TWENTY-FIFTH ANNUAL MEETING

OF THE

IOWA IMPROVED

STOCK BREEDERS' ASSOCIATION

HELD AT

IOWA CITY, IOWA,

DECEMBER 14 AND 15, 1898.

OFFICERS.

President—JOHN COWNIE, South Amana; Vice-Presidents, W. P. YOUNG, Mt. Pleasant; W. W. MCCLUNG, Waterloo; JOHN A. EVANS, West Liberty; DAN SHEEHAN, Osage; ANDREW DAVIDSON, Monticello; J. R. CRAWFORD, Newton; PROF. C. F. CURTISS, Ames; DAN LEONARD, Leonard; GEO. W. FRANKLIN, Atlantic; R. J. JOHNSTON, Humboldt; H. G. MCMILLAN, Rock Rapids.

Secretary and Treasurer—W. M. MCFADDEN, West Liberty.

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IOWA IMPROVED STOCK BREEDERS' ASSOCIATION.

SECRETARY'S REPORT.

To His Excellency, Hon. Leslie M. Shaw, Governor of Iowa:

In compliance with the provisions of the statute I have the honor to render a stenographic report of the proceedings of the last meeting, held in Iowa City, Iowa, December 14 and 15, 1898

W. M. MCFADDEN,
Secretary.

OFFICERS FOR 1899.

PRESIDENT.

W. M. Beardshear ..... Ames

VICE-PRESIDENTS.

J. F. Heins ..... Wapello
John Howatt ..... Welton
Richard Baker ..... Farley
S. A. Converse ..... Cresco
S. H. Hoadley ..... Cedar Rapids
H. D. Parsons ..... Newton
C. F. Curtiss ..... Ames
C. C. Norton ..... Corning
Charles Eicher ..... Botna
F. A. Edwards ..... Webster City
H. G. McMillan ..... Rock Rapids

SECRETARY AND TREASURER.

W. M. McFadden ..... West Liberty

The next place of meeting will be at Ames, December 13th and 14th.

MEMBERS.

H. D. Luers.....Dublin
W. M. McFadden ....West Liberty
J. T. Brooks.....Hedrick
H. W. Lathrop.....Iowa City
G. R. Hall.....Iowa City
James Hook .....Hedrick
B. L. Wood .....Springdale
W. O. Fritchman .....Muscatine
C. F. Curtiss.....Ames
B. H. Hakes.....Williamsburg
N. L. Elliott .....Iowa City
W. C. McNeil.....Postville
Horace Sanders .....Iowa City
J. N. Reeves.....West Liberty
C. C. Keil.....Ladora
Ed. Greer.....Iowa City
J. F. Heins.....Wapello
E. Lefebure.....Fairfax
G. W. Franklin.....Des Moines
C. A. Lucas.....Iowa City
Ira Hendricks.....Letts
F. D. Tomson.....Des Moines
C. Schuessler.....Iowa City
S. Schuessler.....Iowa City
Gad James.....West Liberty
G. H. Dunkelburg.....Rockford
W. P. Nichols.....West Liberty
J. P. Wallace.....Des Moines
G. W. Dickens.....Hedrick
W. M. Smith.....Iowa City
R. M. Johnson & Son.Sharon Center
Calvin Curtis.....Iowa City
A. Crawford.....Lone Tree
Thos. Birkett.....West Liberty
A. V. Blackford.....Bonaparte
Lee Colony.....Tiffin
Alvah Hardy.....Riverside
Richard Baker.....Farley
A. J. Miller.....Wapello
C. S. Barclay.....West Liberty
B. P. Norton.....Cresco
S. H. Thompson.....Iowa City
Adam Keil.....Genoa Bluff
E. F. Brockway.....Iowa City
J. J. Edgerton.....Ames
F. A. Edwards.....Webster City
W. M. Beardshear .....Ames
J. W. Slemmons.....Iowa City
G. L. Cochrane .....Iowa City
Jordan & Dunn.....Central City
I. N. West .....Mt. Vernon
J. L. Eno .....Luana
A. R. Ohl.....Iowa City
B. L. Norton.....Wilton
Emery Wescott.....Iowa City
Euclid Sanders.....Iowa City
E. C. Bennett.....Tripoli
Thos. Boot.....Wilton
H. Hoadley.....Cedar Rapids
J. A. Meissner.....Reinbeck
J. A. Evans.....West Liberty
John Cownie.....South Amana
John Howatt.....Welton
G. W. McFadden.....West Liberty
W. S. Robbins.....Horace, Ind.
E. M. Wentworth.....State Center
Norris Wilson.....Iowa City
J. M. Brockway.....Iowa City
M. Burge.....River Junction
A. J. Burge.....River Junction
C. D. Cochrane.....Iowa City
M. D. Clark.....Mt. Vernon
L. W. Neudeck.....Ft. Dodge
J. G. Meyers.....Kalona
John L. Adams.....Solon
Clifford Thorn.....Iowa City
R. W. Barclay.....West Liberty
W. C. Barclay.....Tiffin
D. Cookson.....Downey
I. Cookson.....Downey

D. H. Hastings.....Iowa City
Henry Jones.....Marengo
D. G. Swartzendruber....Wellman
H. D. Leonard.....Leonard
T. J. Hitte.....Omaha, Neb.
G. H. Burge.....Mt. Vernon
Geo. T. Borland.....Iowa City
Alfred Wood.....Iowa City
I. A. Loos.....Iowa City
J. T. Kinmonth.....Columbus City
Coldren & Lee.....Iowa City
E. T. Davis.....Iowa City
J. C. Studt.....Solon
Lewis Stoltenberg.....Amity
Wm. McConnell.....McCausland

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 $1 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 second Wednesday in December 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 has, by the custom of committees, been changed from five to one from each congressional district.]

PROGRAM.

WEDNESDAY AFTERNOON, 1 O'CLOCK.

Prayer, by Rev. E. N. Barrett.
Music.
Address of welcome, by Mayor F. K. Stebbins, of Iowa City.
Response, by J. W. Blackford, of Bonaparte, Iowa.
Address of president, John Cownie, South Amana, Iowa.
Appointment of committees.
"The Present Demand of the Horse Market," W. W. McClung, of Waterloo, Iowa.
Discussion.
"Pioneer Stock and Pioneer Stock Breeders of Iowa," H. W. Lathrop, of Iowa City.
Discussion.
"Conserving Soil Fertility," Prof. C. F. Curtiss, Ames, Iowa.
Discussion.
Adjournment.

EVENING SESSION, 7:30 O'CLOCK.

Music.
"Duty of the Breeder of Thoroughbred Stock—Where It Begins and Where It Should End," J. A. Meissner, Reinbeck, Iowa.
Discussion.
"Origin of Our Domestic Animals," Prof. C. C. Nutting, Iowa City.
Discussion.
"Book-keeping on the Farm," J. T. Brooks, Hedrick, Iowa.
Discussion.
Adjournment.

THURSDAY MORNING, 9 O'CLOCK.

Music.
"How I Won Success in Dairying," B. P. Norton, Cresco, Iowa.
Discussion.
"How Some Diseases May Be Communicated from Animal to Animal, and from Animals to Man," Dr. H. F. P. Edwards, Iowa City, Iowa.
Discussion.
"Needed Improvements in Swine Breeding and Feeding," C. L. Funck, Fairfield, Iowa.
Discussion.
"From Hurdle to Hooks," George W. Franklin, Des Moines, Iowa.
Discussion.
Adjournment.

THURSDAY AFTERNOON, 1:30 O'CLOCK.

Music.
Report of committees.
Report of secretary and treasurer.
"The Hand-raised Calf an Economic Necessity," Henry Wallace, Des Moines, Iowa.
Discussion.
"The Weather Bureau—Its Relation to Farmers," J. R. Sage, Des Moines, Iowa.
Discussion.
"Points to Be Considered in Holding a Public Sale," H. O. Correll, Mechanicsburg, Ill.
Discussion.
"Parallel Study of Agricultural Education," W. M. Beardshear, Ames Iowa.
Discussion.
Adjournment.

TWENTY-FIFTH ANNUAL CONVENTION

OF THE

Iowa Improved Stock Breeders' Association.

The twenty-fifth annual convention of the Iowa Improved Stock Breeders' association convened in Close hall at Iowa City, Iowa, December 14, 1898, at 1:30 P. M.

The association was called to order by its president, John Cownie, of South Amana.

Prayer by Rev. E. N. Barrett.

Solo by Mr. Carpenter, of Iowa City.

CHAIRMAN: We have taken the city of Iowa City by storm, and we do not know whether we are welcome or whether we are intruders; so, in order to find out whether we are welcome, I will call upon the mayor of the city to see what he has to say about the matter.

Mayor Stebbins addressed the association as follows:

Mr. President and Gentlemen of the Improved Stock Breeders' Association:

The industry of which you are the representatives, is allied with that which is perhaps the greatest of all Iowa industries. I refer to the production of horses, cattle, sheep, swine and all products of the domestic farm animal.

There seems to be no reliable data as to the exports of these products from the state, but there is no doubt but that the sale of these products are the means of bringing into the state very nearly all of the wealth received from without the state. In the item of butter, I find that the shipments for the year of 1897, amounted to very nearly $4,000,000. In fact, train loads of these products are daily shipped from the state, to be exchanged for various kinds of merchandise and the products of our eastern factories.

About 27 per cent of the principal exports of our country are the products of the domestic farm animal, and about 75 per cent of all of our exports are the products of agriculture.

The business of breeding of improved stock has been to a certain extent, rather diversified. Until about 1877 or 1878, the conditions attending this business were normal, but about this time all kinds of improved stock were

boomed beyond their real or practical value. It was a boom only equaled by the real estate speculations in some of the windy cities of our western country.

The larger part of the horses were in the hands of importing companies. The cattle were not in the hands of producers or breeders of cattle, but were owned by what we might term bunchers of, or speculators in, cattle. The voice of the silver-toned auctioneer was heard from Kentucky to West Liberty.

The cattle were kept in barns that were veritable palaces. Their horns were scraped, their tails were curled, and their hair was oiled. As the cattle were led into the sale ring, the owner appeared attired in a Prince Albert coat, silk hat, patent leather shoes, stand up collar and kid gloves; in his hand he carried a whip, and in his mouth a 15-cent cigar. As the cattle were often paid for with I. O. U's, they sold for immense prices; the celebrated Mills cow having sold for over $40,000 in the state of New York. Think of a cow selling for over $40,000 when corn is worth 30 cents per bushel.

Gentlemen of the convention, you talk about blood, pedigree, this strain and that strain, but there is one thing we must all remember, and that is that the granary, the hay barrack, the pasture field and above all, the milk pail, are great elements in the production of improved stock.

Everything was in a state of inflation, and of speculation, and whenever an industry becomes the object of speculation, it is destined to an early collapse. The collapse came and the prices for improved stock suffered great depreciation.

I was told a few days ago, by one who was handling cattle at that time, that he afterwards sold a bull for $250 for which he had been offered $1,000. Another gentleman reports having been offered $2,500 for a pair of thoroughbred mares, that would not bring to exceed $300 or $400 to-day. Richard Jones, of this city, who has handled a great many imported stallions, reports the depreciation in price from 20 per cent to 40 per cent, and reduction in price of service of such animals from $25 to $15. Our West Liberty neighbors seem to be the only people who have not heard of the collapse, as I understand they still claim to have pigs worth $1,000 each. The collapse of this industry was, perhaps, the best thing that could have happened the state of Iowa, as it has taken this stock out of the hands of scalpers and speculators, and placed it in the hands of prosperous farmers and breeders who are making a study of the science of breeding improved stock. This stock is now largely in the hands of men who raise the feed upon which it is fed.

When a farmer can secure a good animal, for $100, to head his herd of cattle, he has no just cause of complaint about high prices, and if he expects to make the raising of beef cattle a business, he must have such an animal. If the Iowa farmer expects to compete with the ranchmen of Texas, Colorado and Montana, in the production of beef and mutton, he can only do so by producing a quality of beef and mutton that will tickle the palate of the nabob of Wall street and John Bull, the Englishman. When it comes to the production of these articles in numbers, the ranchmen have a decided advantage.

At the present time it looks as though the immediate future would be productive of good profits to the producer of improved stock, as cattle, sheep and horses are commanding much better prices than three or four years ago. At a recent sale in Kansas City, of the Duncan herd of Shorthorn cattle, fifty head of cattle averaged $214, and twelve head of Cruikshanks averaged over $400 each, one bull selling for $1,000. Taking these prices into consideration, I think we can safely predict a brilliant future for the business of producing improved stock.

Gentlemen of the convention, in selecting Iowa City as the place of holding your convention this year, you have chosen the county seat of one of the pioneer counties of Iowa, in the production of improved stock.

Colonel Lucas reports having brought a Shorthorn cow and a small herd of thoroughbred Woburn hogs to Johnson county in 1845. In 1850 we find thoroughbred bulls in possession of Richard Burge, Phil. Clarke, Mathew Ven Eycke and Mr. Winterstein.

In 1852, Franklin Kimball started his herd of Devon cattle that became known all over this part of the country.

At the first county fair held in Johnson county in 1854, in what is now the university campus, it is said there was a very creditable display of improved stock of all kinds on exhibition.

A few years ago Johnson county was known as the banner county of Iowa in the production of improved stock.

Numerous herds of horses, cattle, sheep and swine were owned in Johnson county, from which herds show animals were taken that have successfully competed at stock exhibitions all over the northwest.

Among the many famous animals owned in Johnson county at this time, we find the Holstein cow, Mercedes, with a record of ninety-nine pounds and six and one-half ounces of unmalted butter in thirty days. This record made in June of 1883, in competition with the famous Jersey cow, Mary Ann of St. Lamberts, and other noted cows, and for a silver cup, known as the Breeders Gazette special prize. This cow Mercedes, was owned by Thos. B. Wales and kept on a farm adjoining Iowa City. Mr. Wales reports as having realized large prices for the offspring of this cow, one female being sold for $4,200 and a number of male descendants at much larger figures. The closing out sale of Mr. Wales was held at Cleveland, Ohio, and all animals sold at an average price of $525.

The Holstein cow, Mink, the property of Cary R. Smith, was sold at 8 years old with a bull calf by her side, at public sale, for $1,975.

The red polled bull, Breadfinder, for which his owner, Mr. Hanke, refused $1,000, was also kept within one mile of Iowa City.

Colonel Lucas reports as having sold a Shorthorn bull calf for $500.

The late Chas. A. Vegt, whose farm was within four miles of Iowa City, was the breeder of many famous horses, among which we find Idolf with a trotting record of 2.13¼, and for which horse his estate refused a bid of $7,500. Mr. Vegt was also the breeder of the famous pacing stallion, Fidol. This horse died in 1896, and up to the time of his death his record of 2.04¼ was the best pacing record for any stallion bred in the state of Iowa.

Gentlemen of the convention, on behalf of the citizens of Iowa City, and of Johnson county, I welcome you to the Athens of Iowa, to the handsomest city in Iowa, to the great educational center of the northwest. You will

find in Iowa City everything that goes to make up the modern city. Many of our streets are paved; we have waterworks; our streets are lighted with electricity; we have a system of storm and sanitary sewerage that permeates almost the entire city. I think we can safely venture the assertion that there have been more residences built in Iowa City during the past ten years than in any city of equal size in Iowa. You will also find the university of the great state of Iowa, and the Iowa historical society. In connection with the university you will find a museum of natural history that has no peer west of Chicago. At the rooms of the State Historical society you will find a museum containing many rare and valuable curios that will remind you of the pioneer days in Iowa. And, if you will visit these institutions during your short stay in Iowa City, I can assure you that you will receive a courteous welcome.

Gentlemen of the convention, it is the earnest desire of our citizens that your meeting will be productive of great good to your organization, and of great pleasure to all present; and when you return to your homes may you feel that you have been received with the hospitality and the courtesy to which, as our guests, you are justly entitled.

CHAIRMAN: Being now assured of our hearty welcome I will now call upon a member to respond. Unfortunately Mr. Blackford is unable to be with us. He has grown gray in the service. His son, however, is with us, and, as I believe in giving the boys a chance, I will call upon him to respond to the address of welcome.

BLACKFORD: The president has explained to you, in part, why I was called to deliver this address. My father could not be here, and I did not come with the intention of taking his place. I thought I could get the president to call on some one else. But he refused to do so, and I stand before you to-day. I feel rather embarrassed as I see before me some white heads, some bald heads, some red heads, and all wise heads. We have received a hearty address of welcome from the mayor. It reminds me of the biblical welcome that was given to the servant of Abraham, when he went out to find a wife for Isaac. He met Rebecca at the well, and her brother, Laban, welcomed him with the following words: "Come in, thou blessed of the Lord; wherefore standest thou out?" And so the mayor has welcomed us, and we have come in, and we are blessed of the Lord also. We follow out the commandments, the eleventh of which is, "Thou shalt not falsify a pedigree." The breeder of stock has been blest. Our calling is a sanctified one. We have done much in the cause of humanity and Christianity. We are now in the beautiful city of Iowa City, where, some years ago, the future greatness of Iowa was laid. Then the lawmakers met here and framed the laws. While the capital is no longer here, we believe you have something that is more important than the capital—you have the university. You can derive advantages from this that makes life worth living. Then you have fine schools, churches, and business houses without number, and many things which your mayor might have told us of if he had gone into detail. You may wonder why we are here. We came because we were invited. There has always been

plenty of invitations extended to us. You have all seen the patent medicine men who go from one city to another. They make everybody well, and then think it is due their health to move on. We are like these men. We move along from year to year and dispense our medicine. We find that when we are all together we can do each other good. We are not all here to-day. The men who form the association to-day are quite different from those who formed the membership twenty-five years ago. Remorseless time has thinned our ranks—not thinned them, but taken away our leaders. Father Clarkson and others are not here to-day. They sleep the sleep of peace, on the other side. Twenty-five years ago the men who formed this association erected a monument to their memory. They built a shrine, at which the farmers of Iowa gather every year. The old leaders are not all gone. Some are still living and are with us to-day. Of them it is not necessary for me to speak. They will make themselves heard with their words of wisdom and advice. What can I say of Iowa that will make any of us think more of her? She ranks tenth in population and first in the production of meat and grain. That should make us feel proud. The value of her sheep, swine and poultry would be greatly increased if all the farmers of Iowa used improved stock. So we gather here to talk over this matter of improved stock and learn what we can from each other. We talk of the past and of the present, and plan for improvement in the future. I am neither a prophet nor a son of a prophet, but it requires no stretch of imagination to look into the future. I see 100 thrifty men where I see one to-day, 100 head of pure bred improved stock where I see one to-day. I see improvement along all lines, physically, intellectually and morally. We have been welcomed to the city of Iowa City and Johnson county, and I believe in reciprocity. We want to welcome you to our meetings. We have some scientists among us and many who have learned things in the school of experience. We want you to come to our meetings and get all you can out of them. I think each and every one of you will find our meetings profitable. I thank you.

SECRETARY: The next thing on the program is the annual address of our president.

CHAIRMAN: The position which I now have the honor to occupy has, as you are aware, other duties besides the breeding, feeding and shipping of stock. These duties have devolved upon me since our last meeting at West Liberty a year ago, and they have been so burdensome that it seemed almost impossible for me to attend this meeting. We had a meeting of the superintendents at Des Moines yesterday and to-day, and I announced to them last night that under no circumstances would I attend another day, as I was due at this meeting at Iowa City, and I assure you that it is one of the pleasures of my life to meet with you at this time and discuss such subjects as will be brought before this meeting. I do not know of any meeting that I could attend that would give me

more real pleasure than to meet the farmers and stock breeders of Iowa.

Mr. Cownie read the following paper:

Fellow Members of the Iowa Improved Stock Breeders' Association:

Another year has been numbered with the past since we last met in annual convention, and that year has been fraught with many changes, both national and state. During that brief space of time a war with the nation that furnished the means that resulted in the discovery of a new continent was begun and ended, a treaty of peace has been signed, and vital changes on the maps of both the western and eastern hemispheres will be made. But, while human agencies have been at work making these changes, and while American valor on land and sea has surmounted every obstacle, and won victory after victory, and made it possible that we could dictate the terms of peace to the vanquished in battle, other agencies beyond the control of man have been at work and the year now drawing to a close has witnessed what is practically a revolution in the agriculture of Iowa. Formerly it was believed that the southern half of the state had a monopoly in the production of corn and clover, and that the northern half must be content to raise wheat, oats and wild hay; and if cattle and hogs were raised and fattened, they must be of a type that would not require the finish and excellence that can only be produced by our great staple, corn.

But to-day northern Iowa is contesting for supremacy with the southern section of the state in the production of both clover and corn, and these important factors, combined with well bred stock, will soon demonstrate that a great change has taken place, and that in all future calculations it must be borne in mind that no single section of our state has advantages in the production of our great staples over other parts, for this year our most northern counties rival in the excellence of their crops the most favored localities in the central or southern section of the state.

With this condition existing, northern Iowa will, from year to year as time rolls by, ship less and less grain than formerly, and live stock must be depended upon to consume the grain on the farm that produced it; and, this being the case, it is all important that well bred stock of all kinds should be secured to convert the raw materials into a finished and high class product.

Where the dairy interests predominate, milk breeds of cattle will, as a matter of course, have the preference, but there must be, with the changed conditions, a large field for improved cattle of the leading beef breeds. And what has been said of northern Iowa is alike applicable to the other portions of the state, although perhaps in a less degree, for as yet northern Iowa is, comparatively speaking, a new country, whose immense resources are in process of development, and that they are exceeding the most sanguine expectations, in the production of our great staples, required but the crop of 1898 to demonstrate.

While I have referred particularly to the northern part of the state as a field where improved cattle are needed to consume the grass and corn that can be produced, I am compelled to admit that there is not a county, township, or school district, in Iowa, that would not be benefited by the introduction of pure-bred animals for breeding purposes. While there may not

be a single school district in the state that cannot boast of its herd of well bred cattle, or at least pure-bred individual animals, still the great majority of the cattle of Iowa are much in need of improvement. And it is not creditable to the farmers of Iowa, that over 2,000 pure-bred bulls have been shipped by two dealers in this class of animals to western ranges during the present year. There was room at home for every one of these bulls, and if the farmers of Iowa were looking well to their own interests not one of them would have been allowed to leave the state. It is unfortunate that western ranchmen could be able to secure thousands of these animals every year, when at least 50,000 pure-bred bulls could be used in Iowa with profit to their owners. And while the more progressive western ranchman is improving his herds that he may compete with the Iowa farmer in the great beef markets, or perhaps sell his cattle as feeders to the farmers of the corn states, it is certainly surprising that a single farmer can be found in Iowa who will still continue to mate his cows with scrub or even grade bulls, for in doing so he is sacrificing his own best interests, for there is no profit to anyone, whether breeder or feeder, in ill-bred cattle. The demands of the market to-day are higher than they have ever been before, and consumers of beef are becoming more and more exacting every year, and that farmer is fortunate who is quick to adjust himself to the changed conditions and be in a position to reap the benefits that are sure to follow the improvement in the breeding of his cattle. While I would not advise the average farmer to dispose of the cows that he now has, I would urge him, for his own best interests, to secure at all hazards a pure-bred bull, and at least one, and if his means would permit, two or three pure-bred females to lay the foundation of a herd that in a few years will not only bring wealth to the owner, but prove an unfailing source of pleasure, and an ornament to any farm in the state.

Much that I have said in regard to the breeding of cattle is alike applicable to the horse industry, and it is not creditable to the farmers of Iowa that common horses are a drug on the market, while first-class draft horses can scarcely be obtained, even at what appears to be exorbitant prices in comparison with ruling values for common animals. I am aware that this is an age when cheap articles, as a rule, have the preference, but it is penny wise and pound foolish, saving at the spigot and wasting at the bunghole, to look for a cheap animal when breeding either horses or cattle. A man may purchase a cheap hat, or a cheap, low priced suit of clothes, and when these articles are worn out their existence terminates, and a new article takes their place. But it is entirely different with a cheap, inferior bull or stallion, for these animals perpetuate themselves, and the owner of their offspring goes on, from year to year, waddling in the old ruts, with no improvement in his financial condition, and no hope of bettering himself in the present world.

In the breeding of sheep, the improvement is decidedly pronounced, and the most valuable domestic animal, at one time under the ban, is again standing proudly erect, and gives promise of being an important factor in the development of our great agricultural resources.

With no domestic animal has the science of breeding reached so universally as high a point as in the hog, and an ill-bred animal, such as was common, I might say universal, thirty or forty years ago, is now

a curiosity, and, when exhibited at our district and county fairs, proves as great an attraction as did the well-bred animal a score of years ago. The chief reason, no doubt, for the great improvement of swine is to be found in the small expenditure required for breeding animals, in comparison with cattle or horses. But while the cost of improving the latter is no more proportionately, according to value, still a great majority of farmers hesitate to make an investment that requires a large outlay at first, ignoring the fact that the returns, though somewhat slower in breeding cattle and horses, are far more certain than in swine, with conditions as at present existing.

Owing to the fact that a sister state had inaugurated, and was to hold what was named a "Trans-Mississippi Exposition," to extend over a period of five months, no state fair was held in Iowa the present year. For my own part I sincerely regretted the decision as being fraught with great injury to the live stock and other interests of the state, and it did seem to me that the great state of Iowa, knowing no superior and acknowledging no equal in all that conduces to make an agricultural state, made a great mistake in abandoning her state fair for a single year.

