PROCEEDINGS

OF THE

EIGHTEENTH ANNUAL MEETING

OF THE

IOWA STATE

IMPROVED STOCK-BREEDERS' ASSOCIATION

HELD AT

WATERLOO, DECEMBER 2, 3 AND 4, 1891.

OFFICERS:

President—HON. B. R. VALE, Bonaparte. Vice-Presidents—CAPT. W. H. JORDAN, Des Moines; C. W. NORTON, Wilton; W. W. MCCLUNG, Waterloo; HON. D. P. STUBBS, Fairfield; C. L. GABRIELSON, New Hampton; J. N. DUNN, Marion; A. J. LYTLE, Oskaloosa; B. F. SMITH, Bancroft; HON. PHIL. SCHALLER, Schaller; HON. S. P. MCNEIL, Garden Grove; HON. C. C. PLATTER, Red Oak.
Secretary and Treasurer—GEORGE W. FRANKLIN, Atlantic.
[Reported by C. L. DAHLBERG, Des Moines.]

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PROGRAMME.

WEDNESDAY AFTERNOON, DECEMBER 2.

1:00 O'CLOCK.

Welcome.
Response.
President's address.
Appointment of committees.
Reception of new members.

WEDNESDAY EVENING.

7:30 O'CLOCK.

Opening exercises.
"Among Foreign Farmers," by Henry Wallace.
Questions and discussion.
"The Agricultural College—What it Was, What it is and What We Desire it to be," by Prof. James Wilson.
Discussion.

THURSDAY MORNING, DECEMBER 3.

9:00 O'CLOCK.

Treasurer's report.
"Profitable Sheep Husbandry—Some Facts and Figures Compared with other Farm Stock," by W. P. Young.
Discussion.
"Portions of the State Best Adapted to Dairying," by Hon. A. C. Tupper, Dairy Commissioner.
Discussion.
"Wintering Stallions and Brood Mares," by Prof. C. F. Curtiss.
Discussion.

THURSDAY AFTERNOON.

1:00 O'CLOCK.

"Best Swine Ration," by Prof. D. A. Kent.
Discussion.
"Poultry," by C. F. Payne.
Discussion.
"The Future Short-Horn," by M. W. Fall.
Discussion.
Paper, (Topic to be Selected) by T. J. Brooks.
Discussion.

FRIDAY MORNING, DECEMBER 4.

Unfinished business.
Adjourn.

INTRODUCTION.

Larger crowds of stock men have been at former meetings of the Improved Stock Breeders' meetings at different points in the State, but reason for this is found in the fact that the days of the meeting in this live town of Waterloo was the most disagreeable of any time up to this date. The rain cut short whatever local attendance which may have been there. We recognize the fact that new hands will have to take up the work of this Association and carry on the warfare against the scrub. This is presented in bold characters when we look back over the personnel of the old war horses who took the initiatory steps in organizing this Association. Letters of regret was sent to the officers of the Association expressing regrets that old members could not be present. It goes without saying that the well known voices which once gave the Association its prominence have, by old age and disease, been hushed to the deliberations of the meetings, but there is an abundance of intellectual store among the breeders of the State, and the places will have to be filled by newer and younger blood.

The most impressive scene of the last meeting of the probable farewell address of Hon. John B. Grinnell has come to the full realization of the members of the Association in the intelligence that this illustrious person has passed to the great beyond, and we are impelled with the thought that his demise has caused a vacancy which will be very difficult to fill. Others who have been of great value to the breeders of the State by their councils, have become dead to the Association by their absence, and they are no longer identified with us as members. To make them life members of the Association would be doing but a fair part by these veterans in the warfare on the scrub.

THE CONSTITUTION.

ARTICLE I.

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

ARTICLE II.

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

ARTICLE III.

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

ARTICLE IV.

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

ARTICLE V.

The annual meeting of this Association shall be held on the first 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 have by the custom of committees been changed from five to one from each congressional district. ED.]

LETTERS OF REGRET.

LEWIS, December 24, 1891.

HON. GEO. W. FRANKLIN, *Cumberland, Iowa:*

Yours of the 23d inst. to hand and contents noted. I have been unable to go from home scarcely any since my return from Mexico last spring, having taken a siege of la grippe almost as soon as I returned home and I cannot seem to recover from it, so I find it necessary to forego the pleasure it would afford me to attend those meetings. I feel, however, a deep interest yet, and hope I shall continue to as long as I live, in all meetings pertaining to the general welfare of our good State. In all my journeyings north, south, east and west, I do not know any part of our county, or any other country, that I think is half so good as our own state of Iowa.

With many kind wishes for yourself and the prosperity of the Association I enclose my membership fee, $1.00, which I hope you will receive all in good time.

OLIVER MILLS.

November 27, 1891.

GEORGE W. FRANKLIN, *Secretary, Waterloo, Iowa.*

DEAR SIR—Much to my regret I was denied the pleasure of attending the last meeting of our association. This enforced absence was the first in many years and made me lonely in our separation. I had agreed with myself that this seeming indifference should not be repeated and that the session of 1891 should find me among my most cherished associates, the stock breeders of Iowa.

I had been shaping those official duties which last year prevented my presence with you so that it should not occur again. Already I had begun to congratulate myself on the realization of my good resolves when, for the second time, an official order comes to shatter my plans. It is unnecessary for me to tell you and those good friends in the association, who have honored me in the past, and in many ways made the time spent in their midst the "sunniest" of the year, that words are inadequate to fully convey the regret that comes with this second disappointment.

It is my privelege to be somewhat identified with good friends in banking, in politics and in stock pursuits; and, while the first named associations are pleasant and harmonious, it yet remains for those sturdy representatives of my earlier training on the farm, and subsequent connection therewith, to arouse my heartiest sympathy and secure the fullest enjoyment.

During the past season I visited several countries on the continent, also England, Ireland and Scotland. It would, I flatter myself, have interested our membership could I have been present and discussed agricultural interests as seen in those countries, in a general way, and the stock feature of it in a more especial manner, before them. The Holstein Fresians and Dutch belted cattle of Holland, the Brown Swiss of Switzerland, the stately Short Horns and "big little" Herefords of England, and the meatly Cruickshanks, with their Polled Angus competitors in Scotland, have all been seen on their native pastures.

But for the present this pleasure is denied me, and I can only convey through you, to our Association, my sincere regrets at being forbidden this privilege. Please assure them of my best wishes for one of our old-time profitable and enjoyable meetings. Though not present in the flesh, I am heartily with them in sentiment and purposes.

Very respectfully,

JOHN MCHUGH.

November 27, 1891.

FRIEND FRANKLIN:

I enclose a letter of regret at not being able to be with you at Waterloo, which means all that it expresses.

If you think it worthy of being read at the opening of the meeting it will be only just to me, by giving the Association to understand that as an ex-President, no ordinary obstacles would prevent my attendance at Waterloo. I enclose one dollar for membership fee. I feel miserable over my compelled absence but must only "grin and bear it." As ever, etc.

JOHN MCHUGH.

EIGHTEENTH ANNUAL MEETING.

FIRST DAY—WEDNESDAY

WATERLOO, IOWA, December 2, 1891.

Meeting called to order by the President, B. R. Vale.

PRESIDENT: The Vice-Presidents will come forward and occupy seats on the stage.

Gentlemen of the Association:

The time for our assembling together has arrived and, without further delay, it is my pleasure to introduce to you Mr. Charles Pickett, of this city, who, in behalf of this locality and this portion of the State, will now deliver the address of welcome to this Association, which will be responded to by an impromptu address from one of our own members called to the stage for that purpose. Mr. Pickett, Gentlemen of the Convention, Mr. Pickett:

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

I have heard it said that in order to obtain a comprehensive estimate of the great dome of St. Peters at Rome, you should take your stand at a distance. In conjecturing as to the probable reasons for my selection as a participant in these opening exercises, it occurred to me that perhaps the committee had heard the same remark, and in applying the idea, endeavored to select one who was farthest removed from any definite idea of the subject peculiar to your meetings. If such was their intention, I surely could not question the wisdom of their choice. It would, indeed, have seemed more fit and appropriate for one who was familiar with your origin and growth; conversant with the many interests you represent, and imbued with an understanding of the aims and purposes of your Association, to have received the unmerited honor accorded me by the courtesy of the committee. However, gentlemen, permit me, in behalf of the citizens of Waterloo, who deem it a privilege and pleasure to call you guests, to bid you greeting. You are welcome to our city as visitors, citizens, and friends, but you are thrice welcome as representatives of the greatest industry of our commonwealth. It is a source of special gratification to us to have an opportunity of seeing and meeting the distinguished thinkers, leaders, and advocates of the agricultural interests of Iowa, which an inspection of your program discloses that you represent in the broadest sense. No one can fail to recognize the manifold advantages to be derived from discussion and

interchange of ideas by those following the same vocation in life. The age seems prolific of such organizations in almost every branch and department of our complex civilization, and to this fact more than any other may be attributed the activity that is characteristic of the whole people to-day. Especially is this true of the agricultural interests of our country. Farmers are just beginning to learn that they constitute an important factor in progress and realize the boundless possibilities within their reach. I venture the assertion that the progress made through all the cycles of the ages, from the time the charity of heaven, with invisible hands, scattered manna in the wilderness, or when Joseph plead before Ramesis for his impoverished people, does not compare with the marvelous strides made within the limitary of those present here to-day. The farmers are just beginning to understand that ideas, and not hands, have wrought the greatest changes in men's condition. They have caught the exhilarating influence of our free, inventive, and scientific age, and are shaking off the malarial stagnation contracted in the dead past, as one by one the innovations of modern science and invention have been summoned as coadjutors in their work; the factors of servile customs have been shattered; the altars of idolatrous precedents profaned. I believe it was Victor Hugo who made the remark that, "Races petrified in dogma, or demoralized by time, are instituted for guides for civilization." The idea conveyed in the remark is applicable, not only to races, but to individuals or bodies of men. The activity characteristic of the agricultural interests to-day is a salutary indication of our future prosperity. Effectuations of this revival have not been brought about by any haphazzard accident, but by the thought, the study, the progressive spirit of those men who have taken advance positions and, carrying in their hand the torch of science and reason, have moved onward and upward to a higher and better type.

