaw made his record and beat Tom Hyer at the state fair, was 2:35. Since that time there have been two horses bred and raised here that have greatly lowered that record; Idolf, with a record of 2:13¾, and Fidol, a pacer, 2:10½. Draft horses have increased in strength and weight in like proportion, nor have our stocks of cattle, hogs and sheep been much if any behind the horses in the race for improvement.

LIST OF MEMBERS FOR 1895.

J. R. Sage, Weather Service.....Des Moines
B. F. Gove, Short-horns and Poland Chinas.....De Witt
W. M. Beardshear, President Agricultural College.....Ames
E. C. Bennett, Red Hogs and Dairyman.....Tripoli
R. J. Johnston, Poland Chinas and Short-horns.....Humboldt
John Fox.....Dallas Center
W. W. Vaughn, Short-horns and Chester Whites.....Marion
Prof. C. F. Curtiss.....Ames
A. J. Graves, Short-horns and Chester Whites.....Ames
Albert Lufkin, Short-horns.....Newton
Prof. James Wilson.....Ames
M. L. Manser, Morgan Horses.....Ames
J. G. Brown Short-horns.....Solon
John Cownie.....South Amana
A. A. Berry, Herefords.....Clarinda
P. G. Henderson, Red Polls.....Central City
F. L. Huxtable.....Mason City
Hon. S. B. Packard, Herefords.....Marshalltown
Alex R. Smith, Standard Food.....Audubon
A. C. Thompson.....Marshalltown
L. M. Van Auken, Poland Chinas.....Mason City
John Johnston, Short-horns and Poland Chinas.....Humboldt
Hon. L. S. Coffin, Short-horns and Shropshires.....Ft. Dodge
L. Smith, Cotswolds, Short-horns and Poland Chinas.....Keystone
E. F. Marsh.....Belle Plaine
E. M. Wyatt.....Lamoille
C. S. Carpenter.....Iowa Falls
Prof. D. A. Kent.....Ames
G. Jaqua.....Humboldt
John Manatrey, Short-horns.....Fairfield
Dan Sheehan & Sons, Short-horns.....Osage
C. W. Norton, Short-horns, Poland Chinas, Shropshires...Wilton Junction
A. A. McKittrick.....Humboldt
H. D. Parsons, Short-horns.....Newton
H. M. Reasoner, Jerseys.....Reasoner
Col. J. J. Smart, Short-horns and Standard Bred Horses.....Humboldt
J. R. Crawford & Sons, Short-horns.....Newton
J. P. F. J. Tjossem.....Dillon

Hon. A. C. Tupper.....Osage
L. H. White.....Martinsburg
A. R. Phelps.....Competine
L. B. Goodrich.....State Center
D. L. Howard, Poland Chinas.....Jefferson
J. H. Page.....Geneva
T. J. Kegley, Plymouth Rocks and Mammoth Bronze.....Ames
R. M. Lamson.....Fairfield
A. V. Stout.....Parkersburg
Eli Elliott, Shetland Ponies.....West Liberty
C. L. Gabrielson, Dairyman and Shropshires.....New Hampton
F. N. Chase.....Cedar Falls
D. R. Hubbard.....Des Moines
F. P. Wylie.....Boone
V. O. Holcomb.....Boone
Hon. P. L. Fowler, Secretary State Fair.....Des Moines
J. L. Bane.....Bondurant
E. S. King.....Grundy Center
Albert Needham, Short-horns.....Ida Grove
J. W. Hedberg.....Dayton
Hon. Parley Finch.....Humboldt
J. T. Brooks.....Hedrick
Hon. W. K. Boardman, Dairy Commissioner.....Nevada
H. G. Codd, Dorsets and Herefords.....Westfield
W. W. McClung, Poland Chinas.....Waterloo
C. L. Dahlberg, Stenographer.....Des Moines
Hart & Fuller, Short-horns and Poland Chinas.....Kalo
Capt. W. A. McHenry, Aberdeen Angus.....Denison
Geo. S. Redhead, Herefords.....Des Moines
A. Cooley & Sons, Short-horns, Shropshires and Poland Chinas.....Osceola
Phil S. Kell, *Iowa Turf*.....Des Moines
John Wragg & Sons, Fruit and Ornamental Trees.....Waukee
Hon. Oliver Mills.....Lewis
Hon. B. R. Vale, Chester Whites, Holsteins.....Bonaparte
W. D. Pratt, Short-horns.....Anita
J. B. Peterson.....Creston
J. W. Bopp.....Hawkeye
C. F. Robe, Short-horns, Poland Chinas, Plymouth Rocks.....Jesup
J. F. Morris, Shropshires, Poland Chinas, Short-horns.....Ireton
H. Cade, Red Polls, Plymouth Rocks.....Lenox
B. S. Brown.....Hampton
Barnett Wilson, Short-horns, Cotswolds.....Earlham
B. R. Bohart, Woven Fence.....Cedar Rapids
Wm. R. Matthews, Roadsters, Short Horns.....Sully
A. Fallor, Short-horns, Red Hogs, Carriage Horses.....Newton
D. M. Hayden.....Ames
Hon. John McHugh, Short-horns.....Cresco
Daniel Leonard, Sheep.....Corning
A. J. Blakely, Short-horns, Merinos.....Grinnell
Hon. C. C. Carpenter, Short-horns.....Ft. Dodge

Wadsworth Bros., Standard Bred Horses ..... Algona
G. W. Snoor, Polled Angus ..... Mt. Auburn
Hon. D. P. Stubbs, French Draft ..... Fairfield
Geo. W. Franklin, Suffolk Sheep, Chester White Swine ..... Atlantic

THE PRESIDENT: Ladies and gentlemen, I desire to thank you for your attendance and for the interest that you have manifested in these discussions. I desire to meet you again at our next annual meeting, which will be held at Osage. I am sorry that the President-elect is not here. I desired very much to introduce him to you; but I discovered a few minutes ago that he has taken his overcoat and has left the room. I simply desire to thank you all for your attendance and kindness.