But the legislature of our state, composed of the duly-accredited representatives of the people, was determined to make a liberal appropriation to assist Omaha in her enterprise, and plainly told the representatives of the State Agricultural society that our state fair must be abandoned for the present year, and intimated that if loss occurred the officers of the society would be held blameworthy. Under such circumstances there was no other alternative but to abandon the fair. A small appropriation was made to the State Agricultural society to assist in paying current expenses and insurance on the buildings of the society, the property of the state, and a liberal appropriation was made to assist Omaha in her enterprise. But, the past is gone, and cannot be recalled. Mistakes have undoubtedly been made, but let us not waste time in unavailing regrets, but rather devote ourselves to redeem the failures of the past, and determine that the state fair of 1899—the closing year of the century—will be the grandest and best ever held in the state. And our district and county fairs should also make the exhibitions next year a fitting climax to the century's close. And I would urge every breeder of improved live stock to spare neither time nor expense in making such an exhibit at our local and state fairs as will not only rival but excel all former efforts, for, in so doing, rivalry will be created, and the material prosperity of our state will be greatly advanced.

Having spoken of our annual fairs as a means of advancing the great agricultural interests of our state, I cannot refrain from referring to our State Agricultural college, and the work being done at that institution. It is scarcely necessary for me to refer to the manner in which that institution was formerly conducted, for every practical and successful farmer in the state knew that theory, without practice, did not produce crops, and, had the teachings that emanated from the college of agriculture been followed by the farmers of Iowa, our condition to-day would have compared favorably, perhaps, with the agriculture of the Philippine islands. But a mighty change has taken place; theorists have been given a leave of absence live, practical, thorough-going, earnest men, are in charge,

and we are all proud of the work that is being done at our Agricultural college. This great institution of learning is now in safe hands, and the farmers of Iowa can send their daughters and sons to that college to secure an education in the full assurance that the facilities and the instructors are the peers of any in the land. And that an education that trains the hand and eye, as well as the mind, and an ability to do which proves the keynote to success in all the affairs of life, are certainly assured.

In this connection I cannot forbear referring to our national department of agriculture, which is doing more to-day in the line of practical work that is of real benefit to the farmers of the country than has ever been done before. And we have just cause to be proud of the fact that one of our own citizens, an Iowa farmer, a member of this association, is to-day the secretary of agriculture and a counselor in the cabinet of the president of the nation.

When the appointment was made and James Wilson was placed at the head of the department of agriculture, the people of Iowa knew that a practical and not a theoretical farmer had been chosen to the high station, and that the work of the department would be on lines that would conduce to the welfare and upbuilding of the greatest of all industries in our country—agriculture—and those who are engaged in its development. There has been no cause for disappointment, and he who did so much to bring our agricultural college from the mire into which it had fallen will assuredly place the national department of agriculture on a higher plane than it had ever before attained.

The present season has been particularly favorable for the production of all kinds of crops in our state, and abundant harvests, far above the average, have rewarded the farmer for his toil. With the exception of hogs, all kinds of farm products are now commanding fair prices, and it does not require any gift of prophecy to foretell that we are now entering upon an era of general prosperity.

That farmer will be wise who will so arrange his affairs that he may be able to secure his share in the great advance that is sure to come, and to that end let me urge each and every farmer in the state to spare no pains to place themselves in a position that they may redeem the losses of the last few years.

We meet to-day for the twenty-fifth time in annual convention, and it is appropriate that the meeting that closes a quarter of a century should be held in Iowa's former capital and the seat of our great university. Here are gathered the ambitious young women and the earnest young men of the state, striving with all their might to secure an education that they may be better fitted for their life work; and here are to be found men of the highest character, who, by their ability and success in their respective lines, have made the State University of Iowa known far and wide as the peer of any in the country for thorough, efficient and practical education.

We, too, are educators, striving with all our energies to develop in the largest measure our great live stock industry, and that we have succeeded is abundantly attested by the fact that Iowa occupies first place among her sister states in the number, quality and value of her domestic animals.

We meet here as fellow workers with those engaged in educating the youth of our state, and, while our labors are on different lines, let us all unite in wishing Godspeed to every agency that is earnestly and conscientiously laboring to advance the moral, educational or material prosperity of our people.

The next on the program is the appointment of committees. We will leave that until evening. The next on the program is a paper by W. W. McClung. I see that Mr. McClung is not here so we will pass on to the next paper, by H. W. Lathrop.

Mr. Lathrop read the following paper:

PIONEER STOCK AND PIONEER STOCK BREEDERS OF IOWA.

BY H. W. LATHROP.

Between the Great Lakes on the north, the Gulf of Mexico on the south, and the great oceans on the east and west, there has never been found such a perfect grazing ground for the great herds of buffalo, elk, and deer, that roamed over it as the 55,000 square miles of territory now comprising the state of Iowa. These herds were the prehistoric live stock of the country, and it would not be proper to say that they were bred or fed by the Indians, to whose sustenance they contributed, in furnishing them food and clothing, for their breeding and feeding was done without the help of man, as he had as little to do in the matter as he had in producing the rains and snows that fell from the clouds on this great pasture.

It would, at first thought, be suspected that these vast herds would retain possession of their native pastures till crowded out by herds of domestic animals advancing from the east, and that the advance guard of one might mingle with the rear guard of the other, but such was not the case, especially with the buffalo, for they were near the east bank of the Missouri river on their way to extinction when the domestic live stock were fairly installed on the west bank of the Mississippi.

It, however, was true that deer were co-occupants with the domestics of the country during the '30s, '40s and '50s, and when the whigs of Johnson county, in 1848, celebrated the election of General Taylor to the presidency, by a banquet and barbecue, the carcass of a stalwart buck brought down by Dr. Ballard's trusty rifle, was the subject of that barbecue, and venison in its season was for sale in the market at the same price as beef. Edsall Roup, living in this county, brought down with his rifle, from his concealment behind a large oak tree, six out of a herd of deer before any of the herd discovered the cause of their decimation.

In 1836, while we were a part of Michigan territory, our population was 10,531; in 1838, while we were a part of Wisconsin, it was 22,859, and in 1840, after we had become a territory ourselves, it was 43,114, thus doubling itself every two years, and it is doubtful whether the live stock of the country during these periods more than doubled in number of population and it was increasing in the same ratio.

The settlers coming here during these and even later periods were mostly from the newly settled states on the east of us, where but little, if any, attention had been paid to the improvement of live stock; work oxen rather than beef cattle were the great desideratum in this branch, and cows affording only a moderate quantity of milk were deemed sufficient, for there was but little market for the product of the dairy, though it must be admitted that among the cows of that early time many excellent milkers were produced.

The horses were but little better than improved bronchos. When the Western Stage company, in 1853, bought out the firm of Frink & Walker, whose teams consisted mostly of "prairie plugs," that company wanted some better horses and brought from Ohio fifty that were the style needed, and subsequently brought from the same state fifty more, the Iowa horses being too small for their use. Of the hogs known as razorbacks and hazel-splitters, they were said to have their fore legs in the middle, and when standing on them the front and hind parts would balance each other. In speed they were but little behind the quarter horse, and could scale a fence nearly equal to a hurdle racer. They were in striking contrast with the square-hammed, broad-backed, deep-sided, short-nosed, and low built Poland China of to-day.

But the early settlers did not come here to engage in stock breeding. Grain raising with them was the leading pursuit, and most of their surplus products, up to the completion of the Rock Island railroad to the state, found a market in St. Louis, and flat boats and keel boats were built on the Iowa and other rivers that took to market this surplus. During the most successful period the best wheat on the Chicago market was quoted as "Iowa Amber."

Of the live stock that was raised for sale by the pioneers, a home market was readily found, the purchasers being settlers who came here without such stock. In the late fifties and early sixties cattle from Missouri and horses from Ohio were brought in for sale. Of the latter I bought one with a single eye for $130, and of the former nine head, two cows with calves by the side for $26 each, and seven head, the tail end of the herd, for $19 each. My first venture in live stock was fifty years ago, when, as a tenderfoot, I bought a family cow for $13. On my way home with her was told I had paid too much for her by at least $2 or $3. Another venture was twenty years ago at the closing-out sale of Dr. Sprague's herd. I bought Sharon Rose of Oakwood for $300, and her calf; Peri Sharon for $175, and was congratulated on the good bargain I had made. Still another venture was in 1860 when for $35 I bought of a boy his yoke of pet red 3-year-old steers, which I kept on the farm as a work team six years and then sold them at 9 years old for $140, to help do the freighting from Omaha west, that is now done by the Union Pacific railroad.

In the year 1850 the number of work oxen in the state was 21,892, in 1860 56,964, in 1870 22,058, in 1880 2,506, in 1885 1,723, and in 1895 but 450. At this rate of decrease honest old "Buck and Bright" will soon become extinct and entirely forgotten.

It will, doubtless, be impossible to make many of the rising generation believe that a pair of oxen could be trained and made so tractable that a furrow forty rods long through the middle of a field could be plowed with them, as straight as could be done by a well trained pair of horses, and that by using only the two words, "Haw," "Gee," but many were the ox-drivers and teams of years ago that could do it.

During the period immediately antedating and postdating 1850, considerable interest was manifested in the improvement of cattle, some pure bred stock being imported into the state, and when the first state fair was held at Fairfield, in 1854, fifty-five head were shown as thoroughbreds by twelve different breeders, and the two breeds of "Durhams" and "Devons" were the only ones shown, and they competed with each other in the same class.

Among those showing were the Days of Van Buren, Stuart of Lee, Person of Wapello, and Glenn of Jefferson county. At this fair R. W. Griffith took a $10 premium for the team of oxen (three yoke), and C. C. Clemons one of $4 for the best single yoke.

During the following twenty years the improvement was going on slowly, and in the closing year of the twenty 450 pure bred females at a cost of $132,579, and sixty-five males at a cost of $26,385, were added to the number in the state, one bull bringing $6,100 and one cow $4,000, these to improve a stock of cattle numbering 1,436,659.

The process of improvement seemed to be going on too slowly to suit the progressive ones, when a few score of the leading breeders of the state met at Cedar Rapids, nearly a quarter of a century ago, to accelerate it, when for that purpose they organized themselves into "The Iowa Improved Stock Breeders' Association."

Among the early ones who gave character and prominence to the association, and stamped their impress upon and gave zest, piquancy and power to its deliberations, were C. F. Clarkson, J. H. Sanders, Dr. George Sprague, James Wilson, Col. John Scott, A. S. Welch, J. B. Grinnell and others. As we have met here on the "silver wedding day" of our association, it may not be amiss to take a look backward and review the work of some of these pioneer stock breeders.

Among the oldest in years and ripest in experience was Father C. F. Clarkson, who, in 1855, bought a thousand-acre farm, or rather that much virgin prairie land, in Grundy county, which he purchased for less than a dollar an acre, as he obtained it with script known as soldiers' bounty land warrants.

In the spring of 1855, he left Brookville, Ind., with a pair of carriage horses, buying four yoke of oxen in Muscatine and two more yoke in Iowa City, these being driven to the well known spot christened Melrose Farm. This was before "bovine profanity" became unfashionable and went into "innocuous desuetude," and how much of it the boys indulged in on the route is not now a matter of history.

When the surplus products of this farm could not be disposed of to incoming settlers, Iowa City was the market where that surplus was disposed of, and where supplies were purchased for use on the farm, and where the farmers of that region came to mill. On this farm wheat in pioneer days sold for from 35 cents to over $2, and corn from 10 cents to $3 per bushel.

From 1871 to 1890 Father Clarkson cultivated, with his pen and his brains, the agricultural department of the State Register better than he did Melrose Farm with his oxen, horses and mules.

His farm house was protected by a white pine grove, the trees for which he got on the bank of the Iowa river, and when the writer was at his place some twenty-five years ago, the two first trees planted and brought from the timber in a bucket were forty-two feet high, and the trees in the grove are now of saw-log size. Mr. Clarkson was in the state senate from 1864 to 1868.

J. H. Sanders was one of the pioneer promoters of the live stock interests of Iowa in the establishment of the first periodical devoted exclusively to the care and breeding of live stock, and the Western Stock Journal, published in 1869 at Sigourney, a town of 1,200 population, was a lineal ancestor of the Breeders' Gazette. He has done more than anyone else to fix and make official a standard for the breeding of the light harness horse. When he began his labors the accepted record was "2:40 on the plank." He has seen Flora Temple, "Queen of the Turf," with a record of 2:18¼; Goldsmith Maid, her successor, 2:14, and Star Pointer, sovereign of them all, with a record of 1:59¼.

The college student, who, at the age of 21, traveled twenty miles on foot to cast his first vote for Abraham Lincoln for president, did not on that trip think he was on his way to a seat in a presidential cabinet, but he is there now, where, as secretary of agriculture, he has been opening a wider door in England for the entrance of the products of the Iowa dairy, and preparing the markets on the continent for the entrance of the surplus horses of the northwest.

Dr. Geo. Sprague was an early breeder of Berkshire hogs and Shorthorn cattle, but the best service he ever rendered the stock-breeding interests was when he exhibited to our association a sirloin from the carcass of a deer, one from a common fat cow, cuts from a fat Devon cow, a roast and a sirloin from a high grade Shorthorn steer, sirloin from the carcass of Lady Dahlia, a Shorthorn cow, and cuts from the shoulder, forerib, loin roast and sirloin steak from Orphan Nell, a Guyune cow fattened on corn, and showed us the difference between the dry meat of the native and the juicy quality of the meat of the thoroughbred.

Colonel Scott has been favored above most of us in that he has a wife who, in addition to the utensils of the household, was an adept with the pencil and the brush, and when he would demonstrate to us the improvements made in the porcine race from period to period, her canvas was brought into requisition to show the development from primitive razorbacks to the prize-winning Poland Chinas of to-day.

No one among our pioneers more appreciated the educational character of our society than President Welch, of the Agricultural college. He early made a movement to have local societies like ours organized in different counties, and one was formed in this county, but another direction was given to the movement, and ours became the parent of seventeen other state societies, formed for the promotion of the breeding of that number of families of live stock.

But the most versatile of our early members was J. B. Grinnell. He was the identical person to whom Horace Greeley addressed his world-famous

remark: "Go west, young man; go west." He came, and both he and the west were the better for his coming. In founding a city, establishing a church, representing his constituents in the state senate and in congress, as mayor, presiding over the deliberations of a city council, and controlling the destinies of that city, being president of a bank and also of a railroad company, raising blooded sheep and pure-bred draft horses, and in repairing the ruins of a first-class cyclone, he had few equals.

Our society has numbered among its members a lieutenant-governor, Colonel Scott; three governors, Kirkwood, Carpenter and Gear; three United States senators, Welch, Kirkwood and Gear, and two cabinet ministers, Kirkwood and Wilson.

Hon. Chas. Lowder, on coming from Indiana to Iowa, said he was there in stock-breeders' meetings a whale among minnows, but in Iowa he found himself a minnow among whales.

CHAIRMAN: You have heard Mr. Lathrop's very able paper, giving reminiscences of the early days of Iowa stock breeding. Among the elderly men present I presume we could hear a great deal of information concerning these early days, and the paper is now open for discussion

BROCKWAY: I appreciated that paper very much. I liked it because it made me think of the old times.

BAKER: I have had a great deal to do with agriculture since I came to Iowa. I have made my living by it. I bought my first quarter section when I came here with a sovereign paid down. I have not been so fortunate in making a fortune as the most of you, but I have made a good living.

BEARDSHEAR: I enjoyed that paper very much. It made me think of how much has been done in the way of improvement since those early days. We need preparation to keep step with this great improvement that is going on all the time. We achieved much by chance in the past, but we have learned that "luck is a fool and pluck is a hero." I have been encouraged to hear how the work has been brought up to what it is to-day. Twenty years hence we are going to see great strides in this association, but these men who did the work in the past are the ones we should bow to to-day and give sincerest praise.

CHAIRMAN: The next on the program is a paper by Professor Curtiss, the subject of which is, "Conserving Soil Fertility."

Gentlemen of the Improved Stock Breeders' Association:

I am very glad to be with you on this occasion, and I congratulate you on the excellent opening of this meeting. I have been interested in the last paper. My experience does not date back very far, but I remember the first meeting I attended in this city some years ago. I have attended a great many of them since, and I believe this meeting is going to be one of the

best we have had. The subject assigned to me is "Conserving Soil Fertility." The fertility of the soil is the farmer's stock in trade or his capital. A very large dividend is the return of the capital on the farm in plant food and plant fertility in one year, and yet I will venture the assertion that the farm crop of Iowa has not exhausted 1 per cent of the plant food in nature's storehouse. It must be remembered, however, that the plant-food or fertility on our farms is not all available. Some is locked up, and it requires skill and proper cultivation to unlock this plant-food and make it available. I recently attended a meeting of the American Association of Experiment Stations, and there were representatives there from all the states in the union. One of the most important problems they discussed was that of making the best use of fertilizers.

I think farmers in some sections of the country depend too much on commercial fertilizers. We have a large supply of plant-food. We are inclined to look at our average farming land as so many acres of good farming land out of which we are to get a given yield under good conditions. I do not think the yield is one-third what it might be. Among the elements of fertility in the average soil are nitrogen, potash and phosphorous acid. The three elements constitute the essential principles of plant-food. We have a large supply of plant-food to draw from. We find that an average crop of wheat takes from the soil only about thirty pounds of nitrogen, nine and one-half pounds of phosphorous acid and fourteen of potash. So, you see how small the amount of a single crop is. The difficulty is that the total amount of the soil is locked up in such a way that it is hard for the plant to utilize it until the farmer by tillage allows the plant to draw on this plant-food. It is much more profitable to put this soil in shape to draw this plant-food than by spending millions of dollars for fertilizers, which is simply buying nitrogen and phosphorous acid for the soil. This is quite expensive. The outlay annually, in some places, is about $5 to $10 per acre. We find that in addition to this, having the store of plant-food in the soil, we cannot draw on it indiscriminately without depleting the yield. Thousands of farms in the New England states are standing to-day as monuments to their owners' folly. We have to have intelligent methods of utilizing this soil. We must study this subject practically. If the farmers, instead of buying the commercial fertilizers, would buy good stock food that were rich in the same elements as the fertilizers themselves, it would pay better. Take a mature animal that is neither gaining or losing, but in uniform condition, and that animal sooner or later gives up to the soil all the elements of fertility that enters into the food. A young animal will return to the soil about one-half of the elements of plant-food. A dairy cow will return to the soil from 70 to 75 per cent of the elements of plant-food and the fattening steer from 80 to 90 per cent of the elements of plant-food. Our system of tenant-farming is a bad one. Sooner or later we will have to change that system. The average renter only cares to get out of the land what he can for a short time. There is nothing to encourage him to cultivate the land for future fertility. In the near future we will be forced to a system that will give him a longer lease of the land. In reference to the matter of getting the plant-food out of the soil, it is simply done by a good system of cultivation, making this plant-food available. By continued good tillage we can unlock the fertility. One

thing is thorough drainage. One of the problems in this is regulating the moisture of the soil. We must arrange to have a sufficient supply of moisture and not an excess. An excess is more injurious than a deficiency. Good, thorough cultivation unlocks our soil and makes our land more valuable. Farmers in the old country turn the soil up in ridges. This makes it tillable earlier in the season. It was considered in early days that all we had to do to make the soil better was to plow a little deeper, but lately we have found that deep plowing is no better than shallow plowing. Another thing that is needed to bring out the fertility of the soil is the use of barnyard manure. The western farmer cannot afford to ignore the value of this means of fertility. Unless we are careful to preserve this manure, a large part of the fertility is lost.

CHAIRMAN: This paper is now open for discussion.

HALL: Is it not better to plow deep?

CURTISS: The subsoil is not so rich as the surface soil. If we have the land properly drained we have the first step to subsoiling. While deep plowing is all right it is not always advisable to turn the surface soil too far below. I believe that deep-rooted plants are better for subsoil plowing. We can do better by tile-drainage than by subsoiling.

HOADLEY: To what depth of standard inches has the experiment station found it practicable to plow?

CURTISS: It varies so much according to the plant to be grown that no definite depth can be established. Ordinarily six or eight inches is not too much. Clover is the best sub soiler with tile drainage. It renders available the plant-food. We have exploded the old theory of summer fallowing. We have found that we can maintain the fertility of the soil and grow a crop every year. In Canada they turn under the stubble fields immediately after the grain crop is taken up, with a plow that simply turns up the surface soil and takes the weeds. They follow this with harrowing. Then the rains come, the weed seeds will germinate and they will have a good growth of weeds. In the fall they will have the weeds out of the way for the following season and give the land two plowings. They will then have the land in better condition and have fewer weeds. The New England farmers give the land two plowings and seed with rye after the second plowing.

MCNEIL: I live in a portion of the state that is quite rolling. We think our wealth is in our blue grass pastures. The nearest you can get to breaking a stockman's heart is taking his blue grass pastures. The only relief we have, because we cannot plow, is in the cotton seed meal and wheat bran.

CURTISS: You can get a large amount of fertility by using these. I can appreciate the situation you speak of.

KIEL: I would like to ask the professor if he would recommend high priced food to our stock or clover hay and timothy instead of oil meal and cotton seed meal.

CURTISS: In a general way I would say that I believe the clover plant as the means of maintaining the fertility will be found more satisfactory than high priced feed. This clover can be rotated with our other crops and the soil can be maintained in a high state of fertility. Timothy hay has not the fertilizing value of clover hay. Clover has more plant food and is of more value to the soil.

LUCAS: Does timothy add anything to the soil?

CURTISS: Very little. The clover roots have the property of drawing nitrogen from the atmosphere. We have in linseed meal a large supply of potash.

BROCKWAY: Does the clover draw plant-food from the subsoil?

CURTISS: Clover, when plowed under, opens up the passage ways for the roots of other crops.

CHAIRMAN: We have had an interesting meeting this afternoon, and many valuable things have been brought out. I hope you will all be on hand to-night. A motion to adjourn is now in order.

BARCLAY: I move we adjourn.

Motion seconded and carried.

WEDNESDAY EVENING, 7:30 O'CLOCK.

Meeting called to order by the president at 7:30.

Music by the glee club.

CHAIRMAN: The first paper on the program is by Mr. Meissner. I see he has not yet arrived, so we will take up the next paper. The subject of our next paper is "The Origin of Our Domestic Animals." We have been discussing the improvement of these animals for some years, but we have never had the subject of their origin up for discussion. Professor Nutting, of the university, will tell us of their origin.

The following paper was read by Professor Nutting:

ORIGIN OF DOMESTIC ANIMALS.

BY PROFESSOR NUTTING.

It has long seemed to me that there ought to be a more frequent exchange of views and more mutual support between stock breeders and naturalists. Both are working along much the same lines and are confronted by many almost identical problems. Surely neither would lose and both would gain by more frequent contact along professional lines. Zoologists already owe a debt of gratitude to practical stock breeders that is fully realized and admitted. The greatest naturalist that ever lived was the first to thoroughly avail himself of the wealth of valuable facts included in the various stock breeders' publications, and by means of these records, patiently amassed by your predecessors, the most important advance ever made in biological thought was made possible, and Charles Darwin gave to the world a completed theory of the origin of species, based primarily on the discovery that nature improved her stock by the same means employed by yourselves—the careful selection of the best and the elimination of the inferior.

It gives me pleasure to acknowledge, here and now, the debt of science to the stock breeder. I do not know how largely Darwin's work on "Animals and Plants Under Domestication" is utilized by men of your profession, but certain it is that the facts and the conclusions therein contained, concerning heredity, breeding, crossing, reversion and so forth, cannot be without value to those who seek practical results. On the other hand, we who deal with general principles need many of the facts that come under your notice, and would be greatly helped by your co-operation. We already have improved stock breeders, why may we not have improved naturalists as well?

The origin of our domestic animals is a question beset with serious difficulties. It is only within comparatively recent times that reliable records have been kept of the more important breeds, and, therefore, we find the task of tracing definite strains by no means an easy one. From the earliest times frequent and extensive interbreeding between different races of domestic animals, as well as between domestic forms and wild species related to them, have complicated the question to an almost hopeless degree.

The domestic animals, whose origin we will attempt to trace this evening, are those which, I take it, are of the most practical interest to stock breeders. They are the *pigs*, *cattle*, *sheep* and *horses;* the animals that furnish the bulk of the world's supply of meat, hides, tallow, milk, butter, cheese, wool, and animal motive power.

The investigation in each case is conducted along three main lines involving three classes of facts:

First.—The historical facts, embracing all that is known from the records concerning the species under consideration, and all that has been ascertained by naturalists concerning the nearest wild allies of that species.

Second.—The geological record, which involves the study of the more recent fossil forms allied to the one under investigation. If the Hibernianism will be excused, we might call it the prehistoric history of the animal or its supposed ancestors.

Third.—The application of biological laws, that is, being assured of the uniformity and continuity of natural law, we can apply these laws now in force to the past history of the domestic animals, and thus find some of the distinguishing characteristics of their ancestors.

The animal known to the stock breeder as the hog—and in the Bible as swine—and to the world at large as the pig, is familiar to the zoologist under the generic name of "Sus." In this discussion I will compromise and call it plain *pig*. A pig may be defined as a four-toed, hoofed animal, without horns, having the lower joint of the leg composed of two separate bones, and with a greatly produced and abruptly truncate muzzle, and forty-four teeth. Now, of course, it may be urged that it is highly absurd to define a pig before a convention of stockmen. Anybody knows a pig without definition. But I beg leave to observe, in the first place, that a scientific definition must be such that it distinguishes the animal defined, not only from all living animals, but also from all that have existed in past geological ages. And, to the man who asserts that anyone knows a pig, I would retort by asking him to differentiate the genus *Sus* from the *Dicotyles* on the one hand and the *Potomochærus* and *Babirussa* on the other, and by the time he has done this his definition will be as long as mine.