This annual meeting, composed of the representatives of your industry all parts of the State, cannot fail to be of great advantage to the millions of your fellow workers whom you represent. Your occupation—I was about to say science, and perhaps the latter is becoming now a more fitting term—is an imperial one. Each member coming to this annual meeting can bring with him the results of his own experience, observation and study, and present it as a common offering to be transmitted to the countless thousands you either directly or indirectly represent. No one should hesitate to express his ideas or present the results of his observation. It has not always been the profoundest philosophers nor the most learned scientists who have given to the world our greatest discoveries and inventions. Some years ago an unpretending layman was present when a friend was bitten by a rattlesnake. With natural curiosity, he inspected the fang and found the tube through which the deadly virus had passed. It immediately occurred to him that an instrument might be constructed whereby an anodyne could be injected to offset the action of the poison with equally prompt effect. With stammering modesty, he revealed his ideas to a physician in a neighboring city. As a result, we have to-day in the medical and surgical institutes an instrument called a hypodermic syringe, which is in almost daily use in their profession.

I shall not undertake to discuss this subject further, knowing how limited and circumscribed my knowledge of the same is in your presence. I refer

to it simply in order to express to you the deep, sincere, and peculiar interest felt not only by the citizens of Waterloo but by every citizen who dwells beneath the protection of our flag in the prosperity not only of this, your eighth annual meeting, but of every meeting you may have in the future.

We have had the pleasure in years past of proffering our hospitality to numerous associations and assemblages representing as many different callings in life; charitable, educational, professional, etc., and while the subjects by them discussed were interesting and instructive, yet they cannot compare in importance or significance with the questions before you for study and discussion, which are so vital, relating to the very basis of our welfare, and which appertain in the broadest sense to the material development, expansion, and prosperity of our State. There is a sympathetic relation and interdependency existing between the industry you represent and every industry of our commonwealth. In your hands and in your keeping, therefore, rest the prosperity not only of the agricultural interests, but of the future of our State. We bid you God speed in the work in which you are engaged, and may nothing deter, thwart or impede you on your honored march. Our State is but in its infancy. I therefore bid you.

"Aid its dawning, tongue and pen;
Aid it, thoughts of honest men;
Aid it paper, aid it type;
Aid it, for the day is ripe.
Our earnest must not slack into play;
Men of thought, and men of action, clear the way."

Again, Mr. President and gentlemen of the convention, I give you a cordial welcome to our city. We give you the freedom of our homes and of our business houses. "Seek and ye shall find, ask and ye shall receive, knock and there will be opened unto you the hospitality of our citizens. It is customary for some on occasions of this character to pronounce eulogy upon the city they represent, and to review in detail the different industries, advantages and merits which go to comprise their city. I shall refrain from following their custom, but will ask of you, during the recess of your meeting, to look over our city, in which we feel we have a just cause for pride. We hope, when you leave our midst, you will carry with you such pleasant recollections of your stay with us as to fill you with a desire to again honor us with your presence.

Hon. Henry Wallace was greeted by applause and responded as follows:

Mr. President and Gentlemen of the Association—It affords me great pleasure on behalf of this Association to respond to the very hearty welcome with which we have been received. It is, indeed, customary, at least, sometimes, on the part of those who welcome us, to give an inventory of the greatness and glories of the city. Waterloo, however, needs no eulogy. She is here. She gives the best introduction to herself. She is situated on the clearest, brightest and purest stream of water in all of the great State of Iowa. Every time I have visited this section of the country, I have been charmed with it; charmed with the clear water, charmed with the climate and charmed with the city. A city cannot be else than industrious and enterprising situated as this is, not in what we call the blue grass part of Iowa;

not in that part of the State which assumes to itself the name of blue grass region, but in as truly a blue grass region as there is in any part of the United States. (Applause.)

Let me say to you further that not only this region but the whole northern part of this State has shown that it has as good seed as was ever dropped in the soil. In no part of the State has there been greater progress; in no part of the State has agriculture advanced more; in no part of the State are there more reading, thinking and progressive farmers, and in a city located as Waterloo is, in the heart of such a country as northern Iowa is and peopled with hardy, industrious, energetic, thinking, working citizens, cannot but be a pleasant place in which to live. Do you know that it is almost impossible for us to get this Association south of the Rock Island road? Not because we don't want it, but because the demands that come to us year after year are so pressing, and the invitations are so cordial, that two years out of three we are drawn north of the Northwestern Railroad; and hence, I don't wonder that all of this country is so prosperous and so far advanced. We have here in these thirteen or fourteen counties the great dairy region of Iowa. The dairy region of any State is the most prosperous portion of it.

Now for the Association itself, I can say to these good people of Waterloo, that we are simply an association of men who are seeking the truth, the highest truth, the most practical truth. Primarily, the questions discussed here will be the improvement in stock breeding and feeding. Sometimes it has been a puzzle to me to know whether the name of the Association is the "Breeders of Improved Stock," or "Improved Breeders of Stock." But we have met from year to year since our first organization not, primarily, for the object of teaching the farmers in all the region roundabout how to farm, but for the sake of gathering to our numbers here and there, one this year, and a few the next, and a few more the next, and thus making this the great educational meeting of the State. I think I can state without boasting that there is no meeting of this kind within the United States that has the interest of the members more at heart, or does more good in the way of advancing the agriculturist's interest than this Stock Breeders' Association. I can say to this town still more, that it is not only the question of improved stock breeding that comes within the purview of our Association, but everything that leads up to it and everything that really bears upon a farmer's life, and that helps to develop manhood; that improves his social condition; that gives him real power, and we are glad to meet with the cordial welcome that we find everywhere. We are glad to mingle with the citizens of this town who give us this friendly invitation; we are glad to know them, and glad to have them know us.

There was no selfish purposes in this Association. We aim simply at the improvement of the grand profession of agriculture. Our aim is to make it what it ought to be and what it will be, the empire, queen, capital of labor; the great conservative force in American life that shall enable this government to fulfill the idea that founded it; to make it not only the greatest nation upon the earth, but the best, happiest, and noblest. Therefore, we are exceedingly glad to thus meet with the citizens of Waterloo in this garden spot of Iowa, the greatest State in all the nation; not in mineral wealth, not in commercial power, but in all that makes life worth living, in all that makes man a power among his fellows. (Applause.)

PRESIDENT'S ADDRESS.

BY B. R. VALE.

Gentlemen of the Association:

I congratulate you at this the opening of the eighteenth annual convention of our Association upon the very satisfactory condition, all things considered, of our agricultural and stock-breeding interests. Since our last session Providence has been especially kind to both man and beast. The usual severity of our winters was averted from that of 1890-1891, affording our animal population an immunity from suffering under the influence of a not over-bountiful crop and the stimulus of high prices, and at the same time the bank account of the proprietor did not suffer as under different circumstances easily conceivable. While we have suffered some inconvenience in the last few years in the matter of stock-water, there is no question but that this minimum annual precipitation, following a series of years with a too abundant rainfall has only proved beneficial to the general crop production of the State.

The agricultural conditions were never more favorable than during the planting and cultivating season of the year now closing, and the result is most satisfactory the State over. With an abundant crop of everything adapted to our needs it is possible for us to elect between selling stock at ruinous prices or holding for whatever of promise there may be in the future.

The sanitary condition of our domestic animals is probably as good as is possible to find it at any given period.

Our cattle interests suffered some alarm from occasional instances of "foot mouth" trouble, but fortunately our serious apprehensions were not realized to any great extent, and now we trust we have passed the danger line and can safely dismiss further solicitude on the subject. With all our domestic animals on the increase, with the single exception of mules, with an increase in the number of swine alone within the year of 403,205; with opening up of the way to foreign markets with our meats, which is being so satisfactorily accomplished by those in authority; with the present foreign demand for bread stuffs, and the prospect of renumerative prices for the surplus of an excellent crop, we may well take courage and go forward. But it were needless for me to dwell longer on this subject pending the symposium awaiting by the entire Association.