The meeting now stands adjourned.

APPENDIX.

IOWA SHORTHORN BREEDERS' ASSOCIATION.

OFFICERS FOR 1894.

PRESIDENT.

R. J. JOHNSTON.....Humboldt.

VICE PRESIDENTS.

JOHN MCHUGH.....Cresco.
H. D. PARSONS.....Newton.
A. C. COOLEY.....Wilton Junction.

SECRETARY AND TREASURER.

C. W. NORTON.....Wilton Junction.

DIRECTORS.

J. C. FRASIER, (one year).....Bloomfield.
L. BRODSKY, (one year).....Plover.
T. R. WESTROPE, (two years).....Harlan.
B. L. MYERS, (two years).....Corning.

PROGRAMME.

TUESDAY, 7 P. M.

Welcome, JAMES WILSON.
Response, COL. JOHN SCOTT.
President's Address, R. J. JOHNSTON.
Appointment of Committees.
Enrollment of Members.
"The future for Shorthorns," JOHN MCHUGH, J. P. MANATREY.
My "ideal," or the general purpose cow, PROF. C. F. CURTISS.
Care of stock from first to last, R. BAKER, PROF. KENT, CHANDLER JORDAN.
My favorite breed and how I feed, BEN ELBERT, MARTIN FLYNN.

WEDNESDAY, 9 A. M

The silo—Is it the thing? C. S. BARCLAY, C. L. GABRIELSON.
The Shorthorn of to-day—His past and future, PROF. JAMES WILSON, T. R. WESTROPE.
Cattle diseases—How to prevent and cure, DRS. STALKER, TILLIE AND TUFTS.
"Bacteria," its effects, etc., PROF. HENRY WALLACE.
Secretary's report.
Election of officers and report of committees.
Question box.

IOWA SHORTHORN BREEDERS' MEETING.

The Shorthorn breeders of Iowa held their annual meeting the day before the opening of the Improved-Stock Breeders' meeting at Ames. The association was called to order with President R. J. Johnston, of Humboldt, in the chair, and C. W. Norton, of Wilton Junction, secretary.

Prof. James Wilson welcomed the association in a strong and cordial speech, fittingly responded to by Col. John Scott.

PRESIDENT'S ADDRESS.

BY R. J. JOHNSTON.

Gentlemen of the Shorthorn Breeders' Association:

The year of 1894 will be one that will long be remembered by the people of the great state of Iowa. It might well be termed the year of "industrial armies" instead of locusts. For a while it looked, to a casual observer, as though the only product we would have for sale would be sunshine, and as over production has always been one of our causes of complaint, it seemed to have a giant hold on this production. But as hard as its burdens were to bear it may all have been for the best. It has taught us a lesson not soon forgotten. It has served notice on the Shorthorn breeders of Iowa not to depend on the one crop of grass and hay alone. We have learned to prize its greatest crop only the more and to-day corn stands doubly crowned king. There is one man in Iowa who, whenever the question in regard to feeding hogs on something else besides corn would come up for discussion, would always get up and make a speech for corn. He was always the friend of corn and I think I will take a stand with him. What better thing can we have to help out our Shorthorns in mid-summer than a patch of sweet corn. And right here I wish to make a prediction that the corn shredder and silo will be the main hay now for the cattle industry of Iowa in the future. Now as to the future of the Shorthorn breeders of Iowa, and I will end. It is a well known fact that cattle of all kinds are getting scarce and scarcer in Iowa every year and the quality is getting poorer year after year. This state of affairs will come to an end sometime and that time is coming fast.

It is almost impossible for a man to buy a good car load of feeding steers in my part of the state. If the cattle of this country are sent to the shambles as fast in the next five years as they were in the last, cattle will be imported into the United States for our use in the markets of the country, so that I will say to the Shorthorn breeders of Iowa, that to him who will wait, I think there is a prosperous future.

The first subject taken up was "My Ideal, the General-Purpose Cow." On opening this discussion Prof. C. F. Curtiss said that as the subject was not of his own choosing, he would say at the outset that the general-purpose cow was his ideal only for general-purpose conditions. Stockmen are confronted by conditions which determine whether the general or the special-purpose cow is required, and in what line production should extend. The Columbian dairy test has broadened our views in regard to the cow. It has been demonstrated that cows do not consume feed in proportion to their weight, as some have advocated, and that the small cow is by no means always the most economical producer. Evidence of this is furnished in the records of the Columbian tests. The best cows, even of the Jersey herd, were large, deep milkers of good form and strong constitution. It is impossible to secure milk and beef qualities combined in the highest degree attainable in either alone, but they can be secured in a highly practicable and profitable degree, and no breed is superior to the Shorthorn for this purpose. We can show you grade Shorthorn calves under experiment here not yet thirteen months old that average over 800 pounds, and they are out of heavy milking Shorthorn cows.