These animals are frequently mentioned in the Bible, being included among the unclean animals according to the Levitical law, and being possessed of devils, in the New Testament. Some of them have never recovered from the visitation, as anyone will admit who has had practical experience with the animal. Archæologists tell us that they were domesticated in China over 4,900 years ago. An animal, known as the Neapolitan pig, was domesticated in Italy at the time of the destruction of Pompeii. There are only two wild species that need concern us at present.

The first, *Sus scrofa*, formerly ranged over Great Britain, Europe and eastern Asia, and was apparently domesticated in prehistoric times by the inhabitants of the Lake dwellings of Switzerland, during what is known to geologists as the Neolithic age, unknown thousands of years ago. The species still exists in a wild state in many parts of Europe, and is a long-headed brute, with conspicuous bristles and enormous tusks. The boars sometimes attain a weight of nearly 300 pounds, are wiry, agile, and exceedingly savage when aroused, making a foe worthy the powers of the bravest hunter, being hard to kill, and imbued with the most reckless and desperate courage. From this species descended the largest of the original British breeds, including the well-known Berkshires, and Hampshires, Yorkshires, and Cheshires. These breeds are very prolific, sometimes attaining enormous dimensions, but are slow in coming to maturity.

The wild boar of India, called *Sus indica* by some authors, and *Sus cristata* by others, is taller than the European species, and has an erectile crest, long back and shoulders. It attains a weight of over 300 pounds, and

its tusks have been known to be a foot long. No wild animal is more dangerous to encounter, when enraged, than this pig, which has been known to disembowel a camel with an upward thrust of its tusks, and even the royal tiger has been whipped out of the field by his ferocious onslaughts. From it the domestic swine of China and the orient have probably descended, including the smaller and shorter-headed races, mostly white in color, while the small, black breeds are held to be the offspring of the Naples pig before mentioned, which is itself thought to be an anciently domesticated progeny of the Indian boar.

The so-called "wild pigs" of Texas, Mexico and tropical America are not properly pigs at all, but *peccaries*. From personal experience I can assert that the best way to hunt them is to climb a tree.

Perhaps the greatest natural curiosity in the pig line is what is known as the "solid-hoofed pig." This animal has a single instead of a cloven hoof, and seems to be a sport rather than a legitimate breed. It has been known ever since the time of Aristotle. Mr. Talbot, of Sioux City, has, by careful selection, established a race of solid-hoofed pigs from a single boar, crossing with ordinary swine.

Among fossil pigs, the most remarkable is one found at the foot of the Himalaya mountains, known as the "Titan pig,"—a monstrous brute with a skull twenty-three inches long, and standing as high as an ordinary mule. If it had the savage propensities of modern wild boars, this must have been one of the most terrible beasts that has ever lived.

Turning, finally, to our last line of evidence, the application of biological laws, we have but a single fact to consider; namely, that the young of all the present wild species of pigs are more or less striped. There is also some indication of striping about the shoulders of the adults of certain wild forms. Now, it is a general biological law that characters appearing in the young of any animal indicate the presence of these same characters in the adults of the ancestors of that animal. Applying this rule to the pigs, we conclude that the ancestors of the wild species now living were striped something like the zebra, but not so conspicuously so.

To sum up, we can be pretty certain that the largest, longest-headed races of our domestic swine descended from the European wild boar, and that the smaller white races are from the Asiastic wild boar, while the smaller black races, such as the *Essex*, are from the Neapolitan breed, which itself came in ancient time from the Chinese race, which descended, probably, from the Indian wild boar. Of course, domestic races have been so frequently crossed that the original strains are inextricably mixed in many cases. Finally, we can trace the wild boars themselves back to fossil forms, some of them enormous beasts, which were more or less striped, especially on the back and shoulders.

We next turn our attention to the origin of domestic cattle. They are undoubtedly among the most valuable and interesting of our animal friends. Personally, I must confess to something like antipathy toward the peaceful kine, an antipathy which is, doubtless, the result of a youthful experience. As a boy, I was the victim of a cow that loved me—not wisely, but altogether too well. I naturally loved cattle, and bestowed so much care and petting on a beautiful Jersey cow that was my especial pride that she would come on a trot whenever I called, answering most vociferously, and follow me all the way home from the pasture on the outskirts of

the city. In those days cattle were simply "let out" in the morning, and went to pasture themselves. This particular animal took to waylaying me on my way to school, and followed me thither in spite of every discouragement, and capped the climax by standing with her head over the schoolyard gate, and bawling most solicitously. It was useless for me to seek the remotest corner of the playground, for my delighted schoolmates would yell in ecstasy: "Hey, Charlie, she wants her calf; run along home!" This was followed by new versions of the classic poem about one Mary and her little lamb until my youthful heart was filled with bitterness and gall. If this audience realized the real distress that I suffered from that cow's well-meant attentions, the story would be greeted with tears rather than laughter.

All of our domestic cattle, as well as their wild relatives and ancestors, are included in a single genus, *Bos*, which may be defined as embracing cloven-footed mammals with short necks, broad, naked and moist muzzles, long and flat forehead, two functional toes to each foot, hollow, smooth horns, which are never twisted nor wrinkled, and long tails. These animals are now distributed over nearly all of Europe, Asia, Africa, Australia, and North and South America. They are naturally gregarious, and like most ruminants essentially polygamous. Domesticated forms have been recorded from the very earliest times. They have been objects of veneration and worship to some of the most powerful peoples of antiquity, as the Egyptians, who paid divine honors to the sacred bull *Apis*, and the Hindoos, who have exhibited a marked veneration for the humped cattle of their country. In mediæval times, wild cattle were common in various parts of Europe and the British Isles. Fortunately, we have an extant living race of cattle that have been kept with the greatest care in almost their original surroundings for at least 679 years.

In England, sometime before the year 1220, a large tract of land was inclosed, which has ever since been known as Chillingham park. At that time, a number of wild cattle were ranging through that region, and many of them were included in the park. There they have lived as nearly as possible in their original surroundings, have been carefully protected and rigorously excluded from any crossing with other breeds. Here, then, we have preserved for us a herd of the original stock from which a large portion of our domestic breeds have undoubtedly descended. Darwin has the following description taken at the time of his visit:

"The cattle in their instincts and habits are truly wild. They are white, with the inside of the ears reddish brown, eyes rimmed with black, muzzle brown, hoof black, and horns white, tipped with black."

There seems to be every reason to suppose that these cattle themselves descended from the aurochs, gigantic animals found in Germany in Cæsar's time. These were much larger than the park cattle, being magnificent specimens of bovine life, having horns with a spread of about fifty inches. Their bones have been found all over Europe. The specie is known as *Bos primigenius*. Going back many centuries before the dawn of history, we find that this same species was domesticated by the inhabitants of the lake-dwellings of Switzerland. Along with the domesticated cattle it seems that the wild aurochs were found up to Cæsar's time, and it is claimed that they existed in parts of Poland up to about a century ago. As before mentioned,

the color of the park cattle is mostly white, with red ears and black muzzles. This color is such an unusual one among wild animals that naturalists can scarcely believe that white was the color of the original *Bos primigenius*. It seemed, however, that this color prevailed as far back as we have any records, even back to near the beginning of the Christian era. Another fact of interest is that when cattle become wild in various parts of the world they very generally tend toward a white color with darker muzzles and ears.

From *Bos primigenius* then, most of our larger breeds of cattle descended, including the Durham, Devonshire, Hereford, Friesland, Holstein, Longhorns, Aberdeen, Polled Angus, and Galloway breeds.

It is held that another original species called *Bos longifrons*, was the ancestor of most of the remaining breeds. *Bos longifrons* was much smaller than *Bos primigenius*, and had shorter and more delicate legs, like those of the modern Jersey cattle. This form also seem to have been possessed by the Neolithic lake-dwellers of Switzerland, to whom we are so much indebted, although they lived many thousands of years ago. From this species descended the mountain cattle of Norway and Great Britain, especially Scotland, *Welsh cattle Pembrokes*, *Anglesia*, *Shorthorns*, and *Jersey*. Of course, there have been innumerable crossings of breeds, but it may be said in general, that the heavy, beefy stock shows a preponderance of the *Bos primigenius* strains, and the lighter dairy stock descends principally from the *Bos longifrons*.

The wild cattle of South America are descendants from a herd of seven cows and one bull brought from Spain in 1556. Their ancestors were introduced into Spain by the Goths, it is said. They were related to the Holsteins and Jutland breeds, which, in turn, were descendants of the *Bos primigenius* type.

Hornless or polled cattle do not belong to any particular breed, but are the result of artificial selection. After a polled breed has once become established, they are said to breed remarkably true. Here we have an instance where man himself has established a hornless breed which differs so much from the horned forms that, if their skulls had been found by naturalists in some fossiliferous deposit, they would at once have been regarded as representing not only a new species but even a new genus of animals.

All of the species of the genus *Bos*, used in its widest sense, can be and have been succesifully crossed. The buffalo and larger breeds of domestic cattle, such as the Hereford and Holstein, have been crossed a number of times. The zebus, or humped cattle of India, have been successfully crossed by Mr. Talbot with the Jersey breed. "Buffalo Jones" has produced a number of buffalo-domestic crosses, and fine examples of the same cross could be seen a few years ago on Mr. Talbot's farm near Sioux City. One animal in particular was full grown, and had the finest coat of long, thick, glossy, black hair that I ever saw. Doubtless magnificent robes, far superior to the now greatly prized buffalo robes, could be produced by establishing this breed.

To resume: All, or nearly all, of our domestic cattle are supposed to be descended from two distinct species of the genus:

First, the *Bos primigenius*, an auroch of the Romans, from which the large and heavy forms sprung; and,

Second, *Bos longifrons*, the progenitor of the lighter breeds of dairy cattle. The so-called Park cattle, of England, are probably more like the original *Bos primigenius* than any other form now living From this latter species the great hordes of cattle which are spread over the pampas of South America were derived, through the fact that their ancestors were introduced into Spain by the Goths, and later into America by the Spaniards. Fnally, all cattle are so nearly related as to be fertile among themselves, which indicates a recent origin of the genus, speaking from a geological standpoint.

My reference to the origin of domestic sheep must be very brief, for the reason that nothing definite seems to be known about it. There is no agreement at all among the authorities that I have been able to consult. There are from eight to twelve wild species now scattered over Europe, Asia, northern Africa and North America, but it is by no means certain that any of them are the ancestors of the domestic breeds. Like the species already discussed, their domestication antedates the dawn of history, and goes back to the time of the Swiss lake villages. It seems that sheep are naturally mountain dwellers, many of them being among the most agile climbers of all animals. Their center of distribution appears to have been in the region of the Himalayas. Our own mountain sheep, or big-horn, is probably the most expert climber and leaper of all North American mammals. The idea that they light on their horns when leaping from considerable heights contains some truth. I have seen an old buck do this, but, as he was mortally wounded at the time, it is likely that his massive horns acted as a weight to drag the head downward. The females can make quite as astonishing leaps as do the males, and their horns are small and weak.

Sheep and goats can be crossed without difficulty, and valuable results might thus be attained. For instance, I have seen the fine silky, fleece characteristic of the Angora goat, on the back of a living domestic sheep. This was the result of another experiment by Mr. Talbot, who crossed the goats and the sheep in such a way that the progeny appeared to be a true sheep with goat's hair. The same gentleman produced a four and five horned race of sheep by careful selection, and claimed that if he were permitted time and means to continue his experiments he could produce sheep with almost any number of horns.

The last species which we can discuss, this evening, is the noblest and most beautiful of all the animals which man has made his by domestication. I have little sympathy with those who can not become enthused when horses are discussed; the most faithful servants and loyal friends that God has given to man; faithful from time immemorial amidst the shock of battle and the dangers of the hunt; faithful, in spite of a disposition the most timid, in face of terrors the most intense; faithful in using marvelous speed to bear man out of danger or into the hell of battle; faithful in using his equally marvelous strength in the peaceful pursuits of the farm; faithful in spite of blows and curses on the part of human brutes who are too much honored by being allowed to associate with the noblest of animals. A horse can love and show his affection, can hate and show his animosity, can fear and show his terror, but he never fawns upon a cruel master as does the dog. He is the most striking example of the possibilities of long training that the brute creation has produced. Instantly responsive to

voice or rein, touch of spur or pressure of knee, he becomes, as it were, a part of a good horseman. I know of nothing that shows a more complete mastery of natural disposition than the way in which the horse can conquer his most acute natural fears. Think of the mortal terror that possesses a horse in the presence of a locomotive or an elephant. At Hagenbec's show at the World's fair, a horse was trained in about a week to allow a lion to alight on his back and be borne, growling and snarling, around the ring. Can you conceive of a greater victory of will over organized matter than this?

A race horse is, to my mind, the most remarkable result of careful training and breeding that the world can show. It is the most exquisitely delicate and, for its weight, the most powerful of all animal machines, and it stands to-day a monument to the care, sagacity, and patience of the long line of stock breeders in whose hands natural capabilities, exceptionally good, have been developed through centuries of the most careful breeding, training, and selection into a marvel of speed and endurance. It is a matter of sincere regret to lovers of horses that the race horse has been put so very generally to the base use of a gambling tool, that a majority of the most intelligent people have come to regard a horse race as a performance so intimately associated with bad morals as to be unworthy of patronage. Here, as in so many other ways, man has been willing to sell his birthright for a mess of pottage.

A horse may be defined as a hornless, solid-hoofed, non-ruminant, with a single developed toe to each foot, complete bony eye sockets, a well developed mane and tail, and forty-two teeth. The horse proper can be told from other members of the genus *Equus*, such as the ass, by the fact that he has bare callosities on the inside of the hind legs as well as on the fore legs, and by the further fact that its tail is haired throughout, at least on its upper surface.

The history of this species is more complete, both in human and geological record, than that of any other domestic animal. It was already domesticated in Great Britain at the time of Cæsar's conquest, near the beginning of the Christian era. It figures in the monumental records of all the ancient civilizations of the old world; Egyptian records mention it as far back as 1900, B. C. It is referred to in Job, one of the oldest books of the Bible, but it is probable that the Hebrews first became acquainted with it during the Egyptian captivity. Its breeding was forbidden in Deuteronomy, probably because it brought the Israelites into contact with heathen powers. Among all the early civilizations, it seems to have been used in war alone, and so it spread over the earth in the course of conquest. No animal has been so intimately associated with the destiny of nations as has this; none has been so prized by earth's nobility. It accompanied the Aryan race in its early dispersal. Wherever the foot of the conqueror has tread, there the foot of his war-horse has marked the path of victory. The British herds were greatly affected by the horses accompanying the Norman conquest, while the wild horses of South America came with the Spanish "conquestidores."

Like the pig, the ox and the sheep, the horse existed at the time of the lake dwellers, of Switzerland. It seems, however, that it was then known only as a wild animal, to be hunted and killed for food, and probably

also for its hide. Immense droves at that time overran a great part of eastern Europe, where they were doubtless important objects of the chase.

In what is known as Pleistocene time, horses were co-existent with man, as we know from rude drawings made on slate, bone and antlers. These animals were rather stocky, with comparatively large heads and conspicuous mane and tail. From geological evidence it appears that the climate of western Europe was then much like that of the present Russian steppes, covered during a considerable part of the winter with snow. From these horses of the Pleistocene, it is probable that the greater part of the heavy, hardy breeds of the present descended. They were, as has been mentioned, domesticated at a very early period in Great Britain, where they were carefully selected and bred, so that almost every county is said to have had its peculiar breed of horse. There are nowhere at the present time any pure-bred descendants of this original stock, but the strain is pronounced in such breeds as the black Shire horse, Clydesdales, Percherons, and Suffolk Punch. This same blood also predominated in the war horses of mediæval times, when the weight of a knight and his armor was so great that a strong, heavy horse was essential. I remember seeing, in the tower of London, effigies of mounted knights that wore enough armor to crush a small horse to the earth.

But it is evident that these original wild horses of Europe were not the only ancestors of our modern breeds.

There are at the present time numerous breeds of wild horses ranging over the steppes of central Asia. One of these species is known as the Tarpon, and is characterized by a large head with a convex profile, small, slender legs and delicate hoof. It is usually of a pale dun color, with a reddish-brown streak along the back, a mane and tail of the same dark color, white nose, and black muzzle. These animals are very speedy, and capable of great endurance, as shy and difficult to approach as any deer or antelope, and entirely untamable after reaching maturity, although the young have been successfully broken. This is supposed, by competent authorities, to be very closely allied to the original of the ancient domestic horses of Asia, which spread eastward in early time and southward to Arabia and Africa, where they founded the famous breeds known as Barbs and Arabians. The Barbs were and are characterized by long, delicate limbs, small hoofs, and a remarkably small girth around the loins. The Arabian horses are rather more compact than the Barb, but still of slender build, broad foreheads, eyes large and widely separated. They are amiable in disposition, and capable of wonderful endurance. The Jennets are a Spanish breed, closely related to the Barbs and Arabs. These, later, were early imported into Great Britain and crossed with the heavy native stock—thus originated the Englise race horse. The English hunting horses are produced by crossing racing stock with native animals. The American trotter is said to be, in the main, the English race horse, crossed again with Arab or Barb.

It is a noticeable fact that the mule and ass colts often show a dark line down the back, and stripes on the shoulders and legs. The young of the Asiatic wild horses show the same. The zebra, which belongs to the same genus horse, is notably striped. Using the same argument adduced in the case of the pig, we may infer that the progenitors of the wild horses were more or less striped with a dark line along the back.

The *ponies* are supposed to be descended from parts of the old English stock which took to the mountains and islands where they were subjected to a rigorous climate, which, as has been well established, tends to reduce the size of the breed. The Shetland ponies may thus be regarded as a hardy race diminished in size, but full of strength and pluck. The great herds of wild horses, that formerly overran nearly the whole of South America, were the descendants of five stallions and seven mares that were abandoned in 1537. They quickly spread over the continent from the straits of Magellan on the South, to the northern limit of the pampas. The mustang and broncho of Texas and the western plains are probably descended from Spanish stock introduced into Central America and Mexico. They are, when properly trained, excellent saddle horses, with a gait as easy as a rocking chair, which will be maintained up hill and down for hours without a single break. Few citizens of the eastern or middle states ever see a genuine saddle horse, and riding one is a revelation.

We have thus traced the history of the horse within comparatively recent times. Recent, I mean, from a geological standpoint.

The geological history is no less interesting, but the time at our disposal will only permit of the briefest outline. The tracing out of this history is due largely to American geologists, especially, Professor Marsh of Yale. Without going into detail, it must suffice us to say that the line has been traced by a perfect series of intergradations from the modern horse of noble proportions, with only one toe to each foot, and highly complex teeth, to an animal not much larger than a fox, with four toes to each foot and a rudiment of a fifth in the fore foot, and unspecialized teeth. This statement seems at first thought incredible, but I assure you that the evidence is complete and entirely convincing. Most of these curious geological ancestors of the horse lived in America, where the history runs back without serious break to the Eocene time, a time so remote that we can only say that it was hundreds of thousands of years ago, when nothing resembling man existed, and nature herself was the only stock breeder. But she worked, as you do, by careful selection of the best and destruction of the inferior until from such unpromising material she produced the horse ready for man, his master.

In conclusion, the following general facts are worthy of your notice:

First.—All of the "stock," properly so called, is found in one order of mammals, the *Ungulata*, or hoofed animals.

Second.—They all seem to have originated in the northern hemisphere, and all became first domesticated in the great European and Asiatic land mass, where it is thought that man himself came first upon the scene.

Third.—The southern hemisphere has produced but one useful servant of man, the llama, which is a South American form, while the North American continent has added nothing.

Fourth.—Not a single animal has been added to the list of domestic stock within the historic period. The account seems to have been closed before primitive man took to the making of books or other intentional record of his doings.

The question now becomes pertinent, has man exhausted the possibilities of nature in the matter of discovering animals of which he can make use in the form of stock? Has he forever lost the art of taming the beasts of the field and making them do his bidding? Is the buffalo to pass away without a permanent use being found for his tremendous strength, his hardy endurance of cold, his great mass of nutritious and savory meat and his unequaled robe? Has nature said to the stock breeder, "Thus far shalt thou go and no farther?" or will your successors find a way to still further victories over the buffalo the big-horn and the caribou? The naturalist has a vital interest in this question, for history has demonstrated, and is now demonstrating, that what man cannot use he surely and inexorably destroys, and it is perfectly safe to say that all those forms that are not domesticated are doomed to certain extermination, and that no large mammals will exist in the future, except such as the stock breeders save.

CHAIRMAN: This paper is now open for discussion.

QUERY: Have you ever seen our native elks in harness?

NUTTING: No, I never have. I leave that for men older than I am.

FRANKLIN: I was very much interested in this paper, and my curiosity was aroused. I have heard of crossing dogs with sheep, but I never before heard of goats and sheep crossing. I would like to know what you know about the crossing of the goat with the sheep.

NUTTING: I have had no personal experience with the matter of breeding at all. The records showed that it was a genuine Angora goat, and I believe it to be true.

FRANKLIN: The goose and the duck cannot be crossed, and it is generally believed that the goat and the sheep cannot. They run in the same flock, and I never before heard of their crossing. I was interested in knowing simply to satisfy my own curiosity.

NUTTING: The evidence I have is authentic enough for me to believe that it is true.

BAKER: I want to congratulate you on such an excellent paper. I was familiar with such things as the professor talked about from my reading in the past. He covered the ground from the infinite to the exalted condition of the farm animals.

BROCKWAY: I would like to ask the professor about warts on horses' legs.

NUTTING: They are called callosities. These callosites are the reappearing of the hoofs. They are associated in some way with the splint-bones on the horse's legs. There was a time when instead of these two splint bones on the legs there were two toes. It is the ancient character of the horse tribe reappearing in the present.

QUERY: Can you explain why wattles appear on hogs jaws?

NUTTING: Wattles on hogs' jaws are entirely inexplicable so far as I am concerned.

HITTE: In regard to striped pigs will say, I last summer saw a litter of pigs that had one or two that were marked quite distinctly with stripes. They looked like ground squirrels.

NUTTING: What breed were they?

HITTE: They were registered Poland China stock.

KIEL: I have at the present time among my pigs a litter with some striped pigs among them. They are thoroughbred Poland China stock.

MILLER: I think we should give the professor a vote of thanks for this paper.

CHAIRMAN: A motion has been made to give the professor a vote of thanks for this very able paper. Is there a second to this motion.

Motion seconded and carried.

NUTTING: It was a pleasure to me to read the paper and hear the discussion. The questions were all to the point.

CHAIRMAN: I will now announce the following committees:

Committee on Resolutions.—W. M. Beardshear, J. T. Brooks, H. Hoadley, E. Lefebure and George H. Dunkleburg.

Committee on Nomination of Officers.—W. O. Fritchman, J. N. Dunn, A. J. Miller, B. P. Norton, Daniel Leonard.

Committee on Location.—E. C. Bennett, G. H. Burge, G. W: Dickens, F. A. Edwards, Alvah Hardy, J. A. Meissner, B. H. Hakes.

CHAIRMAN: I see Mr. Meissner is present now and we will hear his paper.

Mr. Meissner read the following paper:

DUTY OF THE BREEDER OF THOROUGHBRED STOCK; WHERE IT BEGINS AND WHERE IT SHOULD END.

BY J. A. MEISSNER.

Gentlemen:

It is easier to preach than practice.

First let me say: It should be the aim and ambition of every breeder not only to maintain the present excellence already acquired in all lines of pure bred stock, but to raise them to still higher level.

Encourage others to embark in the raising of pure bred stock; in this way you are helping yourself, your neighbor, your community, your state.

It was not her factories, shops or mines, or her fertile soil, but it was her pure bred stock or their descendants that marketed her abounding crops on the highest markets, that has given our state the eminent position she has attained.

Still we as farmers are not all prosperous We have the grain farmer, who sells his yearly product soon after harvest for barely enough to cover rent and expenses. Every successive year finds him deeper in debt till circumstances force him to take the degree of milk-hauler or day laborer, where he makes a living as best he can. In the same category I may class the farmer of scrub stock.

Do all you can to demonstrate to your fellow farmer the necessity of keeping only the best lines of stock of all kinds. A pound of beef or pork is more cheaply made on a high grade than on a scrub.

To illustrate: let me cite an experiment recently made with two steers, one a high grade beef animal, the other a common steer belonging to the scrub kind. At the beginning of the experiment the two steers weighed about the same, all chances being equal. They were fed for five months; the amount of gain was a little in favor of the high grade steer, the scrub doing remarkably well for his kind; they were sold on the same market, one for $5.50, the other for $4,50; 1 cent a pound, in favor of the well bred steer, on 1,500 pounds is $15. It did not cost a cent more to grow the good steer; no, it did not cost as much. Then why not raise good stock?

The moral duty of the breeder is another phase of this subject, and probably the one the committee had in mind when they assigned me this topic.

There seems to be an opinion among a number of breeders of common stock, who buy thoroughbred animals to head their herds, that any price above the market price is either exorbitant or clear profit. Let me remind these men of the old proverb, "It is not all gold that glistens," and though we may get from $10 to $50 above market price this does not represent that much profit. Every breeder encounters many expenses, as advertising, extra care, the keeping of pedigrees, traveling expenses, express or freight charges, the buying of stock to keep up the herd, interest on money invested in foundation stock, incidental expenses, which occur daily, all of which bear heavily on the breeder. He must sell for enough to cover these expenses or be driven to the wall.

A breeder should be honest in all his representations, should describe stock just as it is, not merely mention the good qualities in a way to imply the same evenness all over, but name the faults as well. If such animal is sold, see it is properly handled and cared for till time of delivery, delivered in good shape, carefully watching express and freight companies, and see the animal is not exposed to bad weather or extreme heat. Having done this he has completed his duty.