A word as to the prosperity of our existence, the holding Farmers Institutes and other kindred agricultural associations. The name Improved Stock Breeders, may imply to some a select few, but it really includes the entire breeding and feeding population of the State.

No man with the courage to feed out hard earned provender cares to experiment with other than improved stock and improved methods.

We find the range or scope of subjects profitably discussed at these meetings including the leading and most vital issues pertaining to the domain of agriculture at large, and hence we conclude that this is but a round up or review of the many kindred lines of work in hand by a few of the interested and earnest advocates of improvement, and why not?

From the harmless but natural affiliation of child-nature up to the most gigantic schemes of men that inherent principle of assimilation is manifest all along the line.

As "iron sharpeneth iron, so a man sharpeneth the countenance of his friend." With this truth in mind and the fact that in "union there is strength" and the further fact that a "three-fold chord is not easily broken," mankind has, in all ages past resorted to the concentration of effort, the centralization of power. In the early days of oratorical leadership the plastic and untutored mind of the masses rendered them an easy prey to the persuasive eloquence of competent leaders. As to the course taken, whether right or wrong, depended entirely upon the character of the principles entertained by those same leaders, regard for the methods used in obtaining the following being a matter of secondary consideration. As society developed and diversity of labor became a necessity it was by mutual consent that even brothers should pursue different callings for a mutual benefit.

Such is the attachment growing up between persons of the same or a similar calling as against other and distinct callings, that a bond of union or kindred feeling readily responded from within corresponding to the sameness of effort and oneness of action without. As time progressed and the demand for higher, skill better means and improved methods compelled the necessity of specific lines of operation, the ties of "craft-hood" became stronger and still stronger till we find the "brother of kin" to occupy small place in the heart of the artificer as compared with the "expert brother of the craft."

Nor is this other than it should be. It is right. It is the life that we now live. It is the reward of an earnest zeal, the result of a laudable ambition ripened into full fruition.

We recognize then that Necessity, the mother of inventions is the genius that has brought all this about. Having fallen out in the natural order of things, for the specific benefit of each in his calling and the general good of mankind we may well accept the situation as one conducive to our best interests and one, which, when properly directed will produce the most happy results.

We unhesitatingly say, then, that the association together for mutual benefit of persons engaged in a similar calling is not only profitable and expedient but also right.

It is not the lawful exercise of this prerogative that causes a question but possibly an occasional abuse of it; and yet in the grand aggregate the benefits accruing to society at large are of such untold value that we dare not for a moment contrast the present status of society with the primitive condition of affairs when every man turned his own way. The results already obtained, through this and kindred associations, fully warrant the conviction of the necessity for such existence, and when we look at this representative gathering assembled in the light of past experience it is evidence conclusive that our mission is only begun.

We are a magnificent gathering in this beautiful city; those present will ever remember the many rich thoughts here expressed. But when we consider that our audience, which is State wide, and even goes beyond the lines of our State—the people of the entire agricultural Northwest anxiously waiting to sit in judgment upon our deliberations, and to receive profit from the result of our conclusions, we will begin to conceive something of the merit and magnitude of the work of this Association.

Let the missionary work of the past eighteen years continue, till the whole State shall be covered with similar subordinate organizations seeking improvement in breed and method.

I wish to remind the Association of those prophetic words of the Hon. J. B. Grinnell, spoken to us last year, viz: "I will sleep in my grave before another meeting." That prophesy has been fulfilled, and it is eminently proper that the memory of one who occupied such a high and honorable place in this body for so many years should receive the consideration it so richly merits.

But I invite the attention of the convention to the excellent program awaiting you, as prepared by your ever vigilant and faithful secretary, and during the deliberations of the session the chair will ask that kindly consideration and forbearance always in order in case of incompetent and inexperienced presiding officers.

What is the further pleasure of the convention?

PRESIDENT: I understand that there is one gentleman on the program for to-morrow forenoon who desires to deliver his address this afternoon, as he may not be here to-morrow, Prof. Kent of the Agricultural school.

We will now listen to the address on the subject, "Best Swine Ration."

SWINE RATION.

BY PROF. D. A. KENT.

The first questions in determining a ration for swine or any other animals are, what are the natural habits, what is the natural food and how are these natural conditions to be supplied when swine are restrained in pens or fields. In their native state, swine subsist upon grain, fruits, nuts, roots, grass and such animal food as may chance to come in their way. Tininatus says that they take one hundred and seventy-five different plants. They also take mineral food in bits of lime, salt, clay, ashes, carbon, etc.

The hog is a kind of scavenger, gathering up waste food products of almost every description. Give him the full range of the farm, and a chance to slip around occasionally and upset a soap barrel or slop pail and crack the fruit pits, craunch the soup bones, root up the garden, rob the chicken coop, and he will never ask you to pay any doctor bill on his account. Of course we do not mention these observations to encourage such husbandry of swine, but merely to emphasize the explanation of their real nature. In addition to his omnivarous character the hog is adapted to all climates and inclined to congregate in small herds. His whole nature may be summed up in three words, he is omnivarous, cosmopolitan and gregarious. Pretty heavy words, but inasmuch as the hero painted not his portrait on the shield and the poet has left him unsung, we have dignified him in prose."

In hot weather the hog rushes for water and seeks the dense shade, where he can root out a place in the moist earth, and lie in coolness, aloof from the parching sun, and annoying flies. Long ago the hog flourished in the deep forests of England, France and Germany. He was given full range of the royal forests during the fawnage month, which extended from fifteen days before Michaelmass to forty days thereafter. The Greeks and Romans took great delight in the porcine dish from the remotest period of their history. Their methods of feeding and keeping swine are full of suggestions to us. The old swine general or the servant of Ulysses, knew better than to pen up a pig and feed it a single nutrient. They depended largely on mast, giving grain as a ripening ration. These early people sometimes conveyed their land by the acreage necessary to maintain a given number of swine. The early settlers of Ohio, and the eastern States fattened their hogs largely on mast. The progenitors of our illustrious Poland China reveled in acorns and chestnuts and beech nuts in the Miami valley, and made Cincinnati at one time the most famous place for pork in the world. If such has been the varied diet of the hog in his earlier history, we must conclude at once that he cannot thrive on a single grain ration of any kind. We observe that different peoples mix their food to supply a natural want. We add butter or rich gravy to bread. The Irishman mixed cabbage and butter-milk with his potatoes and thus balanced starch, gluten and albumen. The Englishman eats largely of pork and beans, and beef and starchy foods. The Italian mixes cheese with his macaroni. The native of India mixes grain with their rice and millet. The ancient bread of Cappadocia was made of oil, salt and milk, kneaded with fine flour. The German government has recently adopted for the army a bread made of a mixture of corn and rye meal.

In short, the mixtures that man has made for his food, are without number. He has done so because he finds that his nature repels a single article of diet. Starch or sugar or fat alone, will not sustain life. A duck fed exclusively on fat died at the end of nineteen days. The hog is no less limited in his desire for a wholesome mixture of diet than man. He must have a homogeneous mass for his food. I believe that a hog, in time, would starve to death on dry corn; yet corn, with its proper supplementary elements, is the greatest fattening feed in the world. I have used with good success, a mixture of 100 pounds oil meal, 100 pounds bran, 100 pounds oat meal, and 600 pounds corn meal. This makes corn meal two-thirds of the ration by weight, and gives a nutritive ratio of 6.3; however, this ration must vary as the fattening period progresses. When the animal has reached

its maximum of rapid gain, an additional amount of oil meal will extend the period, and sometimes increase the gain still more rapidly.

The feed should be administered three times per day. A hog will digest more food, when fed three times per day, than if only fed twice. This is not true of cattle. Hogs should not be watered immediately after feeding. As a matter of dollars and cents, it may not always pay to vary the ration with expensive feeding stuffs. Economy in compounding a ration is some times of importance. In addition to the above, the dietic effect may be improved by giving turnips, beets, carrots or potatoes. An ear of dry corn thrown into the pen occasionally will be relished. Fresh pasture is also of great value. The feeder should be careful and not feed more at any single meal than will be eaten up clean.

Shelled corn, soaked at least thirty-six hours, and supplemented with abundant fresh pasturage, makes a good summer ration. The corn must be fed regularly three times per day. We cannot give the nutritive ratio of corn and grass, because we do not know altogether how much grass the pigs eat. We do know that grass is nature's own feed, and that soaked corn and grass is a well balanced ration. So far as figures, determined by the German standard, are concerned, they only amount to a good guess, at best.

On the question as to the value of the various nutriments, Prof. Armsby says that "Their equivalency has been assumed and made the basis of the calculation of rations, simply because, in the lack of all evidence, this was the only practicable method. It is quite probable that this assumption does not involve any very great error, except, perhaps, in the case of cellulose; but the actual comparative value of these substances can be determined only when we know, first, how much latent energy each contains; and second, how much of this energy is liberated during digestion. * * * The study of this subject can hardly be said to have begun, and the only object in mentioning it here is to show how provisional are our present methods of estimating the value of fodders, and to guard the reader against the error of considering them final and conclusive. They are of great value, and have rendered very important service. It is certain that they are not grossly erroneous. At the same time no good and much harm may come from an intelligent over-estimate of their accuracy and value."