SHORTHORN OF TO-DAY—HIS PAST AND FUTURE.

PROFESSOR JAMES WILSON.

If you go into the great cattle markets of the country and look them over you will find that ninety-nine one hundredths of them are Shorthorns. If you will inquire into the kinds of cattle that are shipped across the country, that bring so much to us now, you will find that they are nearly all Shorthorns. The Shorthorns are developed like nearly all other animals by their environments, pastures and the like. We find that the poorest cow comes from the scantiest pastures. They are small animals because they come from poor pastures. The Shorthorns are from the best fields. They are large because they are well developed. We heard last night from one of the speakers that the "winning cow was the Shorthorn."

It is well to know that men who are well fed and well developed are the most comprehensive in mind as well as best developed in body. The beef eaters of this country and others, rule the world.

Now I do not say the Shorthorn is the only animal we can raise. For excellence of beef purposes the white faced Hereford and the Polls are excellent. I believe the time is coming when the cow will be the center of the farmers' systems, she will be the milking cow and she will give work to those wanting it.

The Red Poll is an excellent common purpose cow.

We have got the milking Shorthorn and the skim-milk calf here that suit many Iowa conditions.

Mr. BAKER: I want to endorse all that Professor Wilson has said with an emphasis that there is a great deal of money in it.

CARE OF STOCK FROM FIRST TO LAST.

D. A. KENT, R. A. BAKER, CHANDLER JORDAN.

PROF. KENT: If we are to consider this question from first to last, the first consideration will be that of sanitation. When a great general pitches the tents of a large military camp he looks well to the air drainage and the ground drainage of his camp. The stock men should enter his field of work with the same care and caution. To illustrate the danger that lies in this direction, take for example the thousands of dollars that have been lost in the management of sheep by reason of foot rot. Lost because the sheep were herded and yarded in muddy places. Sheep growers from the arid regions of Dakota where sanitation is perfect in the field of nature can go to Wisconsin where the feet of sheep are rotting and buy large flocks at diminutive prices, ship them out onto the high Dakota prairies under the salubrious atmosphere of that dry region and find their animals healing without medical treatment; thus proving that good sanitation lies at the foundation in the management of sheep.

There is such a thing as sanitation extending out into the pasture. You may have bad sanitation in a field of forty acres as well as in a small lot. In a field of forty acres you may turn forty head of sheep, twenty or thirty hogs, a number of cattle and horses; under such conditions you cannot expect good sanitation. You should give the pasture field sanitary attention as well as the cattle yard. Moreover, if you crowd sheep, hogs, cattle and horses into a field, the horses will run the sheep down, break their backs and impose great injury upon the pigs; the cows will horn the hogs; the hogs will eat the lambs, and everything would go topsy turvy. These animals do not herd together in nature, neither should they be required to do so under domestication.

Mr. JORDAN: Would you have no sheep at all in a large cattle pasture?

No Sir. I will have the cattle, sheep and hogs each by themselves.

Q. How large a flock in the pastures and how large a pasture would you want?

From six to ten head per acre. Sheep will herd together in large numbers, but it is understood that the smaller the flock the better they flourish. With good sanitary conditions provided, the question of feeding comes up. Management is here governed by the purpose for which the animal is kept. If it is to be hurried off to market, then the forcing system of feeding must be adopted. If it is to be turned to breeding account then the forcing system must be avoided, and it must be fed to develop and maintain vitality. However all young animals should be well fed and especially the males. If speed or work is the requirement in the life of the animal the system of feed should be about the same as in the breeding career except that the ration should be less succulent.

It must be remembered that the young animal can turn the feeds into flesh and fat with greater facility than the older one. As age advances the digestive and assimilative powers weaken. The animal inclines to bolt down its feed with less thorough mastication and therefore more feed escapes digestion and resorption. It is also a well known fact that as the per cent of the fat increases in the animal body the fat of the muscles and the organized fat is stored with greater difficulty. Hence the nutritive process should be stimulated with food more palatable and richer in protein elements. The sanitation of feeds is also of great importance. The animal economy is ever waging with the disease germs and the more of these germs that are allowed to pass into the system with food and drink the more will the nutritive processes be weakened by the efforts of the blood cells to destroy the infectious germs. Therefore, pure food and drink, as well as pure air are absolutely necessary to the highest attainment in the growth and development of an animal. Were it is possible to thoroughly disinfect the air the animal breathes, the food it eats and the water it drinks, the system would be relieved of the great burden of its life and the process of its growth would go on with remarkable development.

MR. JORDAN: It seems to me Professor Kent has gone over this ground. Well, I will have to imitate Father Baker and tell a story. The father told the son he could not teach him to spell "luck;" the father said it was spelled "c-a-r-e;" and I think this is the sum and substance of this question, care, from beginning to end. As Professor Kent has said before, with us, in all that he has spoken of the care of yards, cattle, stock, etc., necessitates care.

Q. Mr. Jordan, give us your system of feeding.

A. In the first place I would be particular in getting a dam, think to possess as much quality as possible; then I would get as good a male as I could find, and he should have quality; then if they should produce offspring I would see that it was fed properly and I would attend to the care of that animal through its life.