To the purchaser I would say, my friend, do not expect to buy a $100 animal for $15 or $20; if you do you will be disappointed when the animal arrives. Make an allowance for honest difference of opinion, considering the price you paid, remembering that you are scrutinizingly examining the newly arrived beast, not forgetting the fact that nearly every one looks at his stock with favor and pride.

Am sorry to say, all men are not honest, which necessarily includes some of the breeders. As a rule I think the breeders are an honorable class of men. Considering the amount of business done through the mail, where buyer and purchaser are entire strangers and animals under consideration are never seen, and the comparatively few complaints, I would congratulate them on their honesty, integrity and sterling qualities.

Misrepresentation of pedigrees, another source of dishonesty, though inexcusable, is resorted to by unscrupulous persons, sometimes under financial pressure, when a change of pedigrees will make the animal sell for more money. Sooner or later these men will be caught and should be promptly debarred by all record companies.

Every breeder should be familiar with all animals in his herd, should have them properly marked, not relying on his memory for their identification; such is a shiftless way, and can only be done by men who have little stock and little business.

As to guarantee; ordinarily an animal sold for breeding purposes should be a breeder or no sale. Let me illustrate: Suppose A goes to B to select a boar. He finds what suits him, of proper size, etc. "What is your price?" "Twenty-five dollars." "Very well, I will take the pig; want to begin breeding on Monday." He pays for the pig, takes him home, and after much pains finds the boar will not work or is barren. Surely the breeder who sold the pig is responsible, and will have to replace him or pay back all but pork price. Seller here was responsible, animal having been fed and cared for by him all his life. Animal may have been improperly fed, or confined in close, filthy quarters, or improperly treated in other ways.

As to guarantee at public sale; while it is a fact that all stock bought at these sales is bought for breeding purposes, and should be such or it does not fulfill the purpose for which it was sold, who ever heard of a farmer selling common sows at every public sale, guaranteeing every one to be with pig or to be a breeder? We, as breeders, are putting up our stock to sell for what it will, even though it goes below market value, and are supposed to give an ironclad guaranty. It is impossible to lay down rules to govern these transactions, All we can do is to follow the custom of guaranteeing, with the expectation of getting a little better price, or sell them just as they are for $25 to $40, letting each purchaser assume all other risks. I am of the opinion the latter would be the best way, and in the long run cause the least annoyance and friction.

The Jew who buys the $25 animal for $15 to $18 has the same moral right to recover from $2 to $8, though it may bring the animal below cost, as has the other party. I suggest you tell Mr. Jew, "If I must cut on prices, I waive all guaranty and responsibility." You can then withdraw the guaranty portion of your price and no misunderstanding will arise.

Again, if A goes to B for a boar at weaning time, months before he is old enough for use, he buys him cheap because he is young. By so doing the buyer surely implies: Sell me the pig cheap now, and I will assume all risks. It certainly does not look fair to hold one responsible for stock which has been in the hands of another for a long time, probably subject to misuse or ill treatmant.

And even here, if seller received a fair, remunerative price, being reasonably assured of the good treatment while in the second party's hands, I think he is morally, though probably not legally, bound to bear part of the burden. Purchaser may have bought early to get better selection, not caring so much for price as he did for quality. Of course, this will apply to all lines of stock and of both sexes.

Pedigrees and transfers should be promptly furnished for all stock settled for, while it is proper to withhold the same until such settlement is made.

As to advertising, public sales, etc., let me caution you against trying to make too much display and trying to come into prominence too quick. While you are good fodder for the agricultural papers, you are liable to starve yourself. I believe the man with a reasonably large ad., who has not paid such long prices that he cannot afford to sell cheaply, one who goes along quietly, without making too many and too radical changes, gets along best. On the details of the stock business much could be said; so it could on the other business.

Gentlemen, let me suggest experience coupled with a little common sense and fairness, placing yourself in the position of the other party, will help you out of most difficulties, telling you where your duty begins and where it should end.

CHAIRMAN: The paper is now open for discussion.

WOOD: The paper seemed to cover the ground.

BAKER: I would like to hear from Cownie.

COWNIE: They elected me president to cut me off from talking. I think we will now take up the next paper on the program, which is by Mr. Brooks. He will now tell us something about how to keep track of our losses in the next few years.

Mr. Brooks read the following paper:

BOOKKEEPING ON THE FARM.

BY J. T. BROOKS.

It is not the purpose of this brief paper to formulate or set out a system of bookkeeping for the farm, but rather to urge the importance of keeping books. The subject was assigned me by your secretary, and I am so heartily in sympathy with his thought, that it is an important subject, that I could not refuse to lend a helping hand, though regretting that he had not called a more ready one.

The necessity for keeping a systematic record of all business transactions is so great and so universal that it is a matter of some surprise that anyone neglects the duty. And yet I am inclined to think that anything approaching a complete and comprehensive record of the yearly transactions on the average Iowa farm, is the exception. And if any effort of mine

could change this exception to the rule, I would feel that I had done more for my state than usually falls to the lot of the ordinary citizen to do. My daily work for nearly twenty-five years as lawyer, banker, and farmer has brought me into close and intimate connection with every phase of business affairs as conducted in the country districts of our state. And, on due reflection, it is my firm belief that as many as nine out of every ten of the business wrecks that have passed under my observation during these years, whether in the town or on the farm ,would have been prevented wholly or in large part by a set of well kept books. Now, I do not wish to be understood as suggesting that the act of recording a bad deal will make it over into a good one, nor that a system of accounts will in itself change a losing business into a paying one. And yet it will even do this in many cases by pointing out the cause of the loss, and thereby suggesting the remedy. And in those cases where the loss is inevitable, and a remedy out of the question, the books will reveal this fact, usually, in time for a change of front before everything has gone "into the hole."

What the log-book is to the ship-master, the record-book is to the business man; and if the farmer is not a business man he is no farmer. The sea captain who would attempt to sail his ship without due attention to the log-book would be deemed out of his head, and his crew would likely mutiny and, in sheer self defense, throw him in irons. And that is just about what the logic of events does with the man who attempts to navigate his affairs without account books. The thought often prevails that it is only the merchant, the tradesman, or the professional man who need to bother about keeping books. But in fact, nothing could be farther from the truth. On the farm the property is more fixed and stationary in character, and the exchanges fewer than in the store, but of more relative importance. In these facts rests the whole difference in the obligations of the farmer and the tradesman for keeping books.

With the merchant the transactions come along a little faster, are a little more numerous, and in the absence of accurate records he quickly comes to grief. On the farm the turns are less frequent, and it is possible for a good clear head to keep itself above water without the aid of pen and paper.

But it is beyond question that such a course calls for increased care, greater energy, and produces results less satisfactory.

The farmer who succeeds without books would succeed better, and with far greater satisfaction, with them. And then there is a feeling of self-reliance, of security and comfort of mind, in the fact of knowing just "where you are at," and why you are there, that is well worth many times the trouble of keeping the accounts. But to be valuable, the entries, like the hired hand's meals, must be promptly and persistently attended to. I think many persons are deterred from undertaking a system of accounts by a feeling of incompetency to keep them correctly, and so as to have them do what they are designed to do. But this feeling should be summarily disposed of One does not necessarily need to attend a so-called commercial college to be able to put on paper the affairs of a business which is itself thoroughly understood. The man who has his business affairs in hand can, with the aid of the very commonest of a common school education, transfer those affairs from the hand (head) to paper.

When I speak of a system of accounts, I do not mean any specific formula that is to be mechanically followed out. That is the sort of thing that so many of our bright boys get at the commercial college, and that acts as a clog ever afterwards till experience frees them from it.

The book entry is nothing more or less than a convenient and necessary means of perpetuating the thought that is in the mind of the operator at the time of the actual transaction. And the man who clearly understands what he does, and why he does it, will, after a little effort, have no difficulty in so grouping his book entries as to make them show, in after days, these things in the proper relation to each other. And that is the soul of book-keeping.

As to the details: They are determined wholly by the scope of the business—by the things done. There will be, of course, the general in and out account, where all transactions are rounded up under the heading of *cash*. This account may be kept by original entries made from day to day, as the transactions take place; or, it may be written up from the other accounts at the end of the month, or quarter. But I think it the better way to keep this account from original entries made at the time of the transaction. This is a little more bother than the other way, but it will prove more satisfactory in the end, and should be persistently adhered to.

Then each branch of the business conducted on the farm must have its separate and distinct account, as persistently and carefully kept as the account of a bank with an individual depositor. And I wish to emphasize this point: The well-kept cash account, with an occasional taking of stock, will show what the business is doing, whether it is paying or falling behind, and just how much. But it will give little or no information as to what particular branch of the business is responsible for the good or bad results. It may be that some branch of the business that is consuming the greatest amount of care and labor is being played wholly as a losing game. While others that are lighter and more congenial are the ones that are entitled to all the credit for a small general gain, after making up the heavy deficiency of the other. And yet the cash account, which many good people think is all that is needed on the farm, will be dumb on this all-important point. These facts are only revealed by the individual, sub, or auxiliary accounts. For this reason these accounts are the life-blood of all good systems, and abound in no end of useful results.

The horse account must show, as near as possible, just how much of the proprietor's resources have gone into this branch of the business, and how much has come out during the year. And if there are two or more classes of horses carried, then each must have an account. The sheep, might with about the same propriety, be listed with the hog, and the hog credited with a wool clip, as that the trotting horse or the roadster be entered in the same account with the draft-horse.

The cattle will be carefully charged with what they cost, and as carefully credited with all returns. And, here again, it will be apparent at a glance, to a real farmer, that the dairy herd, the breeding herd, and the feed-lot must each have its own distinct and separate account. In like manner the sheep and the hog, etc., must go through the books.

And right here, in making up the items for these accounts, will come in some nice play for good judgment. For it will not always be possible to

say that this amount or that should not be a cent more or less. But the experienced farmer will find but little difficulty in hitting off these items with sufficient accuracy for all practical purposes, provided the thing is done with the current facts all fresh before him.

In the matter of the various crops produced on the farm, I have found it more satisfactory to keep the account with the land, naming or numbering each field or tract that is separately fenced or handled, and keeping a separate account with each.

This plan will serve every purpose of a good crop account, and will, in addition, make a convenient comparative showing as to the different kinds of crops in the rotation under similar soil conditions. And still farther, it has the advantage of showing, without additional labor, what effect the system of cropping is having on the productiveness of the land.

But it must be kept in mind that nothing is attempted here beyond general suggestions as to the frame-work, as it were, for bookkeeping on the farm. All else must be suggested by, and fitted to the facts and surroundings of each individual case. And for the farmer who is determined to be master of his affairs, and not drift before the wind, nothing more is needed.

CHAIRMAN: The paper is now open for discussion.

BAKER: I keep books, but not by such an intricate system as Mr. Brooks has spoken of. My cash-accounts when received are transferred to the books, and then deposited in the bank. Then, whenever we feel like lining our pocketbook with cash, we send a check to the bank to be honored, The man who handles the plow does not care to run to the house to enter a little cash item on his books.

LATHROP: How do you balance your books? If you sell a piece of land, how do you carry that?

BAKER: I never carry dirt on my books.

FRANKLIN: I would like to ask Mr. Brooks if in debiting a field he charges up what the land is worth or what it would rent for?

BROOKS: I carry no value on my books. These book entries are simply what the land produces and what it costs me during the year. I know of no other way for a business man to carry on his affairs without a set of books. I do not keep the same kind of books for the farm that I do for the bank. If I had plenty of time and wasnot too lazy I might. For me it is necessary to keep my accounts in a convenient form so I can tell what I am doing.

WEST: Do you take into consideration the value of the land?

BROOKS: I do not carry the value of the land on the books.

QUERY: Do you take an invoice of your stock?

BROOKS: The experienced farmer takes account of stock every year, the same as the merchant, I do the same thing.

CHAIRMAN: I would like to ask Mr. Brooks how he keeps his accounts separate, with your horses, cattle, and hogs. You say you keep an account of each. In feeding corn to horses, cattle, and hogs from the same crib, how can you keep an account of each individual animal?

BROOKS: I do not do much of that. I have my stock scattered. My idea is to have it distributed over the farm. My hogs are fed at one crib, my cattle at another, and my horses at another. It is not hard to keep an account of these things if you attend to it as you go along.

CHAIRMAN: It is getting late and I think we had better adjourn. I hope you will all be in your seats at 9 A. M., to-morrow.

Adjourned.

THURSDAY MORNING, 9:30 O'CLOCK.

Meeting called to order at 9:30 by the president.

CHAIRMAN: The first thing on the program is a paper by our newly appointed dairy commissioner. I take great pleasure in introducing to you Mr. B. P. Norton, one of the most successful dairymen in the state of Iowa, recently appointed dairy commissioner. You are no doubt well aware of the fact that the time has gone by in Iowa, when theoretical men are called on to take high positions. When the governor wanted a dairy commissioner last winter, he searched the entire state to find a thoroughgoing, practical dairyman for this position, and he found the man in Delaware county. We have Mr. Norton with us, and will now listen to his paper.

Mr. Norton read the following paper:

HOW I WON SUCCESS IN DAIRYING.

BY B. P. NORTON.

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

I have never had the pleasure of attending one of your meetings before, for I have been more interested in dairying than I have been in the breeding of fine stock.

Your president called upon me at the dairy commissioner's office in Des Moines a short time ago and requested me to attend this meeting, and tell you, as he put it, how I won success in dairying. So I will try to tell you in as few words as possible how I started and worked into the dairy business, and how I feed and care for my cows.

Twenty-four years ago last month my wife and I commenced farming on our farm near Cresco. At that time we had 160 acres of Iowa's good soil, with a good-sized mortgage on it, under very good improvements, with comfortable house, small barn, and farming tools and teams enough to carry on the place, and last, but not least, we had two cows. At that time wheat was the main crop on the farms of northern Iowa, and the first year our farm was nearly all sowed to wheat. That year, as many of you may remember, was the year of the beginning of the wheat failures, and our first crop of wheat was nearly a failure. Our second crop was a very good one, and brought a fair price, and we reduced the mortgage on the farm more than one-half. But from that time on our wheat crops failed. Some years they were not worth harvesting. We couldn't stand that kind of farming very long and we were obliged to try something different. A good many of our neighbors were leaving their farms and going west to try to make a new start. We commenced seeding down the farm to clover and timothy, and working into cows. We enlarged our barn and increased our dairy until we milked forty cows. About this time I commenced reading in the papers about baby separators, siloes, watering cows in the barn, and weeding out the poor cows and keeping only the good ones. I tried them all. I tried the weeding out, and sold the cows down to thirty-five, and then down to thirty. I found that by feeding my cows ensilage, watering them in the barn, and skimming the milk with a baby separator, I could make more butter from thirty cows than I had been mak ing from the forty.

When I first started in dairying I bought the most of my cows. When I went out to buy a cow, I never asked a man to show me the cow's pedigree. If she suited me I bought her regardless of breed or color. I have never tried to keep any particular breed of cows, but aimed to keep the one I thought would make me the most money for the feed she consumed, and the more feed she would eat the better she suited me. I have been running a winter dairy and consider that much more profitable than summer

dairying. Cows that are fed well through the winter come out in good shape in the spring and will keep up a good flow of milk until it is time for them to go dry in July or August. I consider four cows that are fresh in the fall equal to five that are fresh in the spring. By taking pains in selecting my cows, and giving them good care and plenty of feed, I have been able to make a little gain each year in their product, and have raised their average of butter from less than 200 pounds to the cow to over 370 pounds last year.

The cows that I am keeping at the present time are grade Jerseys, Shorthorns, and Holsteins, about one-half of them being cows that I have raised, and the others, cows that I have bought. In the summer they have the run of a good pasture, with plenty of pure water and shade, and are fed all the ensilage they will eat twice a day. In the winter they have a warm stable, well ventilated and lighted. The first thing in the morning they are fed hay, and that is all they get until after milking and breakfast. Then the hay is swept out of the mangers, and the water is run in, and they have all they will drink, and we intend to leave six or eight quarts of water in the manger for each cow after they have drank all they will. Then they are fed twenty-five or thirty pounds of ensilage and ten or twelve pounds of ground feed. This feed is about one-third bran and two-thirds corn, oats and barley, ground together in nearly equal parts, with a little salt sprinkled over it all. After they have cleaned up the manger the hay that was taken out in the morning is put back, and they have that to pick at during the day. The cows are turned out in the yard in the afternoon while the stable is being cleaned, if the day is suitable. If it is too cold or stormy, they are kept in the barn. About 4 o'clock in the afternoon the mangers are swept out, and the cows are watered and fed in the same way as in the morning, except that the hay is given the last thing at night, and no salt is given them.

My cow stable is ninety feet long. The cows stand in two rows, facing each other, in common stanchions. The bottom of the manger from which they eat is made of a ten and a twelve-inch plank spiked together, the edge of one being beveled a little to form a flattened V-shaped trough. The twelve-inch boards on top of this form the front of the manger, the top being about two feet four inches from the front of the stanchions. A four-inch galvanized iron pipe runs the length of the manger on the inside near the top. This pipe is used to keep the cows from throwing their feed out of the manger and to let in fresh air from outside the barn. Holes are punched in this pipe in front of each cow, so she has the pure air to breathe before it is mixed with the air in the stable. Other boxes carry the foul air out through the ventilators on the top of the barn. Water is piped into these mangers from a large storage tank overhead, which is kept full by a geared windmill, which also grinds all the meal we need to feed.

As soon as the milking is done, the milk is run through a baby separator run by a tread-power in the barn, and the skimmed milk is fed to the pigs and calves while warm. The cream is taken to the house as soon as separated from the milk, and ripened and churned in a room in the basement of my house fitted up for that purpose. I use a combined churn and butter worker run by a gasoline engine. My butter has been mostly packed

in sixty-pound tubs lined with waxed parchment paper and shipped to a grocery house in New Orleans, and brings the highest market price.

CHAIRMAN: Mr. Norton is now on the witness stand.

QUERY: What is the size of the galvanized pipe you speak of?

NORTON: Four inches.

BARCLAY: To replenish your milking herd, do you keep the heifers of the best milk cows, or do you depend on buying?

NORTON: I keep my heifers.

BARCLAY: What kind of a bull do you use?

NORTON: I have used a thoroughbred Jersey. I have now a full-blood Shorthorn.

BARCLAY: Do you depend on one particular breed?

NORTON: I do not.

BARCLAY: Could you not attain better results by the selection of a bull from one breed and keeping that up?

NORTON: I think my way is the best.

QUERY: Do you raise the calves or sell them?

NORTON: I raise them from four to six months old, and then sell all but a few heifers that I want to raise for cows.

QUERY: What price do you get for the calves?

NORTON: I got about $18 a head last spring.

QUERY: To whom do you sell your calves?

NORTON: To shippers to send away.

FRITCHMAN: I would like to ask you about how you water your cows. Do you give them the water cold?

NORTON: My barn is warm all the time. The water grows warmer as it stands in the tank.

BARCLAY: Do you water in the same trough you feed in?

NORTON: I use the same trough.

WENTWORTH: How many cows do you milk?

NORTON: About thirty.

QUERY: In what manner do you ship the butter away?

NORTON: In sixty-pound tubs.

KEIL: I would like to ask about the ventilating pipe you speak of. Is it on a level?

NORTON: The pipe is on a level the length of the manger. The air goes in from the outside.

HAKES: Do you feed oil meal to your cows?

NORTON: I feed grain, and buy bran to mix with it.

QUERY: How is your barn built to keep the temperature you speak of?

NORTON: My barn is a frame one up from the ground.

FRITCHMAN: How long do you let your cows go dry?

NORTON: Two months.

HOADLEY: How do you water your cows? Does it run through the gas pipe?

NORTON: The water runs the whole length of the barn.

QUERY: Do you let them have all they want to drink and leave some in the trough?

NORTON: They drink all they want, and we do not leave any. Some get all the water they want before they are fed, some do not.

HOADLEY: My barn is built like that except I do not water my stock in the same way. I like to give each cow a bucket to drink in by itself. I think the impurities in the barn is a bad thing.

DUNKLEBERG: In your experience as a dairyman, would you advise a young man in starting out in the business to try the various kinds of breeds or would you say some particular breed?

NORTON: I am not advocating any particular breed. I have had good luck with the Shorthorns. My grade Jerseys have also done well.

DUNKLEBERG: Do you think the Shorthorns have done you the most good? I want to learn which you think is the best.

NORTON: I think the Shorthorns have been as good a breed as I ever had.

WENTWORTH: Have you not discovered the fact that there are good animals in all the breeds.

NORTON: Yes that has been my experience.

CURTISS: What per cent of the cows have you been obliged to reject?

NORTON: Out of four cows from one to two are first-class and will do to keep.

LATHROP: Is it not a fact that through all these breeds you will find certain strains that are better than others? I have found it so in my experience.

MEYERS: When you start out to select cows and heifers for milkers, do you have any particular idea as to their appearance?

NORTON: I always like to take a view of the cow before selecting it. I am particular about the head. I want a fine head and large eye.

CURTISS: What about the udder?

NORTON: Of course I am particular about that. That is where the milk comes from.

BARCLAY. Do you think the Shorthorns have given you the best results?

NORTON: They have not been any better than the Jerseys. I do not keep thoroughbreds.

CURTISS: Will you tell us how you feed your cows?

NORTON: I feed twenty-five to thirty pounds of ensilage and ten to twelve pounds of ground feed, that is bran, corn, oats and barley. I feed ensilage in the summer time. They do not eat so much when they are running in the pasture lot.

CURTISS: Do you keep your cows in during the heat of the summer?

NORTON: No, they run in the pasture. They are going dry then and we do not pay so much attention to them. We turn them out after the milking.

QUERY: Do you milk in the barn the year around?

NORTON: Yes.

WEST: How many pounds of milk do your cows give a day?

NORTON: They vary so much that I could hardly tell.

WEST: Is there very much difference in the milk of the Shorthorns and Jerseys?

NORTON: The Jerseys give the richest milk.

WENTWORTH: As I understand it you have an intermingling of breeds and breed promiscuously. You are studying the best milking qualities, but can you tell which is the best breed?

NORTON: No sir, I cannot.

WENTWORTH: You make it out that there are good animals in all breeds. We used to have the best success with the grade Devons. The Devons are great rustlers, but I do not think I would want them now.

NORTON: I think the Devons are as good cows as I ever milked.

WENTWORTH: I am a Holstein fancier. I have one that we have been able to get from twenty-two to twenty-five pounds of milk from. She is wedge shaped and devoid of escutchion.

BROCKWAY: My experience in raising cows is that you find good milkers in all breeds. I have been raising Shorthorns for a good many years. Some of the families of Shorthorns I find are not good milkers. If I were going into the dairy business I would try to find the best milking strains of Shorthorns.

EVANS: I think one of the main points in producing milking qualities is the management of the cow, and whether you allow the calves to suck the cow.

BROCKWAY: It is poor policy to let the calves run with the cow. It keeps the udder small. I have a little trough with oats and corn and feed them that instead of milk. You can also raise better calves by keeping them away from their mother.

CURTISS: I have visited Mr. Norton's farm and have seen these cows he tells you about. There is nothing about his system of feeding and handling his stock that is not practicable on any farm. He has made the business of dairying a great success financially. His barns and methods of feeding are such as can be applied on any farm. He first insists on a good cow. There is only one thing that I do not like about his system, and that is the matter of mixing breeds, I think it would be better to confine yourself to one breed.

LATHROP: If you think it would be better to confine yourself to one breed, what breed would you advise?

CURTISS: I will leave that for some one else to say. If you want to make a specialty of dairying, you must take a special dairy breed. If you want to raise the calves, take a breed that has beef-producing qualities. Mr. Norton sells his calves and lets the buyer feed them. If he was feeding his calves to a finish, he would raise another kind.

BARCLAY: I would like to answer the question that was asked the professor by Mr. Lathrop. I would say get the cow that will make 365 pounds of butter in a year and raise a steer that will go to the Omaha exposition and take first premium. There is just one breed that will do it.

WENTWORTH: As a matter of fact Professor Curtiss keeps a Jersey bull. Mr. Barclay also keeps a Tamworth sow.

CHAIRMAN: I think we can all say that Governor Shaw made no mistake in his selection of dairy commissioner. I think we had better pass on to the next paper. Dr. Edwards is the next on the program.

Dr. Edwards read the following paper:

HOW SOME DISEASES MAY BE COMMUNICATED FROM ANIMAL TO ANIMAL AND FROM ANIMAL TO MAN.

BY DR. EDWARDS.

Mr. Chairman and Gentlemen:

The subject I have chosen to present to you is of the greatest importance to us as sanitarians and individuals.

It is utterly out of the question for me to do justice to a subject of this description in the short time I will address you. I will therefore confine myself by mentioning the diseases that occur to me as communicable from from animal to animal and from animal to man, and discussing only those that are most important and more commonly seen in every day life. Should some of these diseases mentioned and not discussed, seem to some of you more important than those discussed, just mention the same and we probably may be able to open a discussion on them. I will now give you a partial list of diseases communicable:

From Animal to Animal:—Cattle plague, anthrax, tuberculosis, Texas fever, contagious abortion, pleura pneumonia contagiosa, ecsema contagiosa, variola vaccinæ (cow pox), variola ovinæ (sheep pox), rabies, mange, glanders, and farcy, maladie, ducoit, canine, distemper, actinomycosis, strangles, influenza, scab on sheep, ring worm, etc.

From Animal to Man:—Rabies, glanders, anthrax, actinomycosis, trichinosis, diptheris, tuberculosis, variolæ, scarletina, mange in dog to man, measles in pig, tape-worm in man, measles in cattle, tape-worm in man, etc.

You can readily see that a paper could be written on any one of the above subjects. I intend to confine myself to a few of the diseases that you meet with as farmers and with which you are all more or less acquainted.