The powers of digestion and assimilation may be strengthened by careful feeding. If the preliminary period advances properly, the stomach gradually enlarges, the digestive fluids increase in quantity, and alimentation intensifies. But, on the other hand, irregularity and over feeding breaks up the harmony of the digestive processes, sickens the animal, and reduces alimentation. The feeder expresses his situation by saying that his animals "are stuck." You can successfully proceed from a common ration to one more rich and palatable, but if the order is reversed growth is retarded, and in some cases entirely stopped. For example, pigs fed on sweet milk and then turned to dry feed, become stinted. "Don't buy cattle from a neighbor who has better pasture than yourself," is a common saying. If you expect the highest results you must reserve the sweet meats for the last.

Animals not being fed for market should be held on a coarser and less rich diet, narrow and not fed to full satisfaction. They should carry enough fat to make them look well, but not enough to produce sluggishness in action.

A nutritive ratio is calculated by multiplying the digestible fat in a given quantity of feed by two and one-half, to reduce the fat to its equivalency in starch. Add this product to the sum of the digestible starch and crude fibre. Divide this sum by the digestible fortein compounds and the quotient will be the nutritive ratio.

INORGANIC FOOD.

About five per cent of the live weight of an animal is inorganic matter and four-fifths of this inorganic matter is phosphoric acid and lime in about equal proportions. There is a large per cent of mechanically separable fat in the carcass of the hog. Three-fourths of the fat is carbon. The growth of the hog, in proportion to size, is more rapid than that of any other animal on the farm. These facts, possibly, will account for his apparent abnormal desire for certain mineral food, such as lime salt, sulphur, carbon, sand, clay and ashes. Owing to rapid growth, influence of high feeding, under the forcing the supply of these inorganic elements is too limited, hence the desire for the free mineral substance. When the ration is properly supplied with these constituents then there is no appetite for them.

Cattle grazing on pastures wet by the spray of the ocean have no desire for salt. A tribe in New Zealand hold salt in abhorrence, while another in Central Africa looks upon it as a luxury, simply because the one has it in abundance in nature and the other has it not. A person whose food has been lacking in salt for some time will relish it as a child relishes sugar. I have seen hogs that had been fed on corn for a long time, in a close pen, eat salt as greedily as they would drink sweet milk, and to such an extent as to produce nausea and vomiting. Barbarous people have known of the value of salt from time immemorial and, to inflict the most agonizing punishment and death upon culprits they required them to eat food without salt.

What is true in reference to salt is largely true of the other mineral elements of food. The rickets has been attributed to a deficiency of phosphoric acid in food. We conclude, then, that in addition to a well balanced ration of organic matter, there must be a bountiful supply of the necessary mineral constituents.

COOKING FEED FOR HOGS.

Feeders differ in their opinion as to the value of cooked feed. There is no doubt that grinding feed fine, and cooking it thoroughly increases its palatability and digestibility. Every function of the digestive track contributes toward the reduction of food. The operations are both mechanical and chemical. The mechanical consists of mastication and trituration. Mastication by the tongue and teeth, and trituration by the contraction of the muscles of the stomach and intestines. This reduction must take place before the digestible portion can be absorbed and carried through the process of assimilation.

Some one has likened digestion to the process of reducing a substance in the chemical laboratory. Comparing the operation of mastication and trituration to that of the mortar and the agitation of a substance under the influence of heat, in the presence of water, alcohol or ether and the action of the ptyalin of saliva, the pepsin of gastric juice, biliary secretions, pancreatic and intestinal juices, to that of the dissolving acids. If all the founding and grinding and soaking and boiling and agitation incident to the laboratory is necessary to effect a solution, then, certainly, grinding and cooking feed will help digestion.

All animals are provided with a means of crushing or grinding or putrifying their food, preparatory for the action of the digestive fluids. The digestive system of the chicken is provided with a strong muscular organ, containing more or less gravel, by which the food is ground up. The cow has four stomachs, in the first of which the food is macerated and then returned to the mouth for final mastication. The hog gulps his food down and depends on the length of his alimentary canal to secure proper digestion. Throughout the whole animal economy, whatever may be the method of taking and digesting food, nature has provided largely for its thorough mechanical division. Grinding and cooking feed therefore assists nature's efforts.

We also find additional evidence in the study of farinacious plants. All these plants have but one object—the production of their seed or fruit that their species may be perpetuated. To insure the uninterruption of this cycle of plant life, each seed is enclosed in a glazed seed vessel, slowly penetrable by water so that it may have time to find its way into the ground and grow again. A grain of corn must soak fifty-three hours in water at ordinary temperature before the starch grains begin to burst. It is a common observation to see grains of corn growing after having passed through the digestive track.

Nature, in her precaution, goes further than the seed vessel, and so firmly impacts the cells with grains of starch, glutin and albumen that they are able to resist the action of boiling water for considerable time. Everyone knows that free starch is not soluble in cold water, and that the water must be raised to near the boiling point before the grains are much affected. The experiments of Dr. Beaumont with Alexis St. Martin teach us that the more finely divided are the farinacious foods, and the more thoroughly they are cooked the sooner will they be digested. Reasoning from the experience of various men and from the provisions of nature we must conclude that cooking feed promotes palatability and digestibility. However, numerous feeding experiments might also be cited to prove the proposition. Professor Stewart conducted an experiment in which he produced a gain of 16.47 of weight for every bushel of corn meal, the meal being thoroughly cooked and fed luke warm, while he only secured a gain 11 pounds when the meal was soaked in cold water for twelve hours before feeding.

The failures consequent upon feeding cooked feed to hogs have resulted from bad management. Through carelessness the hogs may have been allowed to gluttonize themselves and lose their appetite. The ration may have been deficient, the feed may have been ground too course and then not thoroughly cooked, the feed may have been made too sloppy, it may have been too dry, it may have been fed too hot or too cold, it may have been fed in filth and dirt, it may have been fed too irregular, and if fed to young pigs it may have been allowed to sour, and then failure would of course follow, and the short-sighted feeder would attribute it to cooking the feed rather than to his own carelessness.

Gluttonny burdens the digestive organs. The natural digestion can not take place, hence the food putrifies and large quantities of gas are formed, such as carbonic acid, carburetted hydrogen and sulphite of hydrogen which irritates the digestive track and leads to various forms of disease and hence failure.

I will close my paper by saying the highest skill in the rearing of animals is required in the feeder.

DANIEL SHEEHAN: I want to ask you a question, Prof. Kent, and I may at the same time ask a few more. You made the remark that we should never water hogs at the same time we feed them. I, for one, and I suppose that a good many others, do this, and it is a common occurrence with farmers. I would like to know why you make this statement, and when we should water them? Another remark was, that we should feed grain three times a day regularly when the hog runs to pasture. These two questions I will ask together.

PROF. KENT: As to the question of watering immediately after feeding, it has been observed by experiment that when a hog has taken feed, if he drinks very much water, the tendency is to push the food out of the stomach before it is sufficiently advanced in the stages of digestion. If the hog is suffering for water, water him, but it ought to be done an hour or more before feeding. If in the morning you have to water and feed, then water late in the forenoon. If you do that, he will not then need water until after his dinner ration. Then in the afternoon he should be watered again, that is, if you water your hogs carrying the water to them. If the water is in the lot so that the hog can get it whenever he wants it, then the water question does not enter into your manner of feeding at all. I simply interpolated that in order to guard against the practice of allowing the hog to get thirsty, feed and then water him. It, as I have said, has a tendency to push the food out of the stomach before digestion.

Your other question was in regard to the feeding three times a day. It is a well established fact, also, that the hog will digest one pound of food eaiser than two. It is better to give the hog one pound of food to digest at one time than it is to give him two. If you feed twice a day, you necessarily give larger feed. You necessarily feed nearly as large in the two feeds as you do in the three, although the hog will eat and digest more food in the same number of hours from three times feeding than he will from feeding twice. The theory is, all the food the hog takes is digestible in four or five hours. That fact is established by Dr. Vinmont in his experiments. Another point is, that the hog has an entirely different digestive apparatus from cattle. You will remember also that I interpolated that cattle should not be fed three times a day, in anticipation of raising that question. It has been found that food has been in the digestive canal of cattle for as long as five days, but the intestines of the hog have considerable length and the stomach is small so that the digestion of the hog progresses much more rapidly than in cattle, in view of that fact together with the other fact that they can do better and more thorough digestion if the quantities are smaller and oftener.

MR. GILMORE: I noticed some people feeding slop at the fair grounds. They would sometimes eat meal slops, and then go back and eat grain and then slop again, and probably finish up both about the same time. Do you recommend feeding grain and slop separately.

PROF. KENT: I would say feed the two feeds separately, but do not feed more than a hog will eat regularly, although I have seen good experiments where the feed was before them all the time. Some farmers have feed cribs, by which means they let the animals run to the feed all the time; but while the animals get fat by that method, you will find that you use more grain than is necessary. That method would be all right when grain is cheap and labor high, although we ought to bear in mind the old adage that "willful waste makes woeful want."