Q. Do we understand you mean moderation in feed from first to last?

A. I would increase the feed in my judgment, that the animal needed. Of course, if you feed it right in the early day it will soon become strong, and it will require more and stronger food; and I would feed the calf on the food that would best develop it.

MR. COFFIN: Professor Kent has given us some good points, but I want to say the farmer can keep—and every farmer that is here should keep—a few sheep with his cattle. I want every farmer to keep a few sheep with his cattle. I take this ground. I have forty acres of pasture that I would just as soon have ten or fifteen sheep in as not to have them. The nicest sheep that we have in these flocks are the best that we have in these lots.

PROF. KENT: I have no objection to three or four or a dozen of sheep running with a few cattle, but if you take up the business of raising sheep and the business of raising cattle, I raise the objections.

Q. Do you believe in dividing the pasture and rotating the fields whenever you can?

A. Yes, sir.

The topic, "The Future for Shorthorns," was laid over until the "Shorthorn of To-day" was discussed, on account of Mr. McHugh not being present.

Motion for five minutes recess.

Motion carried.

CATTLE DISEASES.

DR. M. STALKER.

Yesterday morning a little fly-leaf was handed me with my name on it in connection with the topic that has been announced. It was the first time I knew my presence was expected at this meeting. As the author of "My Double and How He Undid Me" has said, "There has been so much said and on the whole so well said, that I will not detain you longer." A thorough discussion of this subject would involve the covering of a good deal of ground. Dobson, Clayton and others have contributed many volumes without exhausting the subject.

The cow is rather an obstinate animal to contend with in examinations for disease. She does not respond so readily to examinations and tests as does the horse. Neither do medicines act so promptly and efficiently as with equines. However, probably the more important question for us to consider is how to prevent disease. The treatment of disease is largely the veterinarian's business, as it is the business of the family physician to treat the human patient. You are engaged in other occupations. But some general knowledge on this subject will be of value to all of us. Something has already been said on this topic and well to the point.

I am not disposed to sound any false alarm, or give any color for the erroneous supposition that our cattle are extensively affected by disease, or the industry threatened by its probable appearance. Holding the position I do I naturally hear many complaints. Every mail brings an inquiry or a petition for relief, but it must be remembered that my clientage is a very large one, and that it would be a remarkable fact if there should be one day in the year when every member in the immense family should be entirely free from every form of ailment. All the complaints and a knowledge of all the griefs come to me, and it would not be a matter of surprise if one should sometimes come to the conclusion under these conditions that all the animals of the state were diseased; but the facts are, the general health conditions are excellent. Here and there an infectious disease finds

its way to a herd and may prove a serious matter to the individual owner but the general industry is not thereby perceptibly affected.

It is a fact that a number of herds in the state are affected with tuberculosis, probably a good many more than have yet come to my certain knowledge, and probably this is the most serious question we have to deal with just now. This is nothing more nor less than what is known as consumption when affecting human beings. It belongs to the infectious type of disease, as insidious in its nature, and under conditions favoring its spread will ultimately undermine the herd. Animals handled on the open ranges or under the conditions they are ordinarily kept on Iowa farms are not in such close contact as to favor the spread of the disease, and under these conditions it is possible for an individual to sicken and die without communicating it to its fellows. But where animals are closely housed the facts are different.

A tuberculous animal cannot be crowded with other animals into close, damp, ill-ventilated quarters, without becoming the center of a more or less general infection. I recently had occasion to observe some facts in confirmation of this statement. A dairy herd of fifty-one cows was kept in a close banked barn. The building was new and kept in a very fair condition; but the air space and provisions for ventilation were totally inadequate. Tuberculosis had by some means been introduced into the herd. A careful investigation proved that thirty-eight out of the fifty-one were affected with this deadly disease. It was found that in the most imperfectly ventilated portion of the building nearly every animal was affected, while those near doors, windows or other apertures had escaped infection in larger numbers. I have found that dairy herds are particularly susceptible to this disease, and this is doubtless due to the fact that nearly all this class of stock is closely housed and in many instances in ill-ventilated banked barn. I have not seen all the barns in Iowa, but I have seen very many of them and I have to find the first one that I regard as affording proper sanitary conditions for a dairy herd, packed as they usually are almost as close together as they can stand over the entire floor space. The ventilation is always imperfect and the amount of space allotted to each animal entirely inadequate. Human beings placed under conditions no more favorable for ventilation would be expected to die the first week under such confinement.

When farmers are engaged in any branch of cattle business involving the close confinement of their herds, the closest scrutiny should be exercised against the introduction of a tuberculous individual. This is a lesson that some of our breeders of blooded stock cannot learn too thoroughly or too quickly, and I would utter a word of caution to those who contemplate the purchase of breeding animals to mix with their herds. Do not trust alone to the healthy appearance of the individual. *Know* that it is not tuberculous before you hazard large and valuable interests.

Lumpy Jaw or Actinmcosis is a disease which has given our farmers a great deal of annoyance. I receive frequent letters making the inquiry, "Is it catching?" I have frequently found where one case exists in a herd, a number of others become affected. A sanitarian would not call this a contagious disease, but it is now a pretty generally recognized fact that it is one capable of transmission. Just how communication of the disease to the healthy individual is affected we do not very clearly understand, but enough is known of its nature to render it the part of wisdom for the farmer not to keep animals in suffering with the ulcerative condition of this disease in close contact with other members of the herd. Recent experiments and experience point out to more satisfactory control of this disease than we supposed possibly a few years ago. Moderate doses of iodide of potassium administered daily for one or two weeks have been found to act with curative effect to a rather remarkable degree. Many cases have made entire recovery and many others have been benefited by this simple method of treatment. I cannot hold out any such theurapeutic allurements in dealing with tuberculosis.