Some of the more common ways that diseases are conveyed are by heredity, contagion, infection, co-habitation and direct inoculation.

I will first speak briefly on contagious abortion, a source that has been very prevalent in Iowa, during the year just closing. It affects mares, cows, and ewes, and it is a very undesirable disease to have on a farm, for it invariably results in great financial loss, and used up lots of patience. It is undoubtably due to a germ, but reliable evidence is lacking as to the method in which this germ works on its host. It is not so frequent in mares or ewes as it is in cows, but in all these animals the bacilli seems to be the same. In ewes it is attributed to a septic infection from the litter, and has been seen on farms where the disease existed in cows It has been produced by injecting into the vagina the vaginal contents of a cow which had aborted. It is said that goats have aborted before term in stables in which cows were suffering from abortion at the time. The microbe may enter the uterus through the circulatory system or by the

genitial passages. As to the respiratory and digestive tracks; nothing is known upon this point.

Again, we must not lose sight of the bull in the transmission of the disease. It may be transmitted by means of a specific irritation of the bull's urethra.

Texas fever is a very fatal disease, and, fortunately, one that we in Iowa have very little to do with, as you all probably know. The tick is the carrier of Texas fever, and I am pleased to say the government has discovered a dip that is powerful enough to destroy the tick without destroying the cattle, so that from now on Texas fever ought to be less heard of. You will see from these photos the ticks themselves, from the size of a pin-head to an ordinary wood louse; also their eggs, method of attachment, etc.

Glanders and farcy is one of the most infectious and fatal diseases known to science, and is readily communicated to man, and it is also communicable to every other domestic animal except the cow and fowl. The ass and guinea pig are the most susceptible, and are mostly used for experiments. It is caused by a small bacillus which readily grows on potato, and of which I hand for your inspection a very pretty example.

As in other animals, the one essential cause of the disease in man is inoculation with the bacillus *Mallei*. In man it is almost always derived from the horse, and hence the disease is mainly an industrial one, attacking those that come in contact with horses—grooms, coachmen, farmers, veterinarians, horse butchers, horse dealers and soldiers being especially liable to be affected. Handling the glandered horses with abraded or wounded hands, giving medicine and scratching the hands on the teeth, receiving on the eye, nose or other mucous membrane the particles scattered in snorting, drinking from the same trough or bucket with a glandered horse, and using a knife that has been employed on the sores of glanders are well known occasions of infection. Less common channels are the infected harness, pole or shaft, the use of handkerchiefs, towels or clothing after a glandered man, and the manipulation of culture of the bacillus. Cases of contracted glanders are numerous, ten prominent bacteriologists have died in the last six years handling the bacillus *Mallei*, and in our own state at Alton, Sioux county, in 1897, a child died of farcy from direct inoculation. In June of this year, George Swensen, of Yankton Indian reservation, died of acute glanders from being inoculated from his own horses. Another case occurred in July of this year, in Charles Mix county, S. D., with the same history. And instance upon instance could be quoted, but our time is limited and I must pass on; only, as a parting shot, ask each one of you, when in doubt as to a discharge from the nostril, don't depend on your own judgment, but get the case sifted out at once by having the *Mallein* test used on the animal, which will settle beyond a doubt whether the case is glanders or not.

Anthrax is most frequently recognized in the bovine species in the form known as splenic fever. Other ruminants (sheep, etc.), the horse, ass, pig, rabbit, and last the carnivora, are all affected. It is very, though not absolutely, fatal. Its attack is sudden, and the period of incubation very short (from twenty-four hours to three days). There is ample evidence of its being communicable to man, in whom it manifests itself in three forms, which seem to have distinctive features important for us to remember.

Malignant pustule, or chabon, in man is the form most likely to follow manipulation of carcasses or parts of animals recently dead.

Intestinal anthrax in which the mucous membrane of stomach and intestines manifest the local lesion. The infection is usually fatal.

Pulmonary anthrax or woolsorter's disease. This is also a fatal form, but if the patient does not succumb in a few days recovery is usual.

Under this head of course, blackleg would come. You have all had more or less experience with the same, and it has been prevalent in Iowa, and will be for years to come, and let me here remind you that the loss from blackleg can be very much reduced by vaccination. It is no experiment but a positive preventive. You should not wait until blackleg breaks out in your herd before you think of arresting or preventing it, but annually prevent it by vaccinating. The cost of the vaccine usually will be not as much as the loss of one calf.

Actinomycosis, or lumpy jaw as it is most commonly called, is a chronic infectious disease affecting man and animals, caused by a star-shaped vegetable organism. You will see the organism that causes it in this test tube; I also hand you photographs of animals suffering from the disease, also the organism enlarged and its effect upon the bone. This organism enters the tissues usually through a wound in the mouth and is usually taken in the system with food. Youth predisposes strongly, mainly because it is the period of teething and of raw sores in the mouth, and partly because it is the period when the tissues are more delicate and most easily penetrated. The disease appears to have greatly increased in herds of the west of late years, the infection being caused by scratches of the head and neck, especially by the barb-wire fences. There is no doubt that in man the germ is usually introduced through the same source as in animals, food, air, and water.

There are lots of cases on record where man has contracted the disease. Professor Law in his work records a case of a farmer who contracted the disease after dressing calves suffering from the disease of the skin; another of a case affecting the orbit of a man who handled a diseased cow; another case of a man with pulmonary actinomycosis who had fed for three years an ox having this disease of the jaw; another of a farmer and cattle-dealer who treated his lumpy jaw "cattle with arsenic," and contracted the disease of the facial bones; and of an Illinois farmer who treated his Oregon pony for lumpy jaw and himself contracted the disease in the antrum and face. Only last month one of the inspectors in the Chicago packing houses died of lumpy jaw, and there are hundreds of cases on record, but time will not permit me to mention more.

I hope you will all be careful in the future in handling these cases, especially where there is a running sore.

Rabies or hydrophobia is a disease that is propagated by inoculation only. The exact nature of the virus has not yet been satisfactorily determined. Rabies is most often met with in the dog, and next in order is the cat, wolf, horse, deer, ox, sheep, rabbits, etc. In spite of popular prejudice, abuse, neglect, privation, and season have no effect in generating rabies, though they may increase susceptibility. Rabies assume two forms. The dumb and the vicious. Each animal bitten assumes his natural method of warfare. The period of incubation varies from ten days to a year, and an

animal bitten should always be looked upon as suspicious for at least months. Cases are numerous where persons have contracted the disease by being bitten, and I will only quote one case. This was a boy that was bitten by his own dog this year at his home near Marengo. He immediately went to the doctor and had his wound dressed. He, however, died on the twenty-second day, showing well marked symptoms of rabies. This dog, it is supposed, was the cause of the recent outbreak in our own county, which resulted in the loss of at least forty head of stock, mostly pigs and cattle; at least fifty dogs were shot as having been bitten and were considered dangerous.

Hog cholera and swine plague, as you are all aware are two distinct diseases that are very fatal to hogs, and of which you see so much in your farm journals and magazines, that I will very briefly say a few words about them.

In the first place always remember that both these diseases are infectious, and that each has its origin in a specific germ, and can be carried from one place to another, the usual method of the germ entering the system is through the food and the lungs. If the hog is fed exclusively on corn diet, or from a swill barrel that has been used years and never scalded or allowed to dry in the sun; if it is kept shut up in the dark, damp, and, perhaps, filthy pens, it will not be able to resist any disease as would one kept under more favorable conditions. Good lungs and good digestion must be the pig's chief protection against disease. The laws of hygiene cannot be neglected without rendering animals more susceptible to disease. The germs of these diseases may be carried from place to place upon shoes, or by wagons, or by driving stock back and forth over an infected area; or they may be scattered by driving or transporting infected hogs along the public highways. Dogs are common carriers of these diseases. Running streams and shallow lakes are also serious factors in the spreading of these diseased germs. Bowel discharges are very important sources of infection, and if the yard or pens drain into streams or lakes, these become carriers of the infection. Hogs that have died of hog cholera are sometimes thrown into streams or buried in the sand near the edge of a stream or lake, these infect the water. One of the most faithful carriers of hog cholera is the individual known to all farmers; they sell and carry sure swine cures and preventives. If farmers knew what was to their interests they would hold their gates against these gentlemen as sacred as they would against the Spaniards. They carry the germ of these diseases on the shoes and clothes, under the nails, in fact in all their clothes, and even in their whiskers, because some of them, from their appearance, don't know what a bath means. Steer clear of this class of gentlemen and you will be better off financially.

It is a criminal mistake to ship hogs that are affected with hog cholera to market. As we have proof upon proof that where these hogs have been eaten, they have produced fatal sickness in the human beings. As proof of this I will quote one instance: Van Ermengen obtained from meat a germ belonging to the hog cholera group, which produced a severe inflammation of the stomach and intestines of people who subjected themselves to the experiment of eating the meat. The flesh of one animal affected with this disease caused death both in human beings and dogs, and a number of deaths occured after eating the flesh of a second animal which had been

made into mince-meat. Conscientious people can hardly send hog cholera victims to market any longer and preserve a clear conscience.

You have all probably seen post mortems held on hogs dying of these diseases, but should there be anyone present who have not, these photographs show very prettily the well-marked ulcers seen in genuine hog cholera. Am pleased to say that the government has produced a vaccine which promises to be a great blessing as a preventive.

Tuberculosis—I have left to the last, because I wish it to be more lasting in your memory, as it is no doubt the most important and to be dreaded of all the diseases I have addressed you on. It is infectious in every sense of the word, and statistics indicate that the order of occurence is as follows: Man, milk cows, fowls, pigs, goats, sheep, horses, etc.; also that females and the young are more commonly affected than males and adults. Heredity, starvation, bad ventilation, prolonged lactation, and other exhausting conditions, appear to predispose to the disease; but Professor Koch's fruitful discovery has decided that the active agent is the bacillus tuberculosis. This is an extremely small organism, as you will see in this test tube. Just to think that this insignificant organism could be the murderer that it is. When the assertion is made that every eighth death in the world is due to tuberculosis, we can readily see what a treacherous thing this small organism is. This disease is transmissable to most animals, and experiments have recently shown that the common river carp are subject to the disease, presumably from eating human sputa that had found its way into rivers.

It has also been demonstrated without a doubt that human and bovine tuberculosis are one and the same thing. And, if now we consider the prevalence of tuberculosis in the human population, we see what a fearful risk is being run by the utilization of the meat and milk of tuberculous animals, even if it could be shown that such meat and milk are themselves free from the living bacillus. Such reckless consumption of the products of tuberculous animals can only be looked on as a direct means of sealing the fate of that large proportion of the community which is already slightly attacked with tuberculosis.

In cattle, a professional examination of the most searching kind fails to discover the disease by physical means. Two-thirds of the cases of tuberculosis sometimes escape under the most critical professional examination. It is often the most thrifty and least suspected in the herd that have the disease. When we take into consideration that this is the state of affairs, and that the consumers of most of the milk used are invalids and children, what an awful responsibility rests on us as cattle raisers; and it must come home to us to do what we can to prevent the spread of this terrible disease, and we have the means within our reach in the tuberculine test. When it was first discovered by Professor Koch, it was thought to be of great benefit to the human sufferer, and, whilst it has failed in this direction, it has been proved beyond a doubt that when used on animals it will positively diagnose whether an animal is affected or not without injuring the animal, and it is the duty of every breeder here present, and all breeders over the state that are engaged in the raising of fine stock, to have their herds tested; it is their duty to themselves, their families and the public at large.

Recently, in a herd kept for the supply of high priced milk of guaranteed soundness, the stock having been subjected to a weekly examination

by a veterinarian, the tuberculine test was applied and 50 per cent of the herd demonstrated to be tuberculous. Without the tuberculine test there is no guaranty possible for the products of the dairy, and the sanitary officers who will affect to deal with this disease in a herd without the aid of tuberculine are at best but pruning the tips of the branches of the evil tree. The purification of a herd must be followed in every case by a thorough disinfection of contaminated buildings and places, by a careful seclusion from new sources of infection. It is evident, therefore, that the non-tuberculous herd must be secured against the addition of fresh animals from any herd that has not been similarly attested sound, and that the necessary addition from another source must be tested by tuberculine before it is added to the herd. Equally important is it to test all farm animals of every species that live on the place and cohabit with the herd, and to see to it that no human being suffering from tuberculosis is allowed to attend to the animals or prepare their food.

It is difficult to see how anything short of a system can afford any guarantee of the absence of the soluble tubercle poisons from our milk, butter, and cheese. And in connection with the tuberculine test I would say that it is your duty to support, in whatever way you can, Senator Emmett's bill, to be introduced at the next legislature, in connection with importation of breeding and dairy cattle into the state. It is to the effect that they should be accompanied by a certificate of test by competent persons that they are free from disease and that they have had the tuberculine test. It will be a privilege you will have and one you should not lose.

I have here several photographs of tuberculosis affecting the different organs and which I am sure will be of interest to you if you will take the time to examine. I would especially call your attention to remarks I have made before in this paper, on the difficulty in physical diagnosis. You will see here photographs of animals that to all appearances are sound, especially Fancy and Doras Page. Fancy as you will see by photographs is a fine specimen of the Poll Angus breed and to all appearances healthy; yet in photograph after the tuberculine test you will see at *figures* A. & B. groups of tubercules that are unmistakable. Doras Page from all appearances for a Jersey, was in the best of health, yet on post mortem was found to be badly tuberculous.

There are numerous photographs of tuberculosis of the liver, lungs, etc., and I would call your attention particularly to the photograph of Minnie Fawn, one of the winners of the Jersey class of the World's fair herd. You will readily see the tubercles in the lungs and pleural cavity. I would also call your attention especially to a choice rib roast of beef discovered by one of the government meat inspectors. Some of us are particularly fond of rib roast, and if the inspector had not discovered this roast previous to the butcher separating ribs from flesh, and the purchaser had been fond of underdone meat, there is no knowing what might have become of him and family.

To show how the disease may be communicated from one species of animals to another, I will quote this one case. Dr. Griffith, of Cedar Rapids, was called to the case of a cow, he tested her with tuberculine and condemned her, the cow's milk had been fed to thirty pigs about three months old. About half of the pigs died, and nearly all the rest were sick. He killed a few of the pigs that were nearly dead and they proved to have well

marked tuberculosis. The pigs had drank the milk about two months. The cow's udder was lined with tubercules in its various stages.

You breeders should realize that the time will surely come when intelligent purchasers will buy for breeding purposes only stock with certificate of test or buy subject to tuberculine test. The man who is founding a herd should be very sure that he is not founding a tuberculous herd. He should try to breed cattle, not tuberculosis.

The great value of the tuberculine test to breeders lies in the fact that it enables them to know whether their cattle are free from tuberculosis, and it enables them to free their herd and put them on sound and healthy basis in case they are diseased.

The ordinary farmers of scrub stock should also take warning and give his stock plenty of sunshine, for sunshine kills germs. It kills the bacillus of tuberculosis which can survive very high temperature and can withstand *drying* for months; they can survive freezing and thawing for a time, and yet sunshine kills them rapidly. Many breeders make the mistake of keeping sires shut up in box stalls and frequently these stalls are damp, dark, and poorly ventilated. Their sires are often kept excessively fat, kept without exercise, and then expected to beget healthy offspring. All sires, regardless of species, should be given abundant exercise in large yards, for it is true beyond question that any sire is in the best breeding condition when in a condition to do a day's hard work without injury.

Ventilation cannot be neglected without injury or loss.

Continued in-breeding for a fanciful bit of coloring or shape of horn must be unfortunate in ultimate results, except possibly in the hands of the most expert breeders. It is natural and right that breeders should wish and have their stock in nice condition to show visitors, and yet when this desire causes breeding stock to be kept excessively fat the results cannot be other than unfortunate. Another common mistake is the evident fear of sunshine which some breeders show by their efforts to shut it out. True it does spoil the luster of hair, but it also kills the germs of tuberculosis.

The time has come when breeders can no longer afford to take chances with untested stock. They cannot afford to purchase bulls without purchasing them subject to tuberculine test or with certificate of test. For this, certainly, is the only means we have at present of diagonosing tuberculosis in the majority of cases.

I have here several other photographs of species of other conditions of animals, also some literature. If any of you wish to view the same you can do so at your leisure. Thanking you for your kind attention, I close my paper.

I am indebted to Drs. Beirring, Niles, and Reynold for valuable aid in compiling this paper.

CHAIRMAN: The paper is now open for discussion.

LATHROP: I had some calves ten months old and one of them died from anthrax. The other one was getting stiff. It was cool in March. I wrapped it carefully in warm blankets and gave it cayenne pepper tea. I filled it up, and the calf recovered. It was the only one I had troubled with anthrax.

CURTISS: Is the disease tuberculosis more readily located in the human family than in animals?

EDWARDS: Yes, because the human family are able to tell their symptoms. It is a well established fact that tuberculosis is hereditary.

CURTISS: Is not this hereditary theory of the disease nearly exploded?

EDWARDS: I do not think it is.

CURTISS: I do not think that it is necessarily hereditary. If they are raised on milk that is in no way affected they are not apt to inherit the disease.

HALL: Is there no means by which we can tell when our stock has this tuberculosis?

EDWARDS: When the most expert doctors cannot always tell, I do not think the farmers can.

HALL: I attended the association last year, and this subject came up in regard to tuberculosis. Mr. Wallace gave us quite a talk on the subject. I had a cow at that time that I made up my mind was affected that way. I went home and told my man to take her out in the hog yard and kill her. When she was dead, I went out and made an examination. I took a knife and run into her lungs, and there was nothing there but a watery substance. I did not know anything about the disease then. I have tried since then to detect it, but could not.

LATHROP: What are the early symptoms of the disease?

EDWARDS: They are not noticed until in an advanced stage; bloating is one of them, sometimes a cough. These symptoms are not always reliable.

LATHROP: Is not the cough a strong symptom?

EDWARDS: It is not noticed until the disease is often far advanced. It is very hard to diagnose the case.

BROCKWAY: I have had some experience with blackleg. I had some calves that had it, and I took them from a rich pasture and put them on a poor pasture. I think a starving diet is the best thing for the blackleg.

MEISSNER: I understand that blackleg only occurs where animals have been poor at one time and then fattened up. Is that true?

BROCKWAY: I think that is not exactly the fact, although it is liable to be. It was not true in my case, although I did push them along.

COWNIE: Did you not force them unnaturally?

BROCKWAY: I might have, but I have been moderate since then.

EDWARDS: My experience has been that no matter whether the animals are forced or not, they will have the blackleg. No matter whether they are fat or lean, it works the same.

BROOKS: The doctor says that the tuberculosis, until in the advanced stage of the disease, is hard to detect. I would like to ask what are the first symptoms that can be detected?

EDWARDS: I should think that the difficulty in fattening an animal would be one of the first symptoms noted. The only sure way to find out is to have the animal killed and the lungs taken out. Sometimes the glands of the throat swell. You cannot be sure unless you find the bacillus.

QUERY: Does the milk indicate the presence of the disease?

EDWARDS: Not always. We have failed to find it in lots of cases.

KIEL: Is it not possible for an animal or a man to have the germs of tuberculosis in him and still not to such an extent that he will transmit it? Is it not possible that the germs are in the room now?

EDWARDS: I do not doubt that the germs of tuberculosis are in the room now. If our constitution is good we can get this bacillus into our system, and still we can very often resist its effect. I do not think a person can throw off this bacillus of tuberculosis after it is advanced very far.

CHAIRMAN: Uncle John Meyers, of Kalona, has a heifer at the livery barn, one block south and one east of this building, which he brought up for the purpose of having Professor Curtiss give a lecture on judging beef cattle, using this heifer to illustrate his points. We will now adjourn to the livery barn and hear Professor Curtiss' lecture.

Meeting adjourned.

THURSDAY AFTERNOON, 2 O'CLOCK.

Meeting called to order at 2 o'clock P. M.

CHAIRMAN: The first thing on the program will be a paper by G. W. Franklin.

Mr. Franklin read the following paper:

FROM HURDLE TO HOOKS.

BY G. W. FRANKLIN.

Man's first indispensible need is food, and this unrequited demand continues to the end of life. His next great necessity is clothing. He must be protected from the cold, or he dies, and this need in a climate like this is unending. The sheep, of all animals, supplies these two of man's greatest needs. One can scarcely realize, even when his attention is called to it, the extent to which wool is used — the millions upon millions of woolen garments that each year contribute to the comfort, health and longevity of almost every man, woman and child in the civilized world. It embraces an industry that contributes to the happiness of millions of people, as no other industry does or can, must be honorable when pursued in an honorable way. Mutton is a healthful and a palatable food, and has been attested in all ages. Year by year it is more appreciated and consumed to greater extent, and the time is not far distant when mutton will hold a place of honor as a flesh food.

There was a time when the sheep industry of the United States represented all hurdle, and the hooks were never taken into consideration at all in the rearing of flocks. From a Spanish beginning, one of the greatest productions of man became Americanized and is known together as the American-Merino. The less Spanish it became, the more American characteristics were stamped on its make-up. The business has so changed that the hurdles are scarcely brought into use until the hooks are considered in the beginning, and an attempt is made to produce something that will appear well on the hooks. The time occupied between the hurdle and the hooks consists of the whole life of the sheep—more, for it means the make-up of its predecessors. A sire and a dam of a certain type are necessary to produce something that will accredit itself on the hooks. It is, therefore, safe to say that the real life of the lamb begins long before it is weaned, for all depends on its breeding and the manner of management

of the ewe during the period of gestation. To mete out any degree of success in this line, the ewe should be large and vigorous, and if that degree of success most desirable is obtained one should avoid the use of yearling ewes as breeders. In the management of the ewe, it is not so much the amount of food as it is the kind she has for her best withstanding the period of parturition. I am a firm believer in plenty of feed, and that food should be of the right kind. I am not so much averse to the use of corn as some shepherds, and yet I believe the breeding ewe should be fed on corn with caution. At this period in life she will lay on fat very readily and will soon be too fat for her good. There are other grains which may be given to advantage, and she should not be neglected in the way of providing plenty of exercise. The breeding time with me begins usually the 20th of September, when we return home from the fairs. This plan is adopted for several reasons. We have time then to make up the breeding pens, and the lambs come at a time of the year when we have the most time to take care of them. By providing a warm barn, so warm that water will seldom freeze in it, the lambs drop in February, and a shepherd is with them all the time.

The flock of sheep is divided into as many lots as suitable, observing the following: Breeding ewes, last year's lambs, rams and feeders if you have them. The breeding ewes are given one apartment in the barn, and a plentiful supply of hurdles are provided for use at lambing time. These are made light and of several lengths, viz., four, five, and eight feet. As soon as a ewe steteans her lambs, she is hurdled as near where she may be found as possible. It is nearly always possible to hurdle her near the side of the barn. She has plenty of water but no grain for twenty-four hours after yeaning, and is given a little clover if at hand. When the lambs are forty-eight to seventy-two hours old, the ewes and lambs are placed in another lot known as the nursery, where there are no sheep but the ewes having lambs. The ration for this lot consists of bran, oats, and clover hay. Beets are fed in pleasant weather at noon, and the rack is also filled with fodder. By giving a generous amount of these kinds of food, we have found that the lambs grow rapidly and that the ewes do not shrink in flesh to any appreciable extent. At one end of this apartment is provided an apartment known as the "lamb-creep." It is so constructed as to admit of nothing but the lambs. Inside of this inclosure we have a self-feeding bunk large enough to admit all the lambs we have eating at one time. It will hold enough feed to last them one week. The ration is composed of oats, corn, and bran and a little oil-meal is added when the lambs get two or three months' old. Since I adopted this method, I find the lambs grow rapidly, and they do not tax their dams so much as if they had no auxiliaries. It is remarkable at the early age a lamb will learn to eat if food is constantly before it. The older lambs learn rapidly, and the younger ones soon learn by following suit. This is the way I take care of my pure-bred lambs, and we have some last year's lambs managed in this way that now weigh from 125 to 140 pounds. We have often had lambs at sixty days of age weigh one pound for each day of their age. After that time, I find they do not put on flesh so rapidly, and I believe it is due to the fact that they play more, eat less, go on pasture perhaps, and while they do not fail to grow and thrive, they do not thrive so fast at any time subsequent to

sixty days of age as they do prior to that time. A very ancient piece of wisdom is, "that out of nothing nothing comes." We can never get something out of nothing. We must feed a sheep before we can expect it to return to us anything in the way of fleece or offspring. In feeding we are to take into consideration the object of such feeding and to govern the ration accordingly. Flesh, bone, wool, and all its parts are to be considered in the plan of feeding. These must be fed according to the wants, and when the time comes for finishing perhaps another ration can be substituted to advantage. The horns of a Dorset or a Merino are composed of exactly the same materials as so much wool contains, and the horns do not add one cent to the value of sheep having them, and has really so many pounds of matter in them, that might, if turned that way, add so much to the weight of the fleece, and the shepherd may ask himself the question, "why waste food in the production of a pair of seven or eight pound horns?" But this is only a part of the subject of the natural necessities of the sheep. Food supports life as well as growth, and the support of this calls for a large quantity of nutriment.

Following this line of thought, then, and by the aid of such information as we may be able to gain by perusing the reports of the experiment stations where lambs have been fed, we are placed in a position not known to our forefathers in lamb feeding. I am glad to note, in looking over some of these experiments, that some of them have resulted in producing as fine lambs as ever found American markets, and that they have resulted in a profit to the experiment station. In view of the facts shown at some of the state experiment stations, it has been a wonder to me that Iowa has not been placed at the head of the list in the production of the best mutton. We have a soil gently undulating, rich in herbage, fields laden with that which can cause the greatest thrift to sheep and the best profits to its owner, with air as pure as mountain air, and what is there to hinder this great commonwealth from becoming leader in this important industry? As soon as the hooks became an important part of the demand of the characteristics of a sheep, the politician abandoned it, and, having once left good jobs to pool their issues to make the sheep a profitable animal, they are now seeking other fields in which they may display their talents. At this time there is a great interest being manifest in the sheep. Feeders all over the west are greatly interested in them, and they want to have the best to put on the market they can find, and they must appear well on the hooks or they cannot hope to get a satisfactory price. They know that a good grade of sheep will sell for better prices than those which have been made hardy by privation.