MR. H. C. WALLACE: Professor, I understand you conduct the experiment station.

PROF. KENT: I have something to do with it.

MR. WALLACE: After you conduct the experiments carefully and accurately, weighing all of your feed, and after having done that for six months or a year and published the results, are those results worth anything?

PROF. KENT: I generally swear by anything I do myself.

MR. WALLACE: You think we should have some confidence in such results?

PROF. KENT: Yes, sir.

MR. WALLACE: Have there ever been any experiments in regard to cooking and soaking feed for hogs?

PROF. KENT: I conducted an experiment of soaking myself, and we had just commenced to fit up an apparatus for cooking.

MR. WALLACE: If you will take the trouble to look up the bulletin, you will find that Prof. Stalker conducted a series of experiments in cooking feed for hogs. Have you known of the experiments at Wisconsin?

PROF. KENT: Yes.

MR. WALLACE: Is it your recollection that those experiments are for or against it?

PROF. KENT: It is my recollection those experiments were against it.

MR. WALLACE: Have you ever read of the experiments at the Michigan school?

PROF. KENT: If you have any questions straight to the point, ask them.

MR. WALLACE: Statements coming from you carry weight with them, and I want to get at whether your statements agree with those experiments that have been conducted at other stations—at other experiment stations. Michigan experimented on that question for nine years; nine years they conducted experiments with reference to cooking food for hogs; nine years they fed some dry food and some cooked food, and every one of those experiments was against cooking food. For three years Prof. Sanborn conducted cooking experiments. Each one was a failure. Prof. Henry conducted experiments on the same question, and every experiment was against it. With one exception, every experiment has been against it showing it is not only done at a loss, but that the cooked food is not worth as much as the dry food, your labor and expense of buying the feed, and all that is so much loss. Now, in face of all that testimony if you will study the question, how can you take the ground in favor of cooked food?

PROF KENT: Do you refer to that one single isolated experiment you have in mind?

MR. WALLACE: No, sir, I am refering to those twenty or thirty central station experiments. I am putting those twenty or thirty experiments against your theory. I have great faith in the experiment station. I was not raised on a farm, and all I learn I have to read from books, and for that reason I have more confidence in book farming than some others. All the experiments tell me that it won't pay to cook food, and when I consider the question of buying a feed cooker, I must do as they say.

PROF. KENT: You must not be too incredulous. You may say you were not raised on a farm yourself, and you only understand these matters from a theoretical standpoint. That is one of the troubles with the men who take the stand against cooking food. They don't prove the pudding by chewing the string. They look at the question through the editorial sanctum.

MR. WALLACE: You don't tell us that Profs. Henry and Sanborn tell us what they do from theory.

PRESIDENT: Let us have these questions one at a time.

PROF. KENT: I gave my experience with reference to cooking food. I cooked feed myself and fed it myself through a long series of years, and marked the results. He cites Prof. Henry, and yet I am credibly informed that Prof. Henry is not a practical feeder. I said also in the beginning of the subject that there was a difference of opinion as to the value of cooked food. I am fully aware of the fact that there is a difference of opinion. Pick an audience where you may, and you will find men saying that cooked food is a failure and others who say it is not. I would cite you to Prof. Stewart, as good a professor as there is in the country. He says he obtained a gain of sixteen and forty-seven hundredths pounds of flesh for every bushel of corn meal, cooked feed, while he only received a gain of eleven pounds when he fed soaked food.

MR. WALLACE: You had in your experiment, seventeen and three-tenths.

PROF. KENT: Yes sir.

MR. WALLACE: Did you cook the food?

PROF. KENT: No, sir; that was soaked in water.

MR. WALLACE: That proves that the soaked food is better than cooked, for Stewart did not get as good results from the cooked food.

PROF. KENT: Yes, but you must not put one experiment against another. I might feed another food to pigs and not make the same gain, or I might gain more. I have just conducted another experiment where one of the number did not gain anything, but lost ten pounds. What we attempt to establish in one experiment may fall short by reason of the failure of another experiment. Experiments may be failures outright, and there are hundreds of experiments which are tried that are not outright failures, but they are not worthy of notation. These experiments of Prof. Stewart's must have been a success. I had a greater quantity of soaked food than Stewart, because he had nothing but corn meal, and I soaked mine thirty-six hours and he soaked his only twelve. There is no man who has conducted an experiment but knows one experiment cannot be taken as conclusive evidence of anything. It is only by repeated experiments that these problems can be solved. You can run all over the country on any agricultural subject and get ten thousand opinions one way or the other. You may start to

town and ask every farmer on the road the rule for planting corn, and scarcely find two of the same opinion. Wherever you see two men talking on a subject, you will usually find one has one opinion and another another. Their opinions are at variance because their theories are at variance.

MR. STOUT, of Grundy: I would like to ask if, in the practice of soaking food for thirty-six hours, under fair conditions, whether you expect fermentation or souring of the food? You can soak it for thirty-six hours, even in the hottest weather, without getting it sour. Have absolutely clean vessels, and put fresh water in it every time you put the grain to soak, and it will take thirty-six hours before any decree of acidity occurs; but, of course, there is a large gain much sooner than that to the food. There is a sort of milky solution of the water. You assumed the position that you would have fermentation take place.

PROF. KENT: I don't think it is advisable. Of course, slight fermentation does not affect anything, but I don't believe in feeding hogs sour feed. Let grain soak four or five days until it is half rotten and the hogs will devour it greedily, but I do not regard it as good food to continue on any great length of time.

MR. STOUT: Isn't it a fact that the hogs like the feed fermented?

PROF. KENT: No, I don't know as it is. It will take anything fermented, but a hog likes sweet milk. I don't question what he will take, but I question his judgment sometimes.

MR. STOUT: It is a common practice with us to sour the feed, and we get good, practical results.

DANIEL SHEEHAN: In his paper he made the statement that we should not feed cattle more than twice a day, and since I have heard the professor make that statement, I have felt as if I wanted to pound myself or to have some one pound me. When I wanted to make a good gain I put the steers on the scale; and if I had thirty days ahead in which to make a good gain, I wanted to feed those steers three times a day. It has been my experience that I could make better gain feeding three times a day than two. I can for thirty days, and I don't know but I can for sixty. I don't know that it is a good thing for the steers, but I do know that it is a good thing for my pocket. (Laughter.)

PROF. KENT: What is your theory?

MR. SHEEHAN: My theory is, I put the steers on the scale. I don't know how they digest the food, and I can't analyze it; but I can see it come on their backs. I can see it by putting the steers back on the scales in thirty days, when I see I have made a better gain than I have ever been able to make from the practice of feeding the same steers twice a day.

PROF. KENT: How many experiments have you conducted to establish that fact?

MR. SHEEHAN: I have been at it more or less for thirty years.

PROF. KENT: Will you describe one set of experiments?

MR. SHEEHAN: I have not kept a detailed account of it—we don't do that. Farmers do not generally, but it is conceded we may be wrong, but that is what I want to know, if I have been wrong all this time. Some of the best feeders in the United States, when they are feeding cattle and hogs for the Chicago Stock Show, make a practice of feeding the cattle three times a day. I have no way of knowing in the world, and I am too ignorant to go into these details of feeding, and they would not be of any weight if I did; but when a professor of our Agricultural College gets up and makes such statements—statements that are going to be published to the world, they, of course, will carry weight with them, the same as other professors from other colleges. I want to know, and I presume this meeting does, why it is that a steer won't do as well when he is fed three times a day, when it is my experience and that of other farmers that he will do better.

MR. COWNIE: I am not a professor in a college, and don't receive a salary for my work. Upon my wits depends the success of my work, and consequently any experiments I have carried on have been from a business standpoint to make money. I have fed a great many hogs during the last twenty-five years. Twenty-five years ago, I believe it was, and all my neighbors believed then that hogs could not be fed without meal, and we used to mix potatoes and corn meal and bran and oil meal. This we would mix together and boil, and I never sold a good hog. I remember taking some of these hogs to market, and one merchant I remember picked up one that I had fed with boiled potatoes and corn meal for months—he picked him up that way, and says he, "Is that a codfish?" [Laughter.] Every farmer in our neighborhood had a boiler of some kind, and if there is any one in this audience that wants to boil feed for their hogs, come down in my neighborhood around South Amana, and I will find you a hundred boilers that you can buy for the price of old iron. Every one has given it up. I tried feeding meal and bran. I wish to say, and I speak not with any show of egotism, that I have been in Chicago with hogs that

averaged four hundred and forty-nine pounds, and they sold for a shilling more than any other hogs there, and they never had a bit of swill. If there is anything that makes a hog look bad, especialy in cold weather, it is having him swilled and let him out. He has the most dilapidated appearance after he goes into the swill trough, the hogs piling one on top of the other. Then they go out and get frozen. I don't think I ever saw a more pitiable object than a hog fed swill in the winter time. The Amana Society people are about two miles from me. The South Amana people had three men and women boiling food for hogs. They cooked everything. Everything was cooked and given to those hogs. I never saw them have a decent hog yet—not one. I tell you, gentlemen, it is a foolish notion to believe that we can make good hogs by boiling the feed. It is entirely uncalled for and unnecessary work, this boiling. It is not only uncalled for, but it does no good. I have had a good deal of experience before with hogs, and perhaps before this meeting is over, it will give me pleasure—whether it will benefit you or not, gentlemen—to tell you how I succeed.