Legislation has done a good deal for the interests of Iowa stock growers. Much more could and should be accomplished. A simple statute holding all parties responsible who in any way directly or indirectly contributed to the introduction of Texas fever for the resulting damage, has practically banished that disease from the state. A few years ago cattle died by the hundreds every summer as a result of the negligent shipment of southern cattle into our state. I am not aware of the occurrence of a single case in the last two years. Placing the responsibility where it belongs has had a most salutary effect.

We need other and more comprehensive legislation of the same kind that without complicating the machinery of the state materially, or adding to the expense of administration, would work important reforms and lift many unnecessary burdens from the great live stock industry of this commonwealth.

MR. BENNETT: I am a little more afraid of the Jerseys than others, because they are good milkers, and is there not danger of tuberculosis from that breed?

A. I do not say the Jerseys would originate the disease more than any other animal, but the high grade of milking qualities the Jerseys have, I think would be more susceptible than the beef breeds.

Q. What are the early stages of the disease; that is, what are the suspicions?

A. I find that in many animals no expert could detect the disease in its first stages, even though a thorough test could be given to respiration, temperature and pulse. If you observe anything in the way of a cough, a special tuberculin test might prove that animal to have the disease. Any expert cannot go into a herd and pick out more than one animal in four. Probably the very first symptom you would be likely to recognize would be the cough, and yet no part of the body may be effected by the tuberculous deposit. It may be said with regard to the tuberculous infection, that I have observed in a very valuable herd a Shorthorn cow was lame, and I gave a guarded opinion that the animal was probably becoming affected with tuberculosis. She died some months after and an examination showed she died from tuberculosis. Some points in the formation of abscesses which interfere with the respiration, but do not lead to the formation of abscesses. When in a period of respiration the cough and a tucked-out tongue are at hand, there can be no doubt.

Q. MR. SHANNON: Do you pretend to say it is impossible to keep a herd of good cows healthy in a banked barn with proper ventilation, prorer care, proper sanitation and proper exercise?

A. I do not want to enter into an argument in regard to the banked barns. I think most of the men in this audience will go home and will come to the conclusion that he has sufficient light and ventillation in his banked barn. I do not regard it as a safe place to keep cattle for the most part of the twenty-four hours as tight as they can be packed. Even a small window will give sufficient ventilation for a small lot of animals, but as a rule the stalls are pretty well filled,

Q. Do you believe or do you think there is but a very small per cent of the cattle in Iowa that is affected with tuberculosis or any other infectious disease?

A. Yes. Probably the facts coming under my observation would make me at least as good a guesser as anybody that you could find. You could, perhaps, find one per cent of the cattle affected with any serious disease. I will say, while many of our herds will show 50, 60 and up to nearly 100 per cent, it is not considered as a standard to speak of. I speak now from the position of State Veterinarian.

FATHER BAKER: I listened to the lecture with a great deal of interest, because I think our interests are at stake on this subject. That lecture on this subject is the best one I ever heard; put in the best English I ever listened to, and I am thankful for the lecture in its excellent condition and style, both mental and physical.

MR. GOVE, of De Witt: It perhaps would be considered a little cheeky for me to get up here and tell of some remedies I have found useful in my career. If you think it would be of interest I would state in a brief way some of my own experiences and some of my remedies. As near as I could gather from what the doctor said of the ventilation and percentage of diseases in these banked barns, it was caused from lack of good ventilation. Now, I have a basement barn, basement above ground; there are windows on the north side, six lights, 9x12; they are fixed in a frame so they can be turned down: they can be shut up when the weather is severe. All the doors can be shut up; also the spaces where I go up and down stairs. From this upper barn floor there is what is called a stationary blind in the gable, and they get ventilation from this. But to go still further back, perhaps the last sixty years, consumption has been developed more largely than ever before. Before with us, it is said, there was a very small percentage of it. Then we used the fireplace, and then came stoves. For that reason they were living in these tight buildings and did not know, perhaps, but that they could go into these contaminated buildings that is the cause of consumption among the human. Now I will speak of some of my experiences. Last year I had two heifers that had calves, and I let them run with the heifers, put them into a shed where they had a ration of oats, tame hay and corn, under good shelter. These two calves I thought I could not turn out with my other stock in the spring, so I turned them into another pasture. They had to pass by the house every day on their way to water. I noticed they were not looking right. There was a corn field next to me where some of the corn husks were blown through; they would pick them up, these old bleached husks, and a lot of old newspapers blowing around. Now, I call that a depraved appetite. Pretty soon I noticed they did not chew their cud. I tried some remedies, among them a small dose of pulverized aloes. I learned that while I was a small boy, and never forgot it. I got what

thought was the best thing for these calves. I got at the butcher's some rennet, such as they use for making cheese, took off a slice about the size of my two fingers, and saw to it that it was held in their mouths until they swallowed it. In relation to cows that are giving blood-milk or giving thick milk, my father's remedy was to insert a piece of poke-root into the dewlap, perhaps two or three inches forward in the brisket, and in all the cows that my father had after my first remembrance and until I was 25 years of age, for I was with him until that time, I never knew him to lose the teat of but one cow.