The packer is also interested in sheep, and he hopes a good grade may be able to find its way to his hooks. It must not be too heavy nor too light, too lean nor too fat, but must be finished according to the demands of his customers, which is for mutton rather than tallow. The consumer is interested because he wants the best, and he knows that it can only be secured by the adoption of the best methods of breeding and feeding. At this time there is a lively interest all over the world in the sheep industry. In England it is the rent payer, and much American mutton finds a place on English hooks. In South America and Australia they are interested in the sheep industry, for it is the leading industry. The sheep herder and the

sheep shearer are interested, and the dip manufacturer also has an unbounded interest in this industry. The merchant, the blacksmith, the miner, the banker all have an interest in good mutton, not alone for the choice cuts which come to their tables, but because the producers are their customers. Even the dog, with such a cultured and refined taste, is interested in the sheep industry, and he alone is not content to wait until it comes to the hooks before he has an opportunity to satisfy his appetite. He is not choice about the article at all, for he will put up with poor mutton if he must. Some Iowa farmers are interested in sheep, and it is a wonder to me that all of them are not interested in this great industry. I have said it often, and I repeat it here, that there is no danger of getting too many good sheep on the farms of Iowa. There never was a glut of this kind, and it is safe to say there never will be, for it is the hordes of poor sheep that break down prices and crush demand. The poor grade sheep that would not look well on the hooks is in the same category with the canner steer.

In the years that have past and gone there have been influences in operation which have led to the sacrifice of flocks. This meant a great many things. It meant that far too many sheep were being bred which were of no grade, and which could not be kept at a profit, except the wool be protected by a tariff. Too much dependence was placed in the fleece and not enough in the carcass. It meant that the party engaged in the culling business failed to have his eye on the hooks instead of the fleece. The system of culling is not now what it ought to be, and not what it will be in the near future. The hooks will be the demand for the future sheep and the sooner the breeder is confronted with this problem, the better it will be for his success. He will note that his sheep must be a mutton breed and they will have to be well bred, well fed, and well dead; not dead in the pasture as by the pranks of a sheep-killing dog, but dead on the hooks. The early maturing sheep is the desirable one. One that will make rapid progress, and be ready for market at any time within a year, will be a profit producer.

I believe the thing for Iowa breeders to do is to breed the best sheep, and not to give much thought to the past, but look forward to the future, leaving the time-honored practice of bringing mutton to the front only when the sheep was supposed to be totally unfit for service as a wool-producer, or when harvest or threshing-time arrived, when it was absolutely necessary to have some fresh meat for the table. I do not wonder at mutton getting in disrepute, and an almost universal prejudice against it as an article of diet, when the poor, thin, valueless, aged sheep were alone slaughtered for the table. It has been the wonder of the breeder of to-day why the sheep was not wholly abandoned as a meat producing animal under such conditions. The sheep for Iowa should either be a grade of pure-bred animal, and they should be in the hands of a farmer who will not employ them as scavengers or grubbers of hazel brush land. Such a flock, in such hands, would indeed be what Virgil so truly said, "a sorry flock." Indeed it would be a sorry combination of a sorry flock, a sorry owner, and a sorry condition. A sheep may live a short time on air, and may be sheltered by a barbed wire fence for a very brief time, but the shorter that period the better it will be for both the owner and the sheep. The Iowa sheep should

be sheltered and cared for like anything else of value. The Iowa farmer is confronted with these conditions, and he will have them to face. The sooner he is brought to the belief that he can ill afford not to have sheep the better it will be for him. When we look about us we see that no country has made prominent progress in agriculture without sheep. Great Britian has more than 30,000,000 of sheep, on about as much territory, as is found in the states of Iowa and Illinois, and she could not keep up her fertility without them. France has 20,000,000 on fewer square miles than are found in the state of Texas. The two countries named, with not more than one-tenth of the territory of the United States, have about one-third more sheep. These figures not only show that increased numbers of sheep are practicable, but the experience of farmers living on high-priced lands has demonstrated that such increases is inseparable from profitable husbandry.

The nearer a nation or an individual can come to being self-sustaining, supplying all wants without going outside to purchase, the more independent and prosperous both are likely to be. It is the numerous demands on the farmer for cash that in these modern days give him the greatest anxiety. Upon the modern scale of living, with its high degree of civilization and of specialization of industries and the introduction of factories in almost all lines, it is impossible that the demand for ready money should not be greater than formerly, but it is to the advantage of the farmer to minimize these demands so far as possible by making his farm sustain his family at every point he can by means of his own products without having them pass through the hands of a half-dozen middlemen. What we need in Iowa is to grow more and better sheep—sheep that, while growing wool, will make first-class mutton, and will be ready for the hooks two or three years earlier than the typical 4-year-old weather of the days agone. It goes without saying that the many people who eat poor, scrawny, half-fatted, scrubby sheep would have gladly taken well-fed, well-bred sheep, to say nothing of the premium which is always found to be in favor of superiority of blood and condition. We want a sheep that will produce mutton that will bring the highest price in the markets of the world; that will mature at an early age; that can be finished economically; that will grow to a fashionable size, have plenty of red meat rather than so much tallow. If this sheep is found and kept on the farms of Iowa, it will be a solution of the battle of breeds. Instead of trying to meet the conditions of a varying wool market, the sheep breeder will be found producing the best mutton, for which there is a demand at fairly good prices almost all the time. The conditions of Iowa are favorable to mutton production, while such countries as Australia, South America, and the western range, always will be toward that of cheap wool production. The transportation of wool has been brought to a minimum, which brings the foreign wool grower much closer to us to compete in our wool market, while refrigeration is not perfected so they can compete in our mutton markets. British farmers have been growing sheep on lands that are higher priced than our, and they have shipped wool to our market and have paid 10 cents per pound for the privilege of doing it. We need a little education along the line of sheep husbandry that will have a tendency of changing some of the losses in cholera hogs to gain, thus solving the problem of 15-cent corn, which has so little encouragement in it. It growing wheat or any other farm product, the farmer has to run the gauntlet of freezing weather, insects, drouth,

floods, and all the vicissitudes which vex the grain-growing farmer, while the farmer a few years ago fed his hogs 60-cent corn, and sold them at 3 cents per pound, and the farmers with a pasture full of young horses have been weeping on each other's necks. The sheep breeder was wrestling with free wool, and was making little money. Cattle men have been in the slough of despondency, but are now making some money. The dairymen have succeeded in getting oleomargarine whitewashed, and they are able to whistle, being out of the woods. Oleomargarine has been to the dairy industry what shoddy and goat meat have been to the sheep industry.

There always has been room on the farms for sheep. They are more profitable sometimes than at other times. Before closing out, on account of low prices, we had better ask ourselves the question whether we had better farm at all. We cannot quit farming because chinchbugs, grasshoppers, Hessian flies, drouth, floods, cyclones, hail and low prices appear from time to time to our disadvantage. We do not quit the swine industry because of the cholera. We do not quit the horse industry because the farmer rides to town on a wheel to sell his oats. We do not care to quit the cattle business because the cattle have to be dehorned in order to prevent the pestering attacks of horn flies, or the hollowhorn, or on account of the wolf in the tail, lumpy jaw, the tuberculosis, or the low prices of hides. Farmers can keep sheep if they will. They can make them profitable if they are handled in the right manner. Some will fail, and not all can hope to succeed. It would not be a great industry if none would fail. Some will fall in the ruts of forty years ago, but the procession will move steadily on. They will be found fitting their business to new conditions, selecting a breed suitable to their farm and market, building new buildings, feeding such feeds without regard as to how they are balanced so his ledger balances. Should the ledger fail to balance on the right side, instead of selling the flock, the mistake is hunted and averted. There is as much room on the farms of Iowa for sheep as there is for the cow, and no one wants to abandon the cow. The sheep may not possess the golden hoof once attributed to it by an ancient writer, but the breeder can have an eye on the hooks when he is handling his hurdles, when the lamb is yet in an embryotic stage. His mind's eye, instead of always being on the fleece, will be on that picture of the final end of all meat animals—the hooks.

I knowed a man, an' his name was Brown;
He sez, "Now horses has gone way down;
Them cable cars an' 'lectricity
Don't leave no show fer a man like me!"
An' he went an' sold his horses.

An' dairyman Jones, he lost his grip;
He throwed up his hands an' quit the ship.
Sez he, "This oleo makes me sore,
There aint no money in cows no more!"
An' he went an' sold his cows.

I knowd a shepherd—Bill Smith, of Dee;
"Aint nothin' left fer a sheep," sez he,
"Without no tariff, them sheep won't pay.
I can't raise wool fer to give away!"
An' he went an' sold his sheep.

They're huntin' after good hosses now;
There aint no price too good fer a cow,
An' wool is up an' the butcher shops
Is just a beggin' fer good lamb chops;
An' them men are kicking themselves.

CHAIRMAN: As there is no discussion on this paper we will now proceed with our regular business, the first thing in which will be the report of the secretary and treasurer.

Secretary McFadden read the following report:

SECRETARY AND TREASURER'S REPORT FOR THE YEAR ENDING DECEMBER 12, 1898.

To the members of the Iowa Improved Stock Breeders' Association:

GENTLEMEN—The following is a financial report for the past year:

1897.	
December 9, enrollment West Liberty meeting	$117.00
December 12, 1898, overdraft to date	8.15
Total	$125.15

1897.	
December 9, overdraft to date	$ 47.82
December 10, programs and envelopes	7 00
December 10, typewriting for committee	.50
1898.	
February 15, stenographer	30.00
March 20, express on package to Governor Shaw	.10
October 19, postage and drayage	3.82
November 25, postage on programs	2.25
November 28, W. G. Maxson, printing	4.25
December 12, two trips to Iowa City	2.41
December 12, postage to date	2.00
December 12, secretary's salary for 1898	25.00
Total	$125.15

I presume those members who received a report of last year's meeting noted the fact that they were not bound in cloth as formerly. I was much surprised to receive these reports without being bound in cloth, but, on looking up the law, I discovered that under the new code the state printer was authorized to bind them in pamphlet form, and that none of the reports were to be bound in cloth as under the old law. I make mention of this matter thinking that probably the friends of the association may want to bring the matter to the attention of the next legislature and have the law relating to the publication of the reports changed so that a part of them can be bound in cloth. Respectfully submitted,

W. M. MCFADDEN.

CHAIRMAN: You have heard the report. What will you do with it?

CURTISS: I move it be adopted and spread on the records.

Motion seconded and carried.

CHAIRMAN: The next will be the report of the committee on location.

BENNETT: The committee on location beg leave to recommend Ames as the place for our next meeting.

CHAIRMAN: You have heard the recommendation of our committee on location. What is your pleasure?

BAKER: I move its acceptance.

Motion seconded and carried.

CHAIRMAN: We will now hear the report of the committee on resolutions.

Mr. Beardshear read the following report:

RESOLUTIONS.

WHEREAS, The World's Universal exposition is to be held in Paris, France, in 1900, which promises to be one of the best of its kind ever held, and a bill is now before the congress of the United States, to make an appropriation to have this country represented at that exposition; and the state of Iowa is one of the leading states in the union, as to raising cattle, horses, and other farm products, therefore

Resolved, That it is the wish of this association that its president enter immediately into correspondence with, or wait upon, the executive department of this state, so that steps be taken towards having this state represented at said exposition in a manner befitting its greatness.

We urge upon all of our Iowa people engaged in the stock and dairy interests of the west, the importance of having the youth of the state and of the land prepared more thoroughly for this growing work in the Agricultural college at Ames and similar institutions.

We express especial congratulation and appreciation to the president of the association, Mr. John Cowney, for his excellent address and courteous management; to all the officers of the association; for their efficient arrangements for the profit and success of the convention, and to all who have given special preparations and papers for the program.

We give special acknowledgment for the cordial hospitality and royal entertainment by the citizens of Iowa City.

W. M. BEARDSHEAR,
J. T. BROOKS,
H. HOADLEY,
E. LEFEBURE,
G. H. DUNKLEBERG,
Committee.

CHAIRMAN: You have listened to the reading of the resolutions. What will you do with them?

FRANKLIN: I move the adoption of the resolutions.

Motion seconded and carried.

Secretary McFadden read the following letters:

MARION, Iowa, December 10, 1898.

C. W. Norton, Wilton Junction, Iowa:

DEAR SIR—It is with much regret and disappointment that I find it will be impossible for me to attend the meeting of our Shorthorn Breeder's association next week. Trusting you may have an interesting and profitable meeting, I remain. Respectfully,

W. W. VAUGHN.

P. S.—Find herewith $1 for membership fee.

HAMPTON, Iowa, December 12, 1898.

C. W. Norton, Secretary Iowa Shorthorn Breeder's Association:

MY DEAR SIR—As it is impossible for me to attend our annual meeting which I very much desired to do, I will send greeting to all members, wishing you all a good and profitable meeting. As to the subject assigned me, it was impossible for me to get time enough to prepare a paper as it should be. I presume Senator Harriman and the other gentleman will be prepared to give you a talk on "My Ideal and how Made." Perhaps I may be able to give you a paper at some future meeting concerning Shorthorns from our present standpoint. You may list my name as a member of Iowa Improved Stock Breeder's and Iowa Shorthorn Breeder's association for the year 1899. Let me know the membership fee and I will remit the amount. Yours for good stock. Respectfully,

C. C. SHAFER.

WENTWORTH: I move we accept and publish these letters in the proceedings.

Motion seconded and carried.

CHAIRMAN: We will now hear the report of the committee on election of officers.

Mr. Fritchman read the following report:

Your committee on election of officers beg leave to present the following names:

President, W. M. Beardshear, Ames; vice-presidents, J. F. Heins, Wapello; John Howatt, Welton; Richard Baker, Farley; S. A. Converse, Cresco; S. H. Hoadley, Cedar Rapids; H. D. Parsons, Newton; C. F. Curtiss, Ames; C. C. Morton, Corning; Chas. Eicher, Botna; F. A. Edwards, Webster City; H. G. McMillan, Rock Rapids.

For secretary and treasurer, W. M. McFadden, West Liberty.

CHAIRMAN: You have heard the report of the committee. What will you do with it?

FRANKLIN: I move its adoption.

Motion seconded and carried.

CHAIRMAN: The next on the program is a paper by Mr. Wallace. As Mr. Wallace is not with us this afternoon, his paper will be read by Professor Curtiss.

Professor Curtiss read the following paper:

THE HAND-RAISED CALF AN ECONOMIC NECESSITY.

BY HENRY WALLACE.

For about three years past, the cry that has come up from the large farms of Iowa where feeding cattle has been a regular business, has been "where can we get good feeders?" Even before the recent advance in the price of cattle, the farmer who wished to make his corn, hay, and pasture walk to market has complained not that he could not buy cattle, or that the price was too high, but that he could find nothing fit to feed. If he gave a contract for the purchase of a carload and stipulated expressly that they should be without exception good, smooth, straight, well-made steers, he found on examination when delivered that they were usually of all colors, all breeds, and all possible combinations of breeds, and his experienced eye told him at once that when finished for the market they would be a mixed lot and the larger part of them unable to command a paying price. If he kicked, and sometimes swore a little, at least internally, he was told that cattle of the kind he wanted were not to be had for love or money. Since the recent advance in cattle, the difficulty in securing good feeders has increased. The nation has been searched—Canada and Mexico as well—and we have at least this satisfaction, that we know "where we are at," if we don't know where the cattle "are at." Those who have tried the steers of the special-purpose dairy-cow have found that while they will make pounds, and probably as many of them in proportion to the actual feed consumed as the well-bred steer, these pounds will not bring the price. The packer knows that they will yield cheap, rough fat instead of high priced steaks and roasts, and refuses to pay a price that will pay for the corn, the other feed, and the labor. Farmers who have bought rough range cattle have fared little better; to say nothing of their wildness, and the difficulty of putting them on rich feed safely, they will not when finished bring the price. In despair the farmer turns to the high-grade two or three-year-old range steers from the central and northern ranges, and while he may feed these at a profit, he nevertheless finds that range conditions have more or less modified the quality of breeding, and in despair he turns to the highbred range-calf, transferred from range-pastures at weaning time while still holding its calf-fat, hoping to be able from these to secure feeders that will consume, at a profit, corn grown on land worth from $30 to $50 per acre. He finds, however, that the ranchman will not sell these calves except at long

prices, and for the very good reason that having secured the weaned calf it costs him but a trifle to keep it two years longer, and he proposes to add to its price its value as a three-year-old less this small cost. Hence, if a farmer would feed this kind of cattle he must figure on paying a round $25, to this add from one to two years' keep, and then discover that he will need a long price if this steer is to pay him for his corn.

Feeders who make a specialty of fancy cattle have adopted the method of securing the high-grade cows of their favorite breeds, mating these with high-priced sires, and thus produce a steer which is a delight to the eye and will sell at the top of the market. It is very difficult to get feeders of this class to state what their calves cost them at weaning time. They generally throw away the pencil before the items are all set down and reply, "I must have first-class cattle, no matter what they cost." This is all right for the farmer who is not obliged to figure cost, but the man who enters upon this business without a good bank account, or with a mortgage on his farm, would do well to figure the cost at anywhere between $20 and $30 at weaning time, according to the price of his land, before entering upon the business.

The question, therefore, arises, Where can the ordinary farmer, who must grow clover and other grasses to maintain the fertility of his farm, who must have something to eat the grass and hay at a profit, and some means of making his corn walk to market, this man who represents a majority of the better farmers of the state, obtain his feeding cattle? He cannot obtain them from the progeny of the special-purpose dairy cow, nor from any of her crosses or grades. He cannot obtain them from the ranges, where the conditions of existence are so hard that the steer, in order to maintain his life, must take on the rough, angular form He cannot afford to keep a cow for the chance of a calf, nor can he long afford to feed calves, whether raised on his own land or elsewhere, that cost him at weaning time from $25 to $30 apiece. He must either feed the better quality of range cattle, or he must use the hand-raised calf of the dual-purpose cow. I am quite well aware that there is a strong prejudice among cattle feeders against this hand-raised calf, and particularly the calf grown on separator milk. There have been in the past good reasons for the prejudice, and will be until farmers realize the necessity that is now upon them. The time has gone by when the farmer on land worth $30 per acre can afford to keep a cow for the chance of a calf. He must have something more, and the only something more possible is milk. The creamery system, as now developed, renders it possible for the farmer to have a market for his milk in a large portion of the state, and if he will get rid of the idea that he must have a special-purpose dairy cow to secure a paying quantity of milk, and will set himself to the solution of the problem of how to grow the calf by hand, making the best of cows that have pronounced beef qualities, he may solve the question for both himself and the cattle feeder.

I am well aware that I am entering upon disputed ground, but the experiments conducted at the Agricultural college at Ames for the last two years justify me in pointing to this as the way out. It has been clearly demonstrated, both at the college and on the farm of the Iowa dairy commissioner, that it is possible to secure 300 pounds, and even over, of butter from cows whose calves will weigh, if properly fed, 1,200 pounds at two

years old, and which, if pushed for baby beef, will weigh from 1,400 to 1,500 pounds and bring somewhere near the top of the market. In short, it is possible to secure in the hand-raised calf, properly bred and fed, an animal with which the special-purpose dairy calf is not to be mentioned in the same day—the rough, western steer not in the same week—and which is superior to the best types of two and three-year-old ranch cattle, and equal, if not superior, to practically thoroughbred range calves taken from the range at weaning time and reared under the same conditions.

What, then, is needed to secure this supply of feeders of which the farmers stand in great need? First, that the feeders of the state, instead of opposing, as they have done, the development of the dairy interest, turn squarely around and actively favor it, using all their influence to establish creameries, and at the same time educate farmers who patronize them as to the best methods of breeding and feeding. How much would it be worth to any of you gentlemen who are feeding cattle to have a creamery in your neighborhood where 600 good grade Shorthorns or Red Poll calves are grown and properly fed every year? It would not long be a question as to where you could buy your feeders. Furthermore, it is essential that the creamery management should fulfill the one condition on which alone calves, no matter how bred, can be developed properly, namely, that they return the separator milk sweet even in the hottest weather. This can be done only by Pasteurizing it, or bringing it up to a temperature of 160° and holding it there for ten or twelve minutes. This will involve an additional outlay of perhaps $25 or $50. It is also necessary that the farmer should learn to master the problem of properly balancing the separator skim milk ration. Fortunately, he does not need to make any discoveries in this line. All that he has to do is to use the information that is placed at his door from week to week by the best agricultural papers, namely, that corn meal is the cheapest and the best balance. In other words, it is essential for the western farmer to learn the art in which his grandmother "back east" was proficient—how to grow the calf by hand. Not to enter upon the details as to how this is to be done, which would properly constitute another subject altogether, I am satisfied that in the future, if we would feed cattle properly, we must depend upon the hand-raised calf; not as he is raised now, but as he can be raised if the feeders would give their active aid and encouragement to creameries conducted as I have described and in educating the farmer who patronizes the creamery in the best methods of growing the calf. Henceforth the business of furnishing beef for the markets of the world will be specialized to a much greater extent than it is now. The small farmer will be compelled to secure a profit from the milk as well as from the calf. His interests will lead him to keep as many cows as possible on his farm, and he will prefer to sell the calves rather than feed them. The man who has a large acreage and does not care to grow grain, or whose land, perhaps, is not adapted to growing it cheaply, can afford to give for these calves more than they are worth to the grower, and at the same time furnish feeding cattle at two years old to the feeder cheaper than he can grow them for himself. The important point just now is to get the farmers generally to see that it is possible for them, by the application of brains and skill, to get pay for 200 pounds of butter-fat at least, and at the same time grow a calf worth on the present market from

$15 to $20—one that will uot merely sell for that amount, but is actually worth it. In short, the hand-raised calf has become an economic necessity, both to the feeder, the grazier and the grower of the calf, in all sections of the west where land is worth from $30 per acre upward.

COWNIE: I want to say one word about these hand-raised calves. I have been an advocate as a beef-producer in letting the calves suck. I can shovel corn as well as anybody, but I do not like to milk. Any one on the farm is welcome to the job. Usually the calves get the milk. I saw the calves at Ames that were raised on skim milk, and they were as fine beefers as any one could wish. I do not know how many professors it took to feed these calves. I doubt if Prof. Curtiss did a single thing that summer but wait on those calves. But there is some difficulty about this hand-raised calf. It is that the average farmer will not give the necessary time to the work. Good calves can be made this way, but I do not think on skim milk alone. If it was meant that a calf should be fed this way, the cow would give skim milk. The calf should be fed milk at the same temperature that it is when drawn from the cow. If you will feed a ration at the same temperature and with the same nourishment in it as when drawn from the mother, then you can raise a good calf on skim milk. Not long ago my children were very much interested in a couple of calves and wanted to raise them. They fed them on skim milk. In the spring following these two calves looked better than any calves on the place that got their milk from their mother. The milk was warmed and fed to them by the pailfull not twice a day, but nearly every hour. The children would get sugar and add to the milk. They would get oatmeal, and when their mother was not watching they would make it into porridge and add that to the skim milk. They ate five times their value of oats that winter. They were excellent calves. But what did they cost? Butter-fat was nothing to what they were fed. The average farmer cannot raise good calves and make butter at the same time. I do not believe in feeding calves oil or cornmeal. I think oatmeal is good with skim milk. Pure oatmeal with warm milk will make as good calves as letting them suck the cow, but you must not feed skim milk alone and that only twice a day. You must feed regularly and when the calf is young you must feed often. If you do that you can make a good skim milk calf.

FRANKLIN: You say you feed oatmeal. I want to know if that has anything to do with making a big calf?

COWNIE: When I was a boy I was fed oatmeal porridge and skim milk twice a day. You see the results.

CURTISS: I want a word about this calf question. A few little pleasantries have been exchanged, and it reminds me of a story. A Scotchman in one of his maiden speeches prepared a nice talk on raising calves. He got considerably warmed up over his subject and made what he thought was a good speech. But when he got through another Scotchman got up and said, "Did you ever raise but just the one calf?" I did not fully indorse all that paper. I want to make some statements about raising calves. While Mr. Cownie and I generally agree on agricultural questions, we do not fully agree on this point. I agree with him that if you want to raise good calves, you must feed them. Oatmeal porridge is good for calves as well as for a Scotchman. You must feed them well whatever methods you use. I think any farmer can feed as we do with good results. I will agree with Mr. Cownie that there is no ration in the world that is equal to the natural milk of the cow. What we want is to get an artificial product that is as near like the natural product as it can get. I believe that the coming system in dairy-farming in this state is that of the hand-separator. If you depend upon milk being hauled to the creamery it will be impossible to grow as good calves on that as though you had the milk direct and fresh. We milk about thirty cows the year round. We use a hand-separator. The milk is taken to the barn and fed to the calves at the temperature of 78°, and the calves do not know that any butter fat has been taken out of it. It is a better article than a great deal of the milk that is sold in the cities. Of course it lacks something. The problem is to furnish what the separator takes out. Cornmeal is good and we have used shelled corn. It is a safer feed. We have forty calves fed that way. It just takes one man, not all the professors. The milk comes direct from the separator twice a day. Then we feed shelled corn and sometimes oats. As they need muscle and bone-producing feed, we add oats, bran, and oil-meal. I know it is difficult to take up a problem like that and succeed with it, especially under the conditions that the farmer has to meet. The hand-separator has come, and it has come to stay. It is the coming system to be in use in nearly all of our farms in the country where ten cows are milked. The separator

will furnish the milk in so much better way that we can not afford to ignore its value. It gives the best bone, and the addition of skim milk to the grain ration increases the strength of the bone. The college is not the only place where this system of feeding has been successful. Mr. Caviness, of Hubbard keeps a good herd of Shorthorns. He uses a hand-separator, and feeds all his calves on skim milk. If you allow your milk to be carted around all over the country it is impossible to get good results, but if you give it to them fresh every day, and add products to it, you can raise good calves on skim milk.