MR. ————: How many hogs do you feed each year?

MR. COWNIE: Generally from two hundred and fifty to three hundred. I generally sell them while shoats. I am aware that people usually say they should not be sold before they are hogs, but it is my way of figuring if I can raise two hundred pound pigs and get five cents a pound, and I have two hundred of them, that is two thousand dollars. If I keep them until they weigh four hundred pounds and get five cents, I get twenty dollars apiece or four thousand dollars for the two hundred. I have raised a great many hogs and I always kept them as long as I thought there was any profit it them.

MR. LUCAS: How much grain does it take to make four hundred pound hogs, by the bushel?

MR. COWNIE: If I had time I could tell all about it, but it would take a little too long and I will tell you this much. I allow my hogs to run all summer on the pasture with scarcely any grain, sometimes feeding once a day a little, but most of the time none at all from the middle of May until new corn comes. Then they are fed new corn until about the first of November, when they are shut up with only access to a small yard, and the floor they are fed upon. It has been my rule to feed one bushel of corn—this is no experimental work from an agricultural college. These other men who do not do it can make money at it. Our rule has been to feed

one bushel of corn to five hogs each day. That is fourteen pounds of corn to the hog. If the hogs are doing well they will gain two pounds a day for the first two months after being shut up. In the latter part of the feeding, after they will weigh three hundred and fifty to four hundred pounds, they will not gain quite as fast, neither will they eat quit as much. You may reduce the feed ten or twelve pounds—that is an ear of corn. So I consider that fifteen pounds of corn will make two pounds of pork. This is winter feeding I am speaking of. We have conducted an experiment in the summer where the hogs were running on clover pasture, and we have had sixteen pounds of pork to a bushel of corn. We soaked the corn because it was dry and hard, so that it was difficult for the hogs to eat while running on grass. You are all aware that any animal when running on the grass, their teeth and the salivary glands of the mouth become tender and sore. If the food is soft they eat it better. I tried feeding three times a day but I condemned that practice in fattening hogs. I met an Irishman who was in the habit of throwing down the corn and letting the hogs eat, and he argued that you must have them keep on eating to get them fat. It is not what they eat that keeps the hogs fat, but it is what they digest, on the same principle that it is not what you read that benefit you, but what you remember.

The hog, if properly treated, is an aristocratic animal. He does not like to get up early in the morning, and if you undertake to feed him early, you have to get him out to eat his feed. If he is a good hog, he does not want to get up and eat by lamplight any more than the hired hand on the farm does, and he likes to have his supper in time. He wants to take his supper and go back to bed before dark.

You have all heard about the Irishman who came to this country and who had not been accustomed to working the way we do in this country. He hired to a farmer to husk corn. The farmer set him to work, and after awhile the noon hour came, and in the evening, after dark, he gave him his supper and the Irishman retired. In the morning the farmer called him to come down to his breakfast before daylight. The Irishman was very much surprised at being called at that time. He came down and saw the lamp lighted there and everything ready to sit down to breakfast. "Well," says he, "I have heerd a great deal about what foin lavin yes have in this country, but this beats all I iver heerd of, two suppers in wan noight." This hog we talk of don't want two suppers in "wan" night. He must have some time to digest that food, and

I have found repeatedly—not once in a hundred times, but every time—the hog will do better on two meals a day in the winter than on three. In the morning feed him and let him go back and lie down. Bring him out for supper, feed him and let him go back before dark, and never let any man go in the house while the hog is there.

In regard to this watering—I am giving only casual glances at some of the things referred to by Prof. Kent and Mr. Wallace—as to the watering, I make it a rule to turn the hogs out every morning in the yard, and by this means we keep the house as clean as this opera house. We have no cleaner domestic animal than the hog, if he is turned out regularly. If his master has regular habits, the hog will be clean. When I see a dirty hog I know he has a dirty master. Let him have water; put him on a floor; let him take his breakfast, and give him about an hour to eat it; then let him go in and lie down, and he will lie there until about three o'clock in the afternoon; then go there again and let him out; water him and feed him and let him go right back. While he is out eating we clean the floor perfectly clean; then bring the hog back and give him about an hour for his supper; then open the door and let him go in and lie down, and he will lie there until eight o'clock the next morning. I know what I am talking about when I talk about feeding hogs. I have fed hogs and sold during the last ten years over thirty thousand dollars' worth. I have got the very highest prices paid in Chicago market, and this I can easily verify from the "Drover's Journal;" but I differ with the professors in our own college, as well as Prof. Henry and others, as to the rations for feeding hogs, and I tell you if these gentlemen had to go out and boil food for the hogs and had to fed them, they would change their minds.

MR. WALLACE. Prof. Kent believes in it, but the others do not.

PRESIDENT: This is a topic we can refer to at any time we desire when there is a lull in the proceedings. I wish to name on behalf of the citizens of this place, a committee composed of proper men for the special purpose of soliciting membership, locally. Badges may be obtained by any of these gentlemen from the Secretary after paying the membership fee of one dollar. This entitles them to a membership in the Association and the privileges of the occasion.

I appoint as this committee, A. W. Hammond, B. F. Hoover, Will Parrot and Mr. H. B. Allen.

We would like to have this membership matter attended to now so that we may be able to know who constitutes the members prior to making the several committees.

Another thing I wish now to say, hereafter in the discussions following these several papers, it will be a proper thing for each gentleman to address the chair and to give his name for the benefit of the secretary and reporter, as well as for the entire meeting.

I suggest now that we have Prof. C. F. Curtiss' paper before he goes away.

WINTER CARE OF STALLIONS AND MARES.

BY C. F. CURTISS.

Now that the price of all horses except the phenomenally fast trotter is so rapidly declining, it is well for us to consider whether we are getting the best results that can be obtained in horse raising. To produce a good horse it is necessary to begin on him before he is born. The colt whose sire and dam are of the right type and breeding, and properly mated and cared for until the youngster's birth, is more than half made when he is born. All this is absolutely essential. No amount of care will ever make the highest type of a horse from a colt whose breeding or ancestors have in any way been neglected. The Americans are known almost the world over as sticklers for pedigree, but the making of a good horse does not end with pedigree. More atttention should be given to the conditions and care of the stallion during his idle season, and to the brood mare when carrying the foal. Too many sires are kept from the close of one season to the beginning of another under conditions that are entirely adverse to nature's laws of reproduction. Too many mares are fed and wintered without regard to the demands of maternity and the good of the colt to be foaled. The mortality of foals at foaling time is annually very large, ranging last spring from ten to as high as seventy-five per cent in one locality in this State, where it assumed the form of an epidemic. The average loss varies from ten to twenty-five per cent. The mortality, however, is only a part of the loss sustained. Constitutional weakness, defective form and impaired function will follow the horse through life. Inferior qualities may be developed with just as much certainty by improper handling as by heredity. That much of the loss occasioned by death and weakness of colts may be averted by properly caring for and handling our breeding stock is evident from the good results that invariably follow when the best methods are practiced. One of the first and most essential, and at the same time most neglected conditions, is exercise. Exercise does not imply overwork, debility and scanty feeding; but nutritious, wholesome feeding and healthful activity, use and development of all the organs of the body. An animal that is to transmit strength, endurance and energy must have these qualities bred and developed in him until they are a part of his nature. There is no better way to make and mature a

horse than by work. Judicious and regular work will injure no good horse. The only way to get muscle in a horse is to grow and develop it in him. Trotting horse men *make* their horses mostly by work. They are worked every year of their lives until past maturity. Even menial work does not hurt them. Topgallant, who trotted four miles in 11:04, was taken from a public coach. Dutchman, with a record of three miles in 7:32½, at one time hauled clay in a brick yard. Princess, the dam of Happy Medium, pulled a pop wagon about the streets of Chicago. Dr. Swift, the pacer, and his sire both peddled milk. The time has come when a trotting horse to be of value must have more than a pedigree. He must have a record. He must be a performer. The developed sire is the one that is making a reputation. It is assumed that a horse that has good qualities can transmit them, but we cannot reasonably expect a horse to transmit a quality that he does not possess. One of the leading horsemen of America a few days ago said: "The Americans will not raise good draft horses until they adopt different methods of feeding and management." The only horse in America that is selling for top prices is the trotting horse, and it is a significant fact that greater skill and more intelligence have been applied to this horse than to any other. Apply the same principle to other breeds and it will tell. The standard of excellence and the market value will be raised. It is not more horses from Europe that we need, but better horses and better methods in raising them at home.