BACTERIA THAT INTEREST SHORTHORN BREEDERS.

PROF. HENRY WALLACE.

The investigations of the bacteriologist during the past fifteen years have been of great benefit in the treatment of diseases and in explaining many operations and phenomena that were little understood. It has been discovered that the majority of the diseases which afflict men and animals are caused by bacteria. Bacteria are small plants and represent the lowest form of organized life. They are invisible to the naked eye and can only be studied by the aid of the most powerful microscopes. Twenty-five thousand of them placed side by side would not make a line more than an inch long. They consist simply of a single cell and multiply, not by seed, but by each individual dividing itself into two or more. They are in the air, in the earth, on the clothing and the body, in the mouth and nose, in fact, everywhere, almost.

We are indebted to these little plants for boils and abscesses, for the fevers that exhaust our vitality and the more deadly contagious diseases that decimate our population. They cause the dreaded tuberculosis in our cattle, cholera in our hogs and glanders in our horses. And yet their work is not all bad. While some are destroying others are building up. While some are working against us others are working with us. The bread we eat is made light and palatable by the work of some of these little plants, the beer others drink acquires its "bead" from the same source. The delicate flavor so characteristic of good butter is mainly produced by the work of bacteria in decomposing the casein. They cause the souring of milk and the ripening of cream, which enables us to avoid the heavy losses of butter fat in butter-milk.

For the purposes of this paper we might divide these bacteria into two general classes, those which affect our animals and their products and those which infest man, or more particularly, Shorthorn breeders. The latter class is made up of several different species, which differ somewhat in their general charicteristics and the symptoms produced, but have practically the same effect in the end and leave the system in a depleted condition. We have one species that so works on the brain of the breeder as to make him believe that only Shorthorns of a red color are desirable and that the animals of his herd should be selected or rejected according to this standard. While some of you may not be familiar with this particular germ the disease it produces is well known to all. Then there is another species

which creates an intense desire for so-called fashionable blood lines to the utter ignoring of individual merit, and which feeds upon the common sense portion of the brain until much of it is broken down and destroyed. The prevailing conditions during the last five years have been unfavorable to the development of this germ, however and it is hoped that it will become extinct before long.

A more dangerous species than either of those above mentioned is that which appeals to the avarice of the breeder and prompts him to record everything, good, bad and indifferent. This germ seems to thrive best in the climate of the central and western states. We are informed that in the original home of the Shorthorn it is almost unknown, and that the higher average excellence of the Shorthorn herds of Great Britain is largely due to the fact that in that country only the better individuals are permitted to perpetuate themselves as pure breds, the inferior ones not being recorded. Until some antidote is found for this germ we cannot hope to place the business of Shorthorn breeding on the most profitable and successful basis.

Another species closely allied to the one just mentioned is found in great numbers around the string of the pocket book and the door of the feed bin. Its action is to cause the string of the pocket book to contract and to make the door of the feed bin very difficult to open. On farms where this germ has gained lodgment it is to be observed that the Shorthorns have a hollow and lean appearance, as if they were not sufficiently fed, and a more thorough examination shows that this is really the case. Working in conjunction with the bacteria that exalts pedigrees and fashionable blood lines and minimizes the value of individual merit, this germ is very injurious in its effects. All must concede that the breeding constitutes the foundation upon which the valuable animal is developed, but the superstructure must be put on by liberal and judicious feeding. Breeding and feeding must go hand in hand and then the one furnishes and completes what the other has begun.

Turning from the species which are injurious in their effects and which must be fought and overcome before the business of Shorthorn breeding is put on the most substantial basis, let us consider some of the helpful kinds. One of these whispers in the ear of the breeder that he is making a serious mistake in neglecting the milking qualities of his cows. This germ is just making its first appearance in the western states, although it has been more or less plentiful in the eastern part of the country and thrives in the original home of the breed. Its growth should be encouraged. Conditions are changing in Iowa. The increased value of the land and increased population makes it necessary for us to practice more intensive farming. The time is fast going by when we can afford to keep a cow a year for the chance of a calf. We need the calf to market some of our grains, but the cow should give us milk as well as beef. This question is discussed at almost every meeting of the association, but the discussion should be continued until breeders become impressed with the necessity for developing the Shorthorns in dairy lines. This last summer a gentleman wishing to start a hundred-cow dairy, asked me where he could obtain that many pedigreed milking Shorthorn cows, and in a recent letter informed me that he was afraid he must give up his pure bred milking herd for the time, and fall back on grades, as he had found it impossible to secure more than a few pure bred Shorthorns that were profitable dairy cows. Shorthorn breeders who will heed the whispering voices of these little bacteria and develop the latent dairy qualities of their cattle, will find a very pleasant and profitable business before them. To fail to do so is to relinquish the title which the Shorthorn long ago earned, that of being the ideal cow for the general farmer.

The disease germs mentioned in the first part of this paper must be studied skilled bacteriologists and treated by experienced physicians, but those last mentioned must be fought or encouraged by the breeders themselves. Upon the judgment and skill displayed in handling these little bacteria depends the future of the Shorthorn.

THE SILO—IS IT THE THING.

MR. GABRIELSON.