HOADLEY: What kind of a vessel do you use?

CURTISS: We use a tin pail, and always keep it clean. We build long stanchions, and in front of each animal have a box for the animal to be fed in. After they get their milk, they are fed their grain. These calves were being fed this summer while the exposition was in progress, and we sent ten head out there. They were not finished by any means, weighing about 1,400 pounds, but they won first and second in their class.

FRANKLIN: Last summer the railroads gave an excursion out to the college. I took advantage of it. I thought I would like to see these skim milk calves. I looked all around, but could not find anything that I thought looked like skim milk calves. I asked if they were out in the field. One of the boys took me to the barn and showed them to me. I saw that they were feeders. That is the way that I was misled.

BROCKWAY: I will acknowledge the necessity of keeping up with the procession. I do not think that Iowa should have any ordinary farmers. The farmers of Iowa are always ready for a change if it will better things any. By using the hand separator, we are making a needed change. I do not believe in feeding calves on skim milk alone. Calves like shelled corn and oats.

EVANS: I would like to ask the professor if he ever made any experiments with calves raised on skim milk and those raised with their mother?

CURTISS: We have never made any direct comparisons. We have bought Herefords that had run with their mother and put them under the same conditions as the skim milk calves, but we never made any direct experiments. The skim milk calves were not so much interrupted as the others.

EVANS: I will say that I have taken calves that were raised on skim milk and have wintered them with calves that were

raised with the cow. At first they did not look so well as the others, but when they were about two years old they looked better. I keep Shorthorns. I take the calves away from the cows and feed them on skim milk. I do not think anyone could tell the skim milk calves.

LUCAS: We have a practical man with us who is raising calves. I would like to hear from Mr. Hastings.

HASTINGS: I did not expect to be called upon to speak. I thought I could attend this meeting and listen to others talk and keep my mouth shut. I live on a farm and milk about fourteen head of grade Shorthorns. We have twenty-two in all. We use a small separator in the barn, run with a little tread-power. We raise all our calves by hand. We feed them on separator skim milk, and then shelled corn and oats. We make a success of them. We feed them cut to six or ten months old, and then sell them without any hesitancy. We erect a little set of stanchions and feed them from clean tin buckets. We give them all the separator skim milk they can eat twice a day. We have a good many different breeds of cattle. Have two Black Polls and a Jersey in the lot. I can say this much: The calves from a high grade Shorthorn crossed with the Hereford are my preference. They make the best meat and are the best sellers of anything I handle.

CHAIRMAN: It is time for this discussion to close. The next paper will be by one you have just unanimously chosen president of this association. A man who, as president of the Iowa Agricultural college, has brought it from the depths to which it had fallen while under the management of eastern men and placed it in the very front rank of agricultural colleges in America. I am proud to be succeeded as president by such a man. A man who is the peer, mentally as well as physically, of any man in Iowa. And then we are proud that we have such a man in Iowa that we can elect to the presidency of this association, and I can assure you there is not a position that he is not competent to fill. I will introduce to you Pres. William Beardshear.

BEARDSHEAR: You overwhelm me with your words of kindness. I am made a little different from some men, and yet like all men, when I want to say the most I cannot say anything. You have me at just such a time now.

The following paper was read by Mr. Beardshear:

THE PROVINCE OF EDUCATION IN AGRICULTURE.

BY PRES. W. M. BEARDSHEAR.

Victor Hugo, in his inimitable work concerning William Shakespeare, makes a plea for and predicts the rewriting of history from the standpoint of principle and civilization rather than from the favoritism of the courts and the blindness of war. That was in 1864, and his prophesy is largely fulfilling. In this plea he points out how history has been written in the light of the conquests of war rather than in that of the victories of peace. Our new books of history have recently taken up his philosophy and shown the ministries of inventions, commerce, industries, schools, and especially man as an agent in the world. He says: "Knowing so many things, it is quite natural that history should be ignorant of some. Should you be so curious as to ask it the name of the English merchant who first, in 1612, entered China from the north; of the glass-workman who first, in 1663, established a manufactory of crystal glass; of the citizen who under Charles VIII carried in the states-general at Tours the fruitful principle of the elective magistracy—a principle subsequently adroitly suppressed; of the pilot who, in 1405, discovered the Canary islands; of the Byzantine lute-maker who, in the eighth century, by the invention of the organ gave to music its most sonorous voice; of the Campanian mason who originated the clock by placing the first sun dial upon the temple of Quirinus at Rome; of the Roman toll-collector who by the construction of the Appian Way, in the year 312 B. C., invented the paving of towns; of the Egyptian carpenter who conceived the dove-tail—one of the keys of architecture, found under the obelisk of Luxor; of the Chaldean goatherd who, by the observation of the signs of the zodiac, founded astronomy and gave a starting point to Anaximenes; of the Corinthian calker who, nine years before the first Olympiad, calculated the force of the triple lever, conceived the trireme, and built a towboat 2,600 years before the first steamboat; of the Macedonian plowman who discovered the first gold mine on Mount Pangaeus; these names history cannot give you, these people are unknown to history."

"Who are these? A plowman, a calker, a goatherd, a carpenter, a toll gatherer, a mason, a lute-maker, a sailor, a burgher, and a merchant."

We are but partially severed from the spirit to-day. Do you remember, when a schoolboy, the old poem, "How big was Alexander, pa, that people called him great?" The war hero is the best recognized in the hero worship of the world's altars, and in the heart of the human race the barbarian is greater than the Christian. History is the flaming bulwark of the warrior's progress. Warriors in history are like Plutarch's lives, all giants. Men have written the fifteen decisive battles of the world, but have said comparatively little of the decisive inventions of the world apart from gunpowder, the printing-press, and the mariner's compass. The first movement of congress in support of education was the establishment of the

United States Military academy at West Point, and the school for practice at Old Point Comfort, Va., where they determine, said Horace Mann, "The distance at which one Christian may fire at his brother Christian and be sure to kill him, and not waste his ammunition." The target practice proved its wisdom in the American-Spanish war. This preparation for military defense is wise, for we must move men where we find them. War, like education, has been an enlightener, though both have killed a great many thousands in the marches of empire. Even in 1531 Sir Thomas Elyot said, "Good Lord! How many good and clear wits of children be now-a-days perished by ignorant schoolmasters." War made Washington, Taylor, the first Harrison, and Grant, presidents of the United States. It made Roosevelt governor of New York, and led otherwise sensible women, against the power of the Harveyized steel armored conventionalities of centuries, to fall over one another to kiss some hero of the war in 1899. The philosophical novelist, author of Les Miserables says, "To pass the Rubicon, how readily that throws women into your arms. What good dinners afterward" Gibbon says, "The agriculture is the foundation of manufactures." It is more the foundation of civilization, yet, we find the plowman, the calker, the goatherd, the carpenter, the toll gatherer, the mason, the lute-maker, the sailor, the burgher, and the merchant obscured by the brillancy of the soldier. The love of a good fight inherent in the race of man helps the heroic warrior, not only in the navy, but in the foot-ball struggle of manly contest everywhere to jump whole blocks of numbers to his secure environment in the supreme magistracy of public affection.

I am an optimist, but man is continually and hemispherically lazy. At the bottom of society he hunts and starves, starves and hunts; eats three days' meals in one; starves two and whines one; sleeps one, like a log in shine or dark under the opiates of ignorance, and prowls the other two with a spirit kindred to that of the ancestors of the Romans, who began life by sucking a wolf. At the top of society he travels the world over in quest of pleasure, forgetting that—

"They wander wide who roam
For the pleasures of life from home;"

tunnels the night with implements of revelry; eats the dainties and drinks the spirits of all climes in twenty-four courses at one sitting; yawns in ennui; and, under the opiates of luxury, sleeps like a twenty-year-old stump of an Ohio clearing. In the middle life man from the lordly ambition or highborn ideal works like encaved miners for the light of a better day. While throughout all classes there are an elect few of God and of man who

"Live to hail the season, by gifted ones foretold;
When man shall live by reason, and not alone by gold;
When man to man united, and every wrong thing righted,
The whole world shall be lighted, as Eden was of old."

Henry Ward Beecher, with a brain geographically American, awaked himself to the humanitarian tasks of each day by the reading of an inspiring author; Jonathan Edwards, the New England Hercules of Calvinism, mirrored and rearranged his life every night in the light of seventy-two rules for personal study and conduct; Benjamin Franklin kept a book

account with debits and credits in regard to his virtues and vices. So men everywhere have arisen to the perfection and the reward of education through the strongest endeavor and self-denial. With all the enthusiasm of our Americans for public schools, scarce one here this hour secured his schooling without now and then a whipping, or a just equivalent in order to keep him at it. We are born into the world with a cry for food, and that cry faces with materialities the things of life way past our teens through the twenties, and with the vast millions through man's allotted time upon the earth. The farmer is not slower, therefore, in his education than other classes of people. His development is kindred with that of all classes, and, as intelligent thinkers of public questions, we must grant the justice and magnanimity of the plea. Man has to be stirred up in all spheres of his plain living to have him reach high thinking.

In the development of educational thought, the useful and material sides of life are felt and developed first. Man gathers the crude materials out of which to construct science and a higher life. The first 200 years of our history produces but little poetry, still less in music, in painting, in landscape-gardening, in architecture, and in literature; and even to-day there are debates by eminent critics in regard to whether we have originally American ideas in these finer arts. The people were too busy obtaining a living and securing their independence to cultivate a higher life. So in agriculture, any old thing came to market.

This is not confined to our country, but is true of every country in the world that has developed from the primitive backwoods to the advanced stages of civilization. All through these stages of man's progress, the teacher and education have been in low esteem, as seen in this quotation from Horace Mann in 1840, until the masses were cultured to the proper estimate of the things that lived in reason and not by gold. Military power and wealth made man above everything, until the physical condition necessary for military glory became dependent upon the physician, and the titles of wealth and its perpetuation rested largely with the lawyer and the

"Obstinate questionings
Of sense and outward things
Fallings from us, vanishings;
Black misgivings of a creature
Moving about in worlds not realized,
High instincts, before which our mortal nature
Did tremble like a guilty thing surprised!"

demanding a philosopher and a priest big enough to get man back to "God, who is our home." So that the liberal arts just in these recent centuries, and most largely in the present, made it possible for the physician, the lawyer and the minister to rank with the soldier, the courtier, and the rich. Hon. Justin Morrill, the father of the land-grant colleges of America, saw with others that the children of the industrial classes were behind in their privileges of education, and secured the act of congress that has introduced a specific line of education in America to provide for the liberal and practical education of the industrial classes in the several pursuits and professions of life. He says "agriculture and the mechanic arts should be the foremost, be provided with the best instruction of all the ages, but, having this lead, all other branches of learning should not be arrogantly ignored

or excluded." Industrial education is only now passing through the buffetings and cavilings, or disheartenments and disparagings, of our general system of education in the middle of this century in America, and in the birth stages of all civilized countries. The encouragement of industrial education to-day is that the farmer, the mechanic, the merchant, and industrial classes are coming to see this fact. But industrial education must fight its way to liberty and liberality of culture, as did the education of the liberal arts.

People in history have taken to new forms of education. First, from the side that pays, and afterward they come to appreciate the higher values of reason, soul and character. This same experience repeats itself in agricultural education. Each new form of education has to fill up gaps of kindred subjects and close with its newly educated talent. This has been one difficulty in the first twenty years' experience of agricultural education in America. Each state and territory in the United States has a college of agriculture and mechanic arts or its equivalent, with a faculty each from two to sixty persons. The government service and the demand for agricultural and mechanical experts on the part of large agricultural and mechanical corporations have made more demands than could be adequately supplied. The standing question is, "About how many farmers do you really turn out?" It arises from a lamentable ignorance of the mission and purpose of the agricultural colleges in America. Most people demand straight furrows, straight corn rows, and the materialistic side of things. We are making straight furrows and straight corn rows in prize contests. People used to laugh at us in our dairy interests. The agricultural college under enlightened methods went to work and made butter that scored the highest mark on the market, and more, turns out young men that are taking the first prizes in the states and in the nation for the first brands of butter. I have in my hand a list of prizes that have been taken the last few years; first and second prizes in the State Convention of Butter-Makers in Kansas, the first, second, fifth, and tenth prizes in the National Contest of Butter-Makers at Chicago a few weeks ago. So prevalent has become this prize-taking in the state and national associations that the executive committees are debating seriously the shutting of our college out from such competition. They smiled at us for our knowledge of animal husbandry. In our recitation-room for live stock, we made a place for the introducing of the horse, the cow, or the animal in the presence of the class and of the book. Students thus trained from their teens into their twenties are in demand at our county fairs as judges of live stock and make the eyes of some of the older stockmen stand out in reach of a club, at their knowledge displayed. At the Omaha Trans-Mississippi exposition, prizes of $125, $75, and $50 were offered for the best judges of live stock among students of the colleges of America. Our college took all the prizes. We have had similar experiences in grains and fruits with encouraging results. Now this knowledge of field furrows, corn rows, butter, horses, cows, sheep, swine, fruits, cereals, and crops is good in its place and will bring about great commercial value to the individual and to the nation, but agricultural education means more than this. The education that makes only a doctor or a lawyer, or a minister, whom you can tell on sight at forty rods is most weak and partial. These technical features should be demanded of each in his

place but the magnanimously fitted man, in old John Milton phraseology, will be far ahead of this.

Ignorant labor, especially in an age born short on knowledge, is sterile in inventions. A marked characteristic of useful inventions in industrial arts is that for nearly all of the world's centuries the laboring classes worked with the crudest implements. The Romans had a law that no free citizen should practice the mechanic arts, and held that it was a work fitted only for slaves. Their laws did admit, however, a free citizen to be a farmer equal in rank with a warrior. The feudal system prevalent in Europe for centuries, and the landlord method of agriculture, kept the laboring classes subjected not only to their masters but to the most imperfect implements of husbandry. The slave-laborer that cursed the rest of the world, as well as our own, afforded no intelligence nor impulse for invention. Laboring people were all time-killers, and you will find it to perfection at this very day in many parts of South America. The histories of the plow, the hoe, and the cotton-gin, are striking illustrations of the quickening and improvement of the implements of industry through cultured brains. The plow consisted of the tough crotches of trees for centuries; its first improvement was a forked piece of wood, trimmed and bound to keep the handle from splitting apart from the plow; then came a wooden mold-board. For ten years after the landing of the Pilgrim Fathers on Plymouth Rock, there was not a plow in the colony. At advanced periods men in the towns and round about were encouraged to keep a plow and team, something after the modern fashion of the threshing machine in the communities so that they could go around doing plowing for the neighbors. I count myself a young man, and when I was a boy I plowed the garden with a wooden plow, a number of times, that had been left over by my grandfather. Then came a small piece of iron tied on the point with tongs, and when the cast iron mold-board was invented many had a superstition that it injured the soil, and would not use it for years. At its best it was a rude invention, and adds force that ignorant labor makes little invention. Thomas Jefferson was the first man of educated brains to give much attention to the plow. From 1788 to 1793 he devoted much of his time to the improvement of the mold-board with a view to securing the particular curve that would afford the least friction and resistance. His son-in-law, Colonel Randolph, whom Jefferson considered the best farmer in Virginia, invented a side hill plow with suitable attachments, for the side hills of old Virginia. This leading intelligence began by making plows in the country blacksmith-shops, then to the training of men by the hundreds and thousands for the making of these plows in factories.

The hoe is of older origin than the plow, but, like its mate, the plow, started with a rude piece of a forked tree and came down to the present centuries before the invention and use of the modern cultivators of such remarkable ingenuity and utility. When Elisha was called to the higher mission of God, he had twelve yoke of oxen to his old wooden plow, and the difference between uneducated and educated labor is seen in those twelve yoke of oxen merely stirring up the field with a forked stick, and the pair of horses to a modern plow turning the soil with ease and with beautiful lines. Much more might be said in the development of the steam plow. The same is true in the gaps that have been filled up between the sickle, the scythe and the cradle, and the mower and the modern reaping machine, with

which one man does the work of at least fifty in ages past, with greater ease and efficiency, makes possible a larger and better crop, and the annual yield of millions of bushels, where uneducated labor formerly raised hundreds. So are the strides from the threshing floor and the flail to the modern threshing machine. Strange to observe, these improvements have come about in most recent years. The hand of man is dependent upon his head, and does still better yet with his heart in it. John Milton knew more about poetry than education, and yet he said a sensible thing when he said, "A complete and generous education fits a man to perform justly, skillfully and magnanimously all the offices, both private and public, of peace and war." So, in the material side of the farmer's education in recent years, he is being fitted justly, skillfully and especially magnanimously to perform the offices of peace.

In the great factories of the McCormicks and others in Chicago are extensive departments devoted exclusively to inventions, the improving of previous inventions and the discovery of new methods in farm machinery. It remained for our own country and Massachusetts to start the education of all classes, and the common school system of the United States to lead the world in the leavening of the minds of the masses with the elements of education. A striking illustration of the ministry of intelligence in inventions is seen in our own country. For many years the slave labor of the south and of the far eastern countries hand-picked the seed from the cotton with the accumulation of only a few pounds to each laborer a day. A roller-gin early in the revolutionary times increased the possibilities of preparing this cotton to a capacity of about five pounds a day to a machine; and Eli Whitney, the New England school teacher, who went from New Haven, Conn., to Savannah, Ga., as a private tutor in 1792, saw the laboriousness of this process and put his wits to work for the invention of the cotton gin. His invention, though he was cheated out of its benefits to himself, revolutionized this industry in the south and in the world, until the United States came to produce seven-eighths of the world's cotton because of the life-giving touch of education to this implement of cotton growing. The origin of cotton arises out of the midst of the fables of the Arabian, comes to the stage of crude calico in India, advances to muslin in Persia, serves in awnings, tents and clothing among the Greeks and Romans; proceeds to the profound exhibition of products of oils, foods, soaps from the seed, and from the fiber the threads, twines, cloths and beauteous fabrics of marvelous development and variety, as seen in the Georgia exhibit of the Omaha Trans-Mississippi exposition. Intelligence touched that one product, sleeping with wondrous possibilities in the laps of ignorant masses, and awoke it to a life that has astonished the world.

Strange to say, agricultural education is not much older in the old world than in the new. The British National Board of Argiculture was not established until 1793, under the wise influence of William Pitt, the boy premier. The first three agricultural schools in the world's history belonged to Germany and Switzerland, and were founded in 1799. One was at Celle in Hanover, one at Berne, and the other at Kruman, Bohemia. The agricultural college of Europe of chiefest note, was established in 1818 at Hohenheim near Stuttgart. Germany has now about 150 stations, institutes, colleges and schools for agricultural purposes. Great Britain has but

few. Until the present century, even agriculture itself kept a poor dying rate in this country. In New England, when the soil became too poor for wheat, corn was planted. When corn ceased to flourish, barley and rye were sown, then beans. When beans would not grow, the field was abandoned and a new one opened in the forest. They had most crude ideas of farming. "It was the common opinion in the Virginia colony that housing and milking cows in winter would kill them." They must be exposed to the summer's sun and the winter's storm in order to most thoroughly toughen them up. The main stress was put upon the head of each family to look after the various members in his household, so that ill weeds could be nipped before they took too great a head. The American revolution awoke better thought in agriculture at its close. Foreign demands for our products stimulated greater industry. The Louisiana purchase of 1803, the gaining of land from Mexico in 1847 and the defining of our British-American boundary lines on the northwest territory gave wider agricultural domain and increased the disposition to till the soil. The pre-emption act of congress in 1841 and the homestead law of 1862, together with the Irish famine of 1845 and 1847, and the feeble outcome of the German revolution of 1848, combined to awaken thorough endeavor at home, and to induce emigration from abroad. Above all the individual ownership of lands gave the deepest impulses to the evolution of better farms. In this country the shortage in crops in 1837-1838 necessitated the importing of a few million dollars' worth of breadstuffs; called attention to the run-down condition of our soils and the lamentable depression in agricultural pursuits. These led to a plea to the government, in which small aid was gotten, to be expended under the commissioner of patents for the "collation of agricultural statistics, investigations for the promoting of agriculture and rural economy, and the procurement of seeds and cuttings for gratuitous distribution among the farmers." This national appropriation started with $1,000, in 1839, per year, and increased to $2,000 and $3,000 a year for a time. It was not until 1862 that a distinct bureau of agriculture was established with a separate head. This became the foundation of the present admirable department of agriculture, of which our own Mr. Wilson is in charge. The agricultural colleges now becoming celebrated in America had their origin by an act of congress in 1862, giving 30,000 acres for each representative in congress. In the act creating a department of agriculture in the United States, its key duties are defined as follows: "To acquire and diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word." This gives birth to two sterling words, acquisition and diffusion of useful information.

In America some efforts have been made to carry agricultural education more fully into the rural districts. The State college of Pennsylvania in 1892 offered a course of study, called "Home Reading in Agriculture." They specified four main features of the work. (1) A carefully prepared course of reading designed to cover the most important branches of agricultural science and practice. (2) A reduction of price upon the books needed, all of which were standard works. (3) Personal advice and assistance through correspondence. (4) Examinations upon subjects read, with cer-

tificates and diplomas for those attaining certain grades of excellence. It increased in both the extent of the work, and the number of students, until five divisions of study, each composing five books, were established, upon the subjects of Crop Production, Animal Production, Horticulture, Dairying, and Domestic Economy. A supplementary reading course was also attached. One of the most interesting undertakings of this character is making by the state of New York, on the University extension plan. The legislature of New York passed a bill in 1894 to carry agricultural education into the common schools. It arose first with persons in Chautauqua county, New York, who desired co-operation of the experiment stations in the numerous vineyards of that vicinity. The act gave $8,000 to the station for the purpose of horticultural experiment, investigation, and instruction in western New York. It consisted largely of investigations in horticulture, plant-disease, and entomology. They had itinerant schools and lectures, and aided these by the publication of bulletins. It succeeded so well for the first year that $16,000 was appropriated for the next two years. In 1897 the educational measures of the undertaking were so enlarged that the legislature made an appropriation of $25,000 for the promotion of agricultural knowledge in the state and put these under the control of the college of agriculture of Cornell university. The purposes are outlined as follows: (1) The itinerant or local experiment as a means of teaching. (2) The readable expository bulletin. (3) The itinerant school. (4) Elementary nature teaching in the rural school. (5) Instruction by means of correspondence and reading-courses, field experiments in various parts of the state; and bulletins are issued. Schools are moved from one part of the state to the other. Six special instructors are employed to take charge of these, and occasionally help is employed. These meet the teachers of the public schools at associations and institutions and the schoolroom. Leaflets are prepared for special adaptation to the country districts. In a recent report they had enlisted 15,000 pupils and 10,000 teachers of the public schools and 1,600 young farmers. It has greatly awakened educational thought in agriculture.

There is quite a movement afoot in different countries to have the elements of an agricultural education taught in the rural sections. In the province of Ontario, Canada, the teaching of agriculture in the public schools is left optional with the trustees. A text-book on agriculture has been prepared by the dominion department of education for use in their schools. Many are advocating a compulsory teaching of these elements in the public schools of this country.

In Great Britain, a committee was organized in 1896, with a member of parliament as chairman, to investigate the agricultural conditions in Europe. In the report of this committee it is said the organization of the farming class follows in all these countries. The most positive action of the state in assisting agriculture is taken in connection with education. Everywhere it is accepted as an axiom that technical knowledge and general enlightenment of the agricultural class are the most valuable of all levers of progress. Opinions of leading men in various countries of Europe are expressed. From the president of the Dutch Agricultural council we have, "every guilder spent in the promotion of agricultural teaching brings back profit a hundredfold." The Belgian minister of agriculture reports that every franc spent in agricultural teaching brings a brilliant return. A

leading official in the French government attributes the agricultural progress of the last twenty years in France in greatest force, "to our schools, our professors, our experiment stations, and the illustrious men of science, whom the administration has induced to devote themselves to the study of agricultural questions." The government of France provides special agricultural schools somewhat like our own land-grant colleges, and farther provides for instruction in the schools, and, more, "In addition to all these forms of instruction a course of agricultural teaching is now obligatory in every primary and upper primary school in the rural districts of France." M. Tisserand, in his report to the government of France on agricultural education, has this encouraging statement: "Our schools now are far better attended than they used to be. Everywhere people are working with zeal, and the scientific spirit has invaded the farm. Young men of intelligence are becoming more attached to rural life, and the children brought up in our country districts, when they receive an appropriate agricultural education, will be less tempted to go into the towns to increase the already too great number of those chronic unemployed who constitute to-day a perpetual danger to society."

We have heard in America much about the Danish butter in the markets of London. A prominent official, in his report to the royal commission on technical instruction, explains the secret when he says: "The results of agricultural education in Denmark have been something extraordinary. Danish butters are now the best in the world." In 1860, it was described by the British vice-consul as execrably bad. The progress since then is directly traceable to agricultural education.

Recent statistics show that instruction in agriculture is fostered and promoted by the governments of Holland, Bavaria and Hungary with most encouraging results. At the last census the agricultural population of the United States of ten years of age and over was 8,395,634 people. This is 36.9 per cent of all people having gainful occupations in this country. Of the actual working population it constitutes 13.5 per cent of the entire population, and represents in families more than a third of the entire inhabitants of the country, farm implements and machinery amounting to over $494,000,000, live stock (on farms only) over $2,208,000,000, aggregating upon the whole about 25 per cent of the total estimated wealth of the United States; so that we have a third of our population and a fourth of our national wealth in the direct interest of agriculture. In one year the products of these farmers amount to more than $2,460,000,000. A vast majority of this marvelous percentage of population is wholesome-bodied and sound-minded. They are the reservoirs of much of the physical, mental and moral energies of the cities. They are the conservators of patriotism, industry and thrift. They are just getting a taste of education applicable to their industries, their homes and their civilization. In the past few years 6,663,000 farm bulletins, of the most careful scientific production and editing, and bearing upon the practical questions of the farm industry, have been distributed among the farmers of the United States A year-book, a superb volume of about 800 pages, brimful of practical matter to the farmer, and with science adapted to his understanding, is issued free in an annual edition of 500,000 copies. In the last five years the total publications of the agricultural department have increased *160*

per cent, which rate, if continued until 1901, will reach a total of 16,000,000 copies, and soon make it possible for 5,500,000 farms in the United States to have immediate touch with this uplifting and inspiring information.

In addition to this work of the government, periodicals of state and national reputation are devoted exclusively to the various aspects of agricultural industry. The experiment stations of the various states and territories issue annually about 450 bulletins treating upon subjects of special scientific and local interest throughout the states. In addition to this an agricultural literature has sprung up in booklore, that is finding its way to the more progressive farmers. You remember Lord Bacon's "Reading maketh a full man, conference a ready man, and writing an exact man." As effect follows cause so surely will this beneficent aid of the government and the universal intelligence of the American farmer bring a marked advance in all educational lines of his calling in the near future, so that Bacon need not come in so much at the end of the nineteenth century, as at the close of the eighteenth. "If a man write little he need not have a great memory; if he confer little he need have a present wit; and if he read little he had need have much cunning to seem to know that he doeth not." Daily rural mails, which are sure to come, good country roads, and in thickly populated districts of the United States electrical railway connections will combine in the early decades ahead to speed education in agriculture. Agriculture is a business, an art, and a science. As a business it is as old as the history of man; as an art it has groped feebly through the centuries to the dawning of the nineteenth century; as a science its greatest impetus in any nation of the world was started by the land-grant act of congress in 1862. Herbert Spencer says: "The end of education is to prepare us for complete living in the function which education has to discharge, and the only rational mode of judging of an educational course, is to judge in what degree it discharges such functions;" "in what way to treat the body; in what way to treat the mind; in what way to manage our affairs; in what way to bring up a family; in what way to behave as a citizen; in what way to utilize those sources of happiness which nature supplies—how to use all our faculties to the greatest advantage of ourselves and others." Agricultural education to prepare the farmer for complete living will need to accord itself with, and probably grow out of, the public school system of America. There will need to be elementary instruction in horticulture and agriculture in the rural schools. Nature teaching will help provide in a large measure. The most serious difficulty will be in the secondary studies of our high school courses. It is estimated that in the high schools, normal schools, and academies there are 600,000, pupils in 7,000 schools, and of these probably 400 are in 5,000 schools, located in places having less than 8,000 inhabitants. It is proposed to begin this agricultural education in these secondary schools in places having less than 8,000 inhabitants, as has occurred in other forms of education. It is asked why we do not turn more students back on the farm, when the fact is they are turned off the farm before they ever reach the agricultural colleges, and thousands of them are not turned into the colleges. There are now sixty-four agricultural colleges and universities in the United States furnishing courses in agriculture. In these courses of agriculture, there are 3,930 students. In the schools and colleges of the United States there are enrolled about 16,500,000 of youth. The vast majority of these nearly 4,000 students in agriculture, will never

graduate. More than half of them are in short terms of school of one and two years in length. I do not agree with one of the national authorities in the bureau of agriculture when he says that: "The length and expense of a four years' college course will remain indefinitely as a barrier over which the average farmer's son cannot climb" With the free tuition and the low expenses offered in these colleges there should now be five times as many students from the farms and the towns in the colleges as we have.

We are educationally strong at the top, vigorous at the feet, and weak in the middle. After a somewhat careful study of what can now be called higher education in agriculture of the United States, as centered in the land-grant colleges, I believe that the higher education of the young farmer of both sexes means the technical and humanitarian development of all his faculties, the greatest advantage of himself and others, so that the higher education of the young farmer will bring him upon an equal footing, educationally, with lawyers, or doctors, and the ministry.

We speak of the power of man through law and the majestic system of philosophy and jurisprudence which has built up through the ages. We consider with a deep reverence the profession hoary with age that has brought the healing of Heaven to man and his earth, through the skillful hand of the physician. With deepest reverence must we pay tribute to the man who has more than carried out the sentiment. "If anything is greater than God seen in the sun, it is God seen in Homer"—have brought the councils of the Almighty home to men's business and bosoms, and made God seen still greater than in Homer. But think of the power by which the educated farmer of the future shall find back of the material side this calling. In animal husbandry, for instance, there is the highest intellectual demand of all the thought, of all the common sense, and of all the philosophy he can command in handling the 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. What a marvelous power, under the direction of man, the potency of the bull, Favorite, or the Black Arabian stud, to imprint himself upon his kind for generations to come.

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

"Blynde Obstynacye
Begate Heresys
By a myschaunce
Of dame ignorance;
Heresye begate
Strife and debate;
Debate and ambycyon
Begate superisticyon;
Supersticion playne
Begate disdayne;
Dysdayne of trowthe
Begate slothe;
Slowthe and sluggyshnesse

Begate wyfulnesse;
Wyfulness, verelye
Nygh cosyne to heresye,
Begate myschife;
Father of Wyclife;
Which ded brings inne
His grandfather synne."

In the work of agricultural education, whatever its source, this same "grandfather synne" creeps in, and this great law of heredity makes the stock-breeding orthodoxy expect the transmission of splints, ringbones, under sizes, vitiated constitutions, and other weakenesses of the various domestic animals, but happily at the same time enables him to breed them out of the coming generation.

And what a law is that of variability in breeding animals that enables a man to breed where the facts are going to be placed; what kind of hams and steaks will be ready for the butcher's block, whether foods 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, the place in which a pigeon shall have a tuft on its head, what kind of eyes it shall have, and the color of its feathers; what will secure 150 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?" does decide whether it shall be all white instead of black and multiplies the bags full. The law of selection believes in the orthodoxy of the poet,

"A thing of beauty is a joy forever,"

and embodies in it 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.

The time would fail me to dwell on the laws that make from thirty to forty bushels of wheat per acre grow where only ten to twenty grew before; that produce sixty to ninety bushels of corn per acre where twenty-five to forty formerly grew; that enable the farmer to determine the quality of milk by the butter fat produced and not by quantity; that harness centripetal and centrifugal forces so as to skim milk within five minutes after it leaves the cow, thereby securing one-sixth more cream than the old-fashioned way of skimming; that enables him to make 20-cent butter instead of 12; that will enable the farmer to haul his milk to the creamery in the early morning and return in a brief time with his skimmed milk and a check in his pocket for the butter; the laws that will take the wild sand cherry of the Dakota plains and share its vigor with the more luscious fruit of a tender growth, resulting in a fruit with the hardiness of one and the flavor of the other; that will take the pollen of the Iowa wild rose, or the wild rose of Russia, and cross it with a rose of composite petals with the resultant of a tonic of wildness in a new rose, a greatly equalized beauty of

them both and a fragrance fit for the heavens; that will take the wild chrysanthemum of the far east and develop it into the hundreds of varieties of exquisite beauty and delicate perfection, making possible the wondrous exhibits of floral art in our large cities and filling our homes with sweetness and light. The elder Herschel, discovering the wonderful laws of the heavenly bodies and their remarkable responses to his calculations and inventions, exclaimed, "O, God almighty! I think Thy thoughts after Thee;" but an up-to-date, agricultural-educated man can, in deepest reverence, as he sees these new creations of wonder and immortality in plant or fruit or flower, exclaim, "O, God almighty! I make new creations with Thee that shall live while the hand of man is kindly to utility and to beauty."

CHAIRMAN: This paper is now open for discussion.

DUNKELBERG: I think this paper is above discussion. I move we tender a vote of thanks to the gentleman for the very able paper.

Motion seconded and carried.

CHAIRMAN: The next on the program is a paper by H. O. Carroll. As the gentleman is not here, Secretary McFadden will read his paper.

Secretary McFadden road the following paper:

POINTS TO BE CONSIDERED IN HOLDING A PUBLIC SALE.

BY H. O. CARROLL.

Mr. President and Brother Breeders:

I am not going to say that I have not given this matter any thought or consideration, for such is the case too often with persons when they are called on to read a paper or address a meeting of this kind. I will say, however, that I have given this matter some study for this special occasion, but not what I would like to have done; have given it as much of my time as business would permit. The subject assigned me is one of importance. The public sale has been thoroughly demonstrated as the best method of disposing of thoroughbred stock; therefore the method of preparation and how to conduct it are important factors. If you anticipate a successful sale you should bear in mind that a few weeks or even months of preparation are not sufficient. Preparations for such an occasion mean more than that you have your stock fat and sleek, your pens and sale-ring conveniently arranged, a sumptuous lunch nicely served, etc. These things of course are necessary and indispensable, but the most important element of preparation begins away back in the foundation breeding of the stock. The offering should consist of individuals or the production of certain families that have positively demonstrated the fact that they are

actual producers of high scoring and valuable breeding stock. It is not sufficient that they come from a long line of ancestry that have only one or two valuable animals to their credit. A public sale catalogue composed of the popular kind of breeding will attract the attention of well-posted and successful breeders, who are ready and willing to pay a long price for the thing if found worthy. And if not convenient for them to attend, many will send mail or telegraph bids on the strength of the breeding. The demand is for the best, regardless of price, and the breeder who presents in the sale-ring the animals that present nearest the type of perfection in individuality, combined with the most popular breeding possible to attain, will be handsomely repaid for his efforts, and at the same time receive the congratulations of his brother breeders as to his good judgment and skillful management.

Early breeding is an essential element if you contemplate a sale of spring stock (if a hog sale) during the usual period of fall sales. Thereby you do not have to over-crowd the pigs at the expense of feet and legs, which are among the most important factors of breeding stock. If you expect to hold a public sale do not sell out during the season a single top for at least two reasons. The first one is, no matter how good a friend you sell a top to and how well your friend tries to keep the fact concealed (in order not to injure your forthcoming sale), yet by some hook or crook the secret will be divulged, and ere long will become current among the breeders in general, but this sacred information is never imparted in any other way or manner except in a low breath with the positive injunctions to *never say a word about it* (unless in the presence of at least three other breeders). In a great many cases you will find that your informant is a gentleman who is going to have a sale in the same locality himself, and while he is dealing out this kindness and justice to you (that you may be on the alert) his sense of morality and honor will become horror stricken, and in his earnestness he will hunch you in the ribs to say, "You will never ketch me a doin' a thing of that kind." The second reason for not disposing of a top is, that if you make a public sale and advertise through the stock journals and your catalogue that you have an attractive offering, when the day of your sale comes and your friends and brother breeders arrive, and inspection begins all along the line, you can point with pride and admiration to your stock. If good, your friends will appreciate you more. The unacquainted breeders who have come from a distance will hold you in high regard, as they find you have not deceived them, thereby winning their confidence and making them determined buyers at, oftentimes, fancy prices. You can dispose of all the culls you like; my judgment is, never part with a good prospective animal in the early season, if you are going to have a sale, although you may have a good offer on it.

Cull your offering close. I have been called to some places to make sales, where upon inspection I found there were many superior animals. In fact the majority were a creditable lot, but before getting through the sale I would be confronted with the fact that there was quite a percentage of inferior animals. This of course is perplexing to the auctioneer and disappointing to the owner. But the worst point is not yet touched. Upon the arrival and inspection of your visitors and buyers, while looking through the apartments containing the good ones, they are well pleased

and hopeful for you, and expect to secure something that will make a reputable addition to their herd at home. But afterwards, finding a number of animals that do not compare favorably with the good ones, it causes a reaction, and often brings forth such remarks as follows: "He has got some good ones, but there are too many poor ones." "I would rather buy breeding stock where they did not run down so low in quality." "I have found an animal in the offering that I wanted to buy, but here is a brother or sister, as the case may be, that is very common; therefore I do not want the one I had selected." "He could have got more money out of this sale if he had left these common ones at home," etc.

Furthermore, if you expect to hold annual sales, in the end it is policy to offer nothing but what is good. When you make a sale and your entire offering runs good, and you make a strenuous effort to hold up the standard and character of your sales, and the breeders and farmers in attendance are favorably impressed with the showing and the treatment tendered them while your guests, you can fully depend on as good attendance of the best and most prominent breeders of the country, when you advertise your future sales. Begin in ample time all the necessary preparations for the sale. Give special care to the growing, in the first place, of your stock. Then, as the ripening seasons come on, watch them carefully. They need your personal attention. Some need more feeding than others. Assort them according to circumstances. By day of sale have them loose and mellow, but not too ripe. I want them fat enough to be shapely, but not enough so as to make them lubberly and out of shape. Do not get the foolish idea in your head that you only want them in slight breeding condition to sell at public sale. I might say that I have sold breeding stock by the thousands, and my experience has been that the man who advocates the idea that he will only buy a breeding animal that is only in "slight or breeding condition," in preference to one that is fat enough to be shapely (their breeding being equal) is the fellow that will invariably buy the fattest one every time and give more money for it. Why? Because he sees just what he is getting; while on the other hand, he has to presume what the development will be. If a hog sale, separate your boar pigs from the sows before they realize the fact that they are boars, and, if possible, remove them so far away that they will never see nor smell a sow until day of sale, and if you could fool them on sale day in some way, it would be money in your pocket.

You want to begin early to make your sale arrangements. Decide on your sale day, and in almost all of the first-class stock journals there is a free space allotted for the public sale dates. Get yours in there so the other breeders can see you have your date claimed and thereby cause no conflictions. Now comes one of the most important things in connection with the sale; that is advertising. This will, in a measure, depend on certain circumstances. If you will allow me, I will say right here is where many breeders make serious mistakes. Some go to one extreme and some to the other. Advertising, if properly manipulated, will pay you well, but you should do it judiciously. If your sale consists of common or unfashionable breeding, the individuality will be on a parallel. In such cases, I would not advise extravagant advertising in expensive journals. In case you did, and happened to attract a lot of breeders of good judgment, you would not know

what to do with them, after you got them, and they would be in hot water until the first train came to bear them away. In case of such sale, I would include some other lines of property, such as work-horses, stock-cattle, grain, hay, a few farming implements, etc.; variety enough to attract the attention of every farmer and feeder in the locality. Claim your date early as possible, and get out your sale bills long before the sale. Post one at the different postoffices right away, so your locality will be apprised of the fact that you are going to have a public sale on a certain date and there will be no confliction. Get out plenty of big flashy sale bills on good tough paper, and about ten days before the sale simply paste the earth with them. Post your own county thoroughly and surrounding counties as much as possible, and do not leave a stone unturned.

In this matter of posting bills, put them up at all the stores, postoffices, every cross road, every good, prominent tree and gate post; attend all public meetings, and talk your sale; have it announced by some friend at prayer meeting (if you don't happen to attend yourself). Get up an excitement and breeze if you can; attract all the buyers you can, and if the dead-heads of your community come, so much the better; they will help swell the crowd, which has its bearing. In the high class sales, the advertising must be done in a different manner in order to secure the best results. In such cases I would advise reasonable advertising in the best live stock journals of the country, but in doing this you must ponder well the real merits of your stock, your location, your acquaintance as a breeder, your standing as a breeder, and if all are favorable, then you can afford to spend plenty of money with the journals, but you must exercise judgment as to their locality and circulation over the territory you wish to cover. If your stock is good, do not be backward in saying so in your advertisement. You have to pay for the space and you had as well utilize it to the best advantage. I have seen sale advertisements in expensive journals that would cover a great big space on a high-priced page, and about all there would be to it would be the announcement of the date, the place of sale, and the man's name. Therefore you have used a big space costing you big money, and all the real and valuable information left out. And then some men, after running such an advertisement, will kick and say their money was all thrown away, as to their advertisement. In some papers that is true, but if you advertise in the standard stock papers of the country, properly located, and if you have the right kind of stock and it does not pay, as a rule it is more in the fault of the way you have your advertisment worded and presented than of the journal. To make an impressive advertisement, you had better write it out, lay it away in your secretary, and go about your business and give it your thought and study. When you come back you will find it necessary to take out words in certain places and add them in others, some interlining to be done, and so on, until you have reduced it to an impressive statement, so that it will catch the eye of the breeder and interest him until he reads it through and through. Then you have him interested and he is liable to make you a good buyer. No breeder can go to the postoffice fifteen minutes before the mail closes and stand on one leg in the corner amidst a crowd of idle loafers, with the flies and gnats deviling him to death, and expect to write copy for a successful public sale advertisement, when perhaps thousands of dollars are at stake. If you are going to take out so many inches for your sale ad, to be used in

three or four weeks, I would suggest that you use only a small space for the first one or two issues, and, as the time draws near, let your space and wording increase until the last issue, when you want to use all the space you have left and increase your advertising matter. Just let her swell, for on day of sale you want a swell affair, or, in a financial way, it may not meet your anticipations. I would advertise also what I expected to be a crack sale thoroughly about home and solicit the attendance of my farmer friends, for, in my experience, I have noticed in many cases where the stock is good and there were present wide-awake, progressive and practical breeders, who were willing to pay good prices for the kind of stock they wanted, and take them fast, too, the farmers would hold up their hands in holy horror and become nervous and excited, so much so that they would catch the inspiration, and by the time the sale was over they would be the happy owners of perhaps several head, and some of them at quite long prices.

If you have good stock to sell, always get out a nice, neat and attractive catalogue; for, when you send a progressive breeder, who is unacquainted with you, a catalogue of your sale, he will judge your offering by the breeding and, to some extent, by the kind of catalogue you issue. In your catalogue announcement give a general outline of your sale, and if you *know* you have something good, don't be afraid to say so. Give it out in plain, bold and unmistakable terms. However, you want to guard against statements or manner that would tend toward boasting or reflections on other breeders. I am in favor of foot-notes under pedigrees of all good animals, if written from truthful standpoints. Consequently, if you receive a catalogue, and cannot attend the sale and wish to forward a mail bid, the catalogue explains itself so fully that you can make your selections with some degree of certainty. Some catalogues only contain a few words of announcement, the terms, and immediately drop right in with the sale stock without foot-notes. You have to be an old and experienced breeder to get much out of such a catalogue. Some men say they don't believe in long announcements and foot-notes. In my experience the man who has got something good, and comes out and says so in a plain, matter-of-fact way, is the fellow that always has a good sale. I prefer to hold sales on a fair ground or in town, as you have more conveniences than on the farm, but this is not practicable for all. If you sell at the farm, have good and free conveyances from the depot to the sale for all who come by rail, and mention it in your advertising matter, for this is often the worst part of the trip. Always arrange to sell under a cover of some kind, for, although you may have a lovely day, you do not know it beforehand. Make your crowd comfortable. Unless you do, they will become restless, thereby losing interest in the sale. Have a good, competent clerk secured before day of sale; one who is quick and accurate to make settlement, as well as to keep a correct memoranda of the sale. For a sale of breeding stock, secure a reputable auctioneer. There is an erroneous idea among some men in regard to this matter. Some breeders pretend to think that the local auctioneer can sell as well as anyone. Without the remotest idea of casting any reflections on the local man, I will say he is not in a position to render good service on a sale of thoroughbred stock for the simple reason that he is not making that line of work his study. He does not study pedigree nor the general characteristics of breeding animals. He cannot call attention

to the good and valuable qualities of the stock in either individuality or breeding. They all look alike to him, just so they are large enough. He can tell the audience nothing about their ancestry, or anything else much of interest. Breeders will not send bids to an unknown auctioneer, for they know nothing of him, either as a man or as to his judgment. Auctioneers who make a specialty of thoroughbred stock sales are in a position to make them successful, as this is their business. They are acquainted and meet with the breeders every day in different parts of the country, and know just what their ideas and wants are. The auctioneer that makes this line of work a specialty stands ready to meet all these demands, and with the advance he may secure on a few animals over that of a novice, he will make more than his bill will amount to. Many times will he be able to do so on one or two animals; again, he may be able to send stock to different parts of the country, which makes competition and is an advertisement for the man holding the sale.

Have your stalls and compartments conveniently arranged so that you can order an animal from any place without any special trouble. Have plenty of help and have them thoroughly drilled before the sale begins. Every man must know and do just what is assigned him, and avoid all hallooing and loud talk by either yourself or your help. Keep everything quiet; but let your management be prompt, so there will be no confusion. Just as soon as one animal is disposed of, take it out at the far end of the sale-ring and have the next one ready to drop right in. If selling hogs, use half-herders to handle them from the time they leave their pen until they are finally disposed of. You can't do it with a high-priced buggy-whip, neither by wildly slinging your hands or arms, or by pulling off your hat and throwing it at them. They will get the laugh on you every time. If selling horses, have them well broken to lead, and, if road horses, be prepared to hook them up or exercise them to the satisfaction of the buyer. If selling cattle, they must be thoroughly broken to lead and handle before day of sale. A good average sale-ring for selling hogs should be about ten by twenty-eight or thirty-two feet, not high enough to obscure the animal selling, covered with a little sawdust. The owner should be in the sale-ring from start to finish, with a buggy whip, to exhibit the stock to the best advantage and answer all questions in a prompt, quiet, gentlemanly way, and in as few words as will explain the questions asked. If the auctioneer understands his business, it is better that the owner does not chatter too much about selling an $18 or $23 pig to some fellow, four or five years ago, or something like that. It gets the crowd rattled, because they are listening to him and lose the run of the bids. I do not mean that the owner must keep perfectly quiet during the sale, but if he has anything of importance to say it would be better for the auctioneer to stop until he has made his statement (which is many times beneficial), and then proceed. Have your stock groomed out nicely and looking their best. The crowd is expecting it and will be disappointed if they are not. It is a mistake to drive up a lot of good stock out of the pastures and sell them in the rough and expect to realize their real value. Have your stock all arranged just as you want them. Have them marked and ready before your crowd arrives. I have attended sales where the marking was deferred until the morning of the sale and after the crowd had arrived. This had to be done, besides changing from pen to pen, amid

the deafening squeals of the hogs and misunderstanding of the help. This is bad management. Have everything done before day of sale that you possibly can. Get out early on the morning of the sale, have your sale stock fed, the stalls all cleaned out and rebedded; also have the alleys clean and neat; your stock all dressed up in their best. Then wash and put a clean shirt on yourself, throw your old slouch hat away, and brace up. It has its influence. Then you and the stock are ready to entertain the company when they arrive, in the best manner and style possible. If selling hogs use a good kind of tab in the ear; let the number correspond with the same number in the catalogue. Then on the top board, at the back of each stall in plain chalk figures, put the numbers that correspond with the number of each animal in the stall. The same rule applies well for horses and cattle. Then the buyer can take his catalogue and find any animal he desires without asking any questions. He would prefer to have it this way, besides it will save you a great deal of annoyance.

Always begin your sale with something good. However, it is often the case that some good things are sacrificed till the crowd catches the inspiration. Never permit any by-bidding. Nothing will kill a public sale quicker. Sometimes it hurts, but you had better "grin and bear it." It will develop a confidence with those present in you, and in the end it pays best, saying nothing of your honor at stake. And then it is an advertisement for your future sales.

For lunch I would suggest a sandwich, some kind of cakes, pickles, and cheese. Have your grocer tear your papers and furnish rubbers to enclose and hold intact this lunch, which is very neat. Before you announce lunch, have all these packages on a table where your crowd will come to first, then farther on place your tincups on another table. Then on another table, a considerable distance away, place your coffee, and still on another table, farther away, have the sugar, and on the last one have the cream. By this kind of management the crowd moves right along and does not get in each other's way. Never prepare a fine dinner in the house for a few special friends, but let them and the auctioneer go out and eat in common with the crowd. Then no one will feel slighted and become spoiled for a bidder, for you can use all of them after dinner in your business. Remember, in serving your lunch, you should have system and order as well as in all other branches of the occasion. There are other important points we could touch, but this paper is already too long.

CHAIRMAN: The paper is before you. Have you any remarks?

HAKES: I have been to a good many sales where they took the crowd to the hotel. Do you think lunch on the grounds is as good as that way?

MCFADDEN: I would not take a crowd to a hotel unless it was very convenient to the place of holding the sale. A lunch on the sale grounds is nearly always better than to take your crowd away just before the sale.

RIES: You say in the paper that, where you have a bunch of thoroughbred stock to sell, it is well to sell other kinds of stock with it. Is this the correct idea?

MCFADDEN: This paper is not my paper, and I do not indorse everything in the paper, and this is one of the things that I cannot approve. I believe it is nearly always a mistake to sell other kinds of stock with thoroughbred stock, and I do not approve of selling more than one kind of stock at a sale. I would much prefer, if I did not have enough thoroughbred stock to make a sale with, to find some one else and make a combination sale, rather than to mix this thoroughbred stock with other stock, or other kinds of property.

CHAIRMAN: It is now time for us to close our meeting for this year. Next year we will meet at Ames, and we can depend upon being royally entertained while there. We will see the live stock they have at that institution. We will see Professor Curtiss feeding the skim-milk calves. I wish to thank you for the courtesy extended to me at this meeting. I hope we will all meet at Ames.

Meeting adjourned.

APPENDIX.