The winter care of breeding stock, as stated, is likely to be neglected. Regular and moderate work is the best means of exercise for either stallions or mares. It frequently happens, however, that the farmer or breeder has more horses than he has work for during the winter. In this case other means must be provided. Some regular system should be adopted. The brood mares will fare better on good blue grass pasture, with access to a roomy, open shed for a little fodder and a light grain ration, than they will with high feeding in warm, close stables. They can be wintered in this manner much cheaper, and with vastly better results, than by the more expensive methods of close stabling.

With stallions a different plan is necessary. They, of course, must be stabled. The paddock is the common method used for exercising stallions during the winter, if any exercise is given. If a paddock is used it should be a large one, large enough to give the animal good use of his muscles and develop his lung power. A close pen will not answer. Another method, not so generally used, is the cable. Several years' experience with this method enables me to to pronounce it much more satisfactory than the paddock; it is cheaper, more easily constructed, and much more effective. One hundred feet of three-quarter inch wire cable (which can be made on the farm) stretched ten feet above the ground, one end securely fastened to a post or tree, and the other passed through a pulley and supporting a hundred-pound weight, constitutes the system. Fasten the horses by a heavy tie-strap from the nose-piece of a strong halter to a swivel-pulley, left free to roll the length of the cable. The weight and pulley fastening at one end gives the cable elasticity and two or three feet of slack, when tension is applied. The weight always keeps the cable stretched, and yet allows flexibility (see diagram or model). The device is simple, and its operation is perfect. A horse will take double the amount of exercise on a cable that will be obtained even in a large paddock. It also has the advantage of getting the horse more accustomed to being outside. He sees what is going on, and is more easily managed. Many farmers and joint stock companies have a stallion or two that they are at a loss to know what to do with during the winter. Work them, if possible; it will do no harm, and they will get more and better colts during the foaling season. The next best thing is the cable plan for exercising. It will pay for itself in a week, and the man who puts one up will wonder why he did not have it before. They should be put up right, however, and made strong. Whatever be the plan adopted, by all means give breeding stock exercise.

The feeding is also important. While sufficient and nutritious feed is necessary, it is true that more breeding stock is injured by over-feeding and idleness during winter than by want of feed and work. One of the best Iowa feeds for wintering horses is but very sparingly utilized for that purpose. I refer to corn fodder. The value of good, bright, well cured corn fodder as a feed for horses is greatly underestimated. This most valuable product of our farms is only beginning to be appreciated, and when it is properly rated I believe the horse raiser will depend more largely upon it as a part of the winter ration. A bunch of imported breeding fillies, two Percherons, two Shires and two French coachers, being wintered at the Agricultural College, are making an average growth of two and one-half pounds per day. The only coarse feed they receive during the day is access to a box of cut corn fodder and sheaf oats. They relish it, and it is undoubtedly better for them for coarse feed than hay alone. But the subject of feeding is too large for discussion in this paper.

PRESIDENT: We will now spend a few moments in discussion of this subject.

MR. GOVE: There were one or two points that the gentleman did not touch upon that might be brought out a little. I am not in the business largely. I have two, but we have so much other work to do that we have but little time to devote to them. I have a big stall sixteen feet square with a door that can be opened. We have an opening to the east, and a yard in connection with it with a tight fence six feet high around it so that it has no connection with any other horses. Other horses do not get near enough to excite them. They can take as much exercise as they will in the winter, and when I turn them out to water in the morning, especially in cold weather, they drink and are allowed to run. The yard is about fifty feet one way by one hundred and fifty the other. I take the halter off and let them play around until they are ready to go in, and that is when they get their play out.

Another point is to keep them clean. Well, I don't think they should be curried much in the winter for the second growth of hair, which is fur really, keeps the cold out first rate if they are bedded properly. A yard fifty feet long and one hundred and

fifty feet wide is sufficient for them to exercise in, and in a yard of this size they are not as liable to strain themselves by short turns as they are in a smaller one.

MR. HOWARD: I would like to ask Mr. Curtiss what grain rations he considers best for stallions and mares. He can briefly state it.

MR. CURTISS: I purposely avoided the question of feeding because I hadn't the time to take it up in this paper, but the common mistake is feeding too high and too constantly of heating feed. For that reason, I advise that mares run out on blue grass and clover pasture during the winter. Give them good tame hay—clover and timothy, if they need it while the ground is partly covered with snow. They will need only a light ration of grain that way. Stallions should have a good variety of feed consisting of oats, bran, barley or oil meal and not too much corn. I find rye to be an excellent food for all grades of stock, especially for horses. It should be ground, of course. We are feeding wheat with excellent results. We should feed that which is best adapted to the growth and best adapted to the building up of the muscle and bone and increasing the general vigor of the stallion or mare for breeding.

MR. HOWARD: I asked the question for information. I have had a little experience myself with raising horses and keeping stallions. I do not keep a great many. Generally about thirty head. My way of taking care of mares in the winter season is to allow them to run in the stock field and halter them over the night. I halter all the colts except the sucklings which I keep in a tight shed over night. I feed the mares once a day, feeding a little oil meal—well, up to within thirty days of foaling time during the winter. I have had very good success in raising colts and having the mares good breeders. I generally raise about ten a year—eight or ten colts.

Now, in feeding the stallion through the winter season, I have my stallions in stables adjoining a paddock thirty-two feet square with stall twelve by fourteen feet. I feed them grain from the first of January until the first of March. After the first of January I feed about a pint of oil meal until the first of March, when I commence on a ration of corn, oats and rye—four bushels of oats mixed with one bushel of rye ground fine. I commence with that ration and continue it during the stallion season. Whether that is best or not, I don't know. I know this much about it, that during the breeding season there were sixty-two colts out of seventy-nine

mares bred to draft horses. That was something unusual for draft horses.

MR. CURTIS: One feed I have found to be excellent for stallions during the winter. To feed as coarse feed or in connection with ground feed to mix together—that is, cut sheaf oats. I believe it is better than so much hay. You can cut corn fodder in connection with that with excellent results; that that has not grown too large in rank, putting it in feed boxes in the paddock, as you speak of, and letting the horses run to it. You can mix it with corn fodder and give the horses access to it all the time. The ration you speak of is a good one. I think there are other things in the way of an addition to that that might be well to use in connection with it, rye, wheat or corn meal, but you can get good results from what you speak of.

MR. BROOKS: I understand that when the professor says corn fodder he means old corn. I would like to know whether he means corn fodder.

MR. BARCLAY: I wish to say that there was a committee of three appointed by the Fine Stock Association here to take into consideration the exhibition at the World's Fair, to confer with a committee from this Association. I request that this committee be appointed so that we can get together and have the matter ready in the morning in ample time for discussion.

PRESIDENT: The chair would suggest that all committees will be announced this evening, perhaps at the opening of the session, or as soon as possible after the opening.

Here an adjournment was had until 7:30 P. M.

7:30 P. M., December 2, 1891.

Solo by Miss Alice Ettinger.

PRESIDENT: The chair will now bring up some arrearages in the way of committees that have been neglected, and he regrets that he cannot use more of the available material for this work.

The Swine Breeders named a committee, and the Shorthorn Breeders, consisting of one grand committee of the whole, have asked that we name a committee for the World's Fair.

I will appoint on this committee L. M. Van Auken, C. E. Hartley and F. R. Payne, on the World's Fair business.

General committee on resolutions, James Wilson, L. S. Coffin, Governor Packard, O. T. Denison and Henry C. Wallace.

Committee on place and nomination of officers for the ensuing year, consisting of one from each Congressional District:

First District—W. P. YOUNG, Henry county.
Second District—C. W. NORTON, Muscatine county.
Third District—J. M. ST. CLAIR, Benton county.
Fourth District—D. SHEEHAN, Mitchell county.
Fifth District—J. G. BROWN, Marshall county.
Sixth District—J. C. FRASIER, Davis county.
Seventh District—W. H. JORDAN, Polk county.
Eighth District—W. O. MITCHELL, Adams county.
Ninth District—H. C. WALLACE, Adair county.
Tenth District—J. W. WADSWORTH, Kossuth county.
Eleventh District—H. C. WHEELER, Sac county.

That, I believe, is all the committees which are called for up to the present time at least, and we are now ready to enter upon the program prepared for the evening, the first of which will be an address upon the subject, "Among British Farmers," by Henry Wallace.

MR. WALLACE: *Mr. President and Gentlemen of the Association:*

It is not wise for a man who has spent but a few weeks or months in a foreign country to undertake to give more than his impressions regarding its farms or farming. We sometimes have reason for grievous complaints against the foreigner who strides across the continent in seven-leagued boots, or glides over it in a palace car, and then returns to tell his countrymen all about farming in America, and often to the disadvantage of our reputation abroad. We say, and say truly, that his opinions are nothing better than mere impressions. The only advantage the American traveler abroad has is this, he usually knows more in advance about foreign farming than the foreigner knows about American farming.

The first thing that strikes the American farmer in Great Britain is the wonderful climatic difference between the two countries. A cool summer forbids the growing of our Indian corn; a warm winter makes the feeding of roots possible. A rainfall but little, if any, greater than ours, distributed throughout the season, dispenses alike with the dangers from drouths and floods, while it enforces stacking hay and grain, and dispenses with the necessity of large barns. The next thing that impresses the traveler is the smallness of the average holdings, the necessity of a rotation, and therefore of small fields; this, with the cheapness of labor, precluding the extensive use of machinery. The tools of all kinds strike one as being made by the village blacksmith, and intended for the use of men who depend on pure strength and awkwardness for the efficiency of their work. On every hand he is impressed by the fact that he is in an old settled country, where changes can be made very slowly, and where custom is law.

For various reasons which need not be mentioned here, I aimed especially to make the acquaintance of the Irish farmer. I was prepared to extend to him my hearty sympathy and condolence for his griefs and sorrows, famed throughout the world, but he was not long in assuring me that he stood in

no particular need of my condolence or sympathy. The farmers of Ireland may be divided into about five classes—the titled landlords, the landed gentry, the large farmers, the small farmers and the cotters. The first class usually reside abroad, and I had no opportunity nor desire to make their acquaintance. The landed gentry comprise men who, in character and independent means, are entitled to the honorable title of "gentleman." Independent means is one of the requisites of a "gentleman," but not the only one. He must have some good or "gentle" blood in him as well, and is supposed to deal with rich and poor alike on the principles of the highest morality. The gentry or "gentlemen" are the local magistrates, dealing with petty cases and crimes, and are thus brought into close touch with the people. Next comes the large farmers with holdings of one hundred acres or over, then the small farmers, and finally the peasants or cotters. The line between the laborers and tenant farmers, large are small, is pretty closely drawn, as, in fact, are all other lines between the classes, and while it is possible to rise from the lower to the higher, it can be done only by ability of a very high order.

The farmers of Ireland are for the most part tenants, but in many respects the most fortunate tenants in the world. They own all the improvements, the buildings, the fences, the drains—everything, in fact, except the spot on which to make them, and from this they cannot be dispossessed by any one except for the non-payment of rent or financial failure. The landlord cannot raise the rent except as it is raised by mutual agreement, or the decision of the land court, and if the tenant thinks the present rent too high he can appeal to the same court and have a judicial rent declared, ordinarily about twenty-five or thirty per cent lower than that charged under the old method of agreement. If the landlord wishes to sell he has nothing to do with fixing the price. He must take "twenty years purchase," that is, twenty times the annual rent and this is paid by the government in a lump sum and the tenant has forty-nine years to repay the government in annual payments with four per cent interest per annum.

In other words, land holding in Ireland is regarded as a natural monopoly just as we in Iowa regard railroading, and to be conducted according to the rules of justice and for the promotion of the public welfare.

The Irish tenant farmer has an easy time of it if he has only enough of land. The misery of which we hear is confined to those parts of the island where the holdings are but a few acres on which no man can live decently, or where there is a determination to confiscate the property of the landlords altogether.

He rises at six and sees that the hands are allotted their work, or, if he allots it the night before, he sleeps till eight. Both he and the hands breakfast at eight, but in separate houses or apartments, and the hands work till six with an hour for dinner at noon. His fields are small, from two to four acres, divided by a stone wall with a ditch on one side and with either grass or thorn hedge growing on it. The crops are oats (always called corn), turnips, potatoes, occasionally wheat and flax. The rest is meadows, grass crops cut for hay, called rotation crops, and pasture. He keeps a few sheep, always good ones of the mutton breeds, a few cattle, mostly mixed Short-Horn and Ayreshire on the better lands, and a few pigs, always white, and now and then a few goats. He sells these exclusively at the local fairs and

hence has no controversy with the railroads or the Big Four. It is almost worth a trip across the Atlantic to attend an Irish fair.

In one stall there will be a couple of goats; another place will be three or four boys herding geese; in another one there will be fish and another hogs. You don't see any egg crates over there, but in fact, you will see people in all kinds of dress and all kinds of vehicles. You will see a table where an auctioneer sells old clothes that are gathered from all parts of the world. Going to market you will see lots of sheep, cattle, hogs and everything scattered around, and trading there is a curiosity. No man asks what he expects to take, and no man offers what he expects to pay.

One man at Londonderry, says: "I have a great abundance of pasture, and I don't know what to do with it. I thought I would get you to buy me something at the fair to eat up my pasture," addressing my cousin.

"Well, what do you want?"

"I had been thinking it over, and if I could get two small sheep or a ewe with twin lambs, they would eat it up."

Laughter.

So we went to the fair the next day to buy the ewe with a pair of twin lambs, and finally we struck one we thought was about right. My cousin, Henry J. Wallace, says: "Weel, Archie,"—they usually speak pretty good English there in ordinary conversation, but when they drop in at the fairs, they speak in the broad dialect common to tradesmen there—"thats a noice ewe and a pair of noice lambs you have this morning."

"Indade, and isn't she a beauty, Mr. Wallace?"

"Weel, Archie, and how much'l ye tak for her?"

"Fifty shillins."

"Ay'l g'e ye forty shillins," and so he goes off and after awhile comes back again.

"Weel, Archie, how much for your ewe and the twin lambs now?"

"Weel, I axed ye fifty shillins this morning, but I don't moind—I'll take forty-seven and a-half shillins and not *wan shillin less*."

"Sho, and she is no worth more nor forty shillins."

"Indade, I'll not take forty shillins."

"Get it if you can."

And he goes off and spends another hour and comes back.

"How much for the ewe and the lambs now?"

"Forty-seven shillins."

"I'll g'e ye forty shillings and not a hap'orth more."

And he goes off again for awhile and comes back again.

"Ye have not sold your ewe and lambs yet?"

"No."

"I'll g'e ye forty shillins and not a shillin more. Will ye take it?"

"No."

So he goes off and comes back again.

"I'll g'e ye forty-five shillins if ye will g'e me twa and sixpence back."

"Shure and Mr. Wallace, you're not agoin' to rob a poor man that'a'way. You remember what the prophet said to David about the wee lambs, and shure you are not agoin' to rob me that'a'way."

By this time my cousin Henry has a friend who comes up and says:

"Archie, mon, shure and you're not goin' to rob Mr. Wallace this morn-

in'? He is a good friend of mine. He has done us poor people lots of good. Don't break the mon up entirely. Split the difference between ye and take forty-two shillins and sixpence."

Then they commence dickering about what is to be given back, and Archie says: "Wr. Wallace, give me forty-five shillins' and take the ewe and the twin lambs, and I'll trate ye dacent."

Mr. Wallace says: "No; I'll give you that if you give me back twa and sixpence."

Before we got back there another time, a sharp buyer had bought the ewe and twin lambs for forty-two shillings.

There is nothing bought at a fair without something is given back. With fair people, if it is a penny that is given back, they always spit on it for good luck before it is put in their pocket. Their manner of dealing trains these people to understand the value of property, and they know the value of a steer when they buy one, and whether it is good or bad. They are peculiar people, and are sharp traders. They are a church-going people, and keep the Sabbath as well as everything else they can keep honestly.

(Reads from manuscript.)

The farm laborer, or cotter, lives in a stone house, thatched or slated, with an earth or stone floor and an old-fashioned fire-place on which he burns peat cut from the bogs that are on every farm. He has a patch of potatoes and perhaps keeps a pig or too, and lives largely on oatmeal, potatoes, buttermilk and American bacon. He grows a large family of stout sons and daughters, who find employment on the farm or in the cities or go off to America. The family often lives from generation to generation on the same farm, and the old fellows can tell all about "the master" and "the old master" and all of the family traditions. While our American laborers would not and could not, in this climate, live in the same houses or on the same fare, we believe there is as much content and more happiness among Irish laborers than there is among American, and we believe that Irish tenant farmers have more money in the bank or in railroad stocks than farmers have in America. Not only in Ireland, but in all parts of Great Britain, there is constant complaint of the scarcity and high price of labor and also of the difficulty of finding labor skilled enough to use machinery, the necessity of which is becoming greater every year.

In England the farms are much larger and, as result, the fields are larger and there is more scope for the use of farm machinery. The estates are also larger, and, while we gathered no statistics on this point, we believe the freeholders, or land owners in fee simple, are much fewer than in Ireland. The tenant farmer of England is a capitalist of no small means and when the land laws of Ireland are applied to England and Scotland, as they will be, there will be a revolution that will materially change the face of English politics and policies.

The tenant farmer, whether of England, Ireland or Scotland, is usually a gentleman, using the word "gentleman" in our sense, whom it is a pleasure to meet at his own home. He usually wants "a bit of an introduction" from a friend, but if the American farmer comes in at the right door and lays aside his habit of "bloviation" he will meet with a royal welcome. His home is usually more comfortable than the farm home in America, he has plenty of servants, and whether he drinks himself or not, he offers to his guest half

a dozen varieties of the "O, be joyful." He will answer all reasonable questions about farm matters and is only too happy to find a man who can tell him facts about American farming.

He complains that most American tourists know little about American farming, in which complaint there is only too much truth. Reserved, as the English farmer is supposed to be, convince him that you are a gentleman in the broad sense of the word, and no man is more genial.

Land in England may be roughly divided into three classes, the fens, the downs and the mountains. The fens are flat lands on the level of the sea or nearly so, with a soil very rich and capable of