I confess that I am not prepared to talk about the silo as I would have been four or five years ago. I think it was in 1887, when our hay crop failed, when we had in northern Iowa just a quarter of a crop of hay, and the next year there was enough money spent for hay in western Iowa and Minnesota to pay for the cattle. That year I had fully decided that I would begin looking towards the silo and that year I saved myself their loss by cutting the entire corn crop. The next year we built the silo, that was in 1888, and since then we have used the silo on our farm with a great deal of satisfaction. However I am beginning to look at the question with a more moderate view. If you remember when the silo was introduced into America, they made large cisterns of stone. With regard to the weight and feed there was some fault. This laid the sense of the silos as constructed as not a safe place to keep the feed in good condition. It was found by lining these silos with old boards they kept better. This led to the building of wooden silos; but it is also being discovered now that these silos are rapidly rotting away and that with reason, becomes one of the greatest objections to the silo. Now it is, not that the silo cannot be made properly and kept properly with reference to cattle feed.

On my farm now my son is as anxious to feed silage as I was when I first fed it. I am now free to say that where we are to build economically, that we want the silage, we must build something better than the wooden one. I think that ten years would be a very fair limit of time to allow for the lifetime of the wooden silo. I find the first silo in Wisconsin was built by Dr. Weeks and he seems to think the concrete silo keep better than the stone silo. It would be much better to pay the expense and have a concrete one.

Q. Is there any danger with reference to combustion?

A. No danger of that at all. There never has been any such thing as spontaneous combustion in a silo.

When the silo is first being made it reaches the temperature of 125 degrees and then it gradually settles down to about eighty degrees, but I am also free to say that this question of building silos is one of comfort and economy. It is one of the cheapest and simplest ways of getting rid of the corn crop.

Q. How large is the capacity? That is, how many cubic feet would it require for an acre of feed corn?

A. Silos are usually built deep and rather oblong form rather than twenty feet wide.

Q. What is the size?

A. Twenty-four feet deep and generally about twenty feet of filling.

Q. What season of the year do you feed it?

A. When you get ready to. Generally after cold weather sets in.

Q. Do you have to put weight into it?

A. It is better to lose six or eight inches than to put on different material to preserve it all.

I was going to say that my experience with making a silo, that is, the cost of machinery and the building of the silo always of the best lumber one made would wear out inside of ten years. I have come to the conclusion the simplest way of handling the corn crop is the cheapest. The cheapest machinery we have is the steer's jaw, there is no power that is equal to it on the farm. In the matter of preparing the corn for stock to eat it requires skillful management of machinery. It is not every man on the farm that can take care of the machinery used in cutting corn. The way that is safe is by cutting it up for silage is a great deal cheaper than all the expense we have to go to in order to keep it otherwise.

The experiment stations everywhere have proven that the cutting up of the corn crop for the silo is beneficial and economical.

DAN SHEEHAN, Osage, Iowa: I am glad I came to Ames.

J. P. Manatrey of Fairfield was elected president of the Association and C. W. Norton of Wilton Junction secretary.

The following resolutions were adopted:

"*Resolved*, That we recognize in unmistakable signs now apparent that we are approaching an era of fair remuneration and prosperity for our industry. Among these may be noted the decrease in the late competition we have met from the cattle of the range; the recognition of improved quality in product as shown by the general markets; the more general recognition of the value of Shorthorns for the dairy as well as beef industries in the mind of the Iowa farmer.

"*Resolved*, That while the growing interest in and inquiry for good bulls is a result of the facts stated, it is also apparent that the discussions and publications of this Association are doing much to stimulate this interest, and that for our personal gains as well as for the good done to the public the Association is entitled to our continual and earnest support.

"*Resolved*, That we recognize in the work of the Iowa Experiment Station much that is encouraging as well as instructive to the breeder of Shorthorns. Among the facts demonstrated may be noted the rearing of 800-pound yearlings without whole milk; the feeding of steers, full bloods and grades, testing them on the scales, and recording results proved on the butchers' block; also demonstrating that the Shorthorn, fairly bred and

fairly treated, is the practical cow for the Iowa farmer, both for the block and the dairy.

"*Resolved*, That the object lessons of the college farm and experiment station have been interesting and instructive, and that we recognize with thanks the aid of the various professors who have given us the benefit of their labors as thinkers and experimenters, thereby making this session of our Association pleasant and profitable.

"WHEREAS, the dairy interest in Iowa is a large and constantly growing one, and

"WHEREAS, a few Iowa breeders of the Red, White and Roan had courage enough in the face of reported "Jersey tests" and "dollars," at great expense to themselves and risk to their cattle, did enter their valuable cows in the great Columbian Test at Chicago with results so satisfactory to the Shorthorn interests, therefore be it

"*Resolved*, That we render our sincere thanks to the men who contributed the said cows from our state, and we wish to express our most hearty approval of the results achieved.

"*Resolved*, That we request the various State boards of agriculture to form classes whereby recognition will be had of breeding cattle whose future usefulness have not been impaired by excessive fat. That we also request them to offer inducements for the showing of fat steers.

"*Resolved*, That with the view of helping to build up a livestock trade with the South American states—a trade which promises to be very large and lucrative, we recommend to President Cleveland the appointment of W. J. Buchanan as minister to the Argentine Republic."

C. C. NORTON, *Chairman Committee.*

[The above resolutions should have appeared in last years' report.C. W. N.]

We clip, by request, the following from secretary's report read at Corning and not published:

"Your secretary replied to ex-Gov. S. B. Packard's enquiry as to the beef breeds of cattle that would be shown at the Columbian World's Fair at Chicago, that there would be from Iowa at least one herd of Polled Angus, one herd of Galloways, one herd of Herefords, one of Polled Shorthorns, and one herd of Shorthorns, and probably two of Shorthorns—an aged herd and a young herd. All of the beef breeds but the Shorthorns made a good showing. We had them in Iowa, but I am sorry to say we were disappointed; they were not in the ring. We had the winners in the state, just as good cattle as were on exhibition, but the golden opportunity for Iowa's great Shorthorns was lost, so far as the world's exhibit was concerned. We should have enjoyed seeing some of our best herds in line with Canada's best, and Kentucky's, Minnesota's, Illinois' and Indiana's great show herds of national reputation. Not any one got all the glory, but the honors were pretty evenly divided. It was remarked time and again by such breeders and showmen as Messrs. Pickrell and Potts of Illinois, the Gibsons of Canada, and by those from abroad as well, that they had never seen the equal of the great Shorthorn show at Chicago in 1893. A large collection of aged bulls, a larger ring of two-year-olds and yearlings and a host of blocky, lusty bull calves, say thirty to forty in a class, and only four cash winners to be selected; then a class of forty grand old mothers, which would take a committee of three experts a half day to select the four best,

then every beast placed in its order and so on, with the larger number of two-year-olds and yearlings heifer calves so 'sweet.' All this time the twenty-five Shorthorn cows were pulling along in the dairy six months' test with an equal number of Jerseys and Guernseys that had a record abroad or in the states of years' standing. While the Shorthorn for dairy qualifications was the equal of the 'special breeds,' it was a question whether the committee had found them; but soon it was proven that the great combined machine had come from Iowa, and while some of our best Shorthorns were making about the same number of pounds per day as the Jersey, and of better flavor, they were putting on nearly two pounds of beef as well; and in the two-year-old test the Shorthorn heifer was the second in the butter test, the little Jersey leading by only 25 cents in a twenty-one days' test, which caused some of our especial dairy cattle men to exclaim 'Surely and truly the Shorthorn is a general purpose animal.' Even *Hoard's Dairy* so admitted.

REPORT OF SECRETARY-TREASURER.

SHORTHORN COTTAGE.

One year ago we made a favorable report of our Shorthorn Cottage, showing a cost of $461, which amount has gradually decreased year by year. The total amount paid has been $345, leaving $116 yet due.

Mr. R. Baker one year ago gave us $5 for the Shorthorn cause, stating he needed no ads, as he had nothing to sell, while we very much needed the $5 in the "cottage deficiency." We put it in the general fund, which is a little short even with it. Some of the friends who have contributed $5 and $10 each to the cottage have kindly offered to donate again, but I have hoped to find new friends who would help us among our hundreds of Shorthorn breeders, thereby extending the comfort and benefit to be derived to a larger number. Our visitors during the state fair were quite numerous, not only from our own state, but adjoining states.

TREASURER'S REPORT.

To amount to balance account at Corning meeting 1893	$ 6.14
Dinner, Des Moines	.50
Railroad fare, Des Moines to Corning	2.80
Hotel bill over night, Creston	1.50
Three meals, Chapin House	1.13
Railroad fare, Corning to Des Moines	2.80
Supper at Des Moines	.35
State Fair 1894, use of furniture, tables, chairs	2.00
Drayage to and from fair, $1.25 and $1.25, herd books etc.	2.50
Meals, five days	3 75
Printing programs, 300 and 300 envelopes, Ames	3.60
Postage	2 00
Total	$28 47

NAMES OF MEMBERS.

John Johnston & Son	
Daniel Sheehan	Osage
Martin Flynn	Des Moines
D. D. Parsons	Newton
Chandler & Jordan	Manbeck
B. F. Gove	De Witt
A. Cooley	Osceola
W. R. Mathews & Son	Sully
D. A. Kent	Ames
C. W. Norton	Wilton Junction
G. W. Franklin	Atlantic
P. Finch	Humboldt
B. F. Myers	Cornine
J. P. Manatrey	Fairfield
Wm. Cook & Son	Marion
Chandler Bros	Fairfield

Amount received for membership	$17.00
By balance	11.47
Total	$28 47

Moved report of secretary and treasurer be received and adopted. Carried unanimously.

Moved we adjourn to meet at some time and place with the Improved Breeders' meeting. Carried.

Mr. J. P. Manatrey was elected president. The other officers hold over for the ensuing year.

Place of meeting, Osage.

C. W. NORTON.
Secretary and Treasurer.

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TWENTY-SECOND ANNUAL MEETING

OF THE

IOWA IMPROVED

Stock Breeders' Association,

HELD AT

OSAGE, IOWA,

OCTOBER 30 AND 31, 1895.

OFFICERS:

President—ROBERT J. JOHNSTON, Humboldt. Vice-Presidents—J. P. MANATREY, Fairfield; JOHN COWNIE, South Amana; RICHARD BAKER, JR., Farley; PROF. C. F. CURTISS, Ames; W. W. VAUGHN, Marion; J. R. CRAWFORD, Newton; C. C. NORTON, Corning; C. L. GABRIELSON, New Hampton; B. F. ELBERT, Des Moines; B. F. GOVE, DeWitt; Secretary and Treasurer—GEO. W. FRANKLIN, Atlantic.

Stenographer—D. A. LONG, Waverly.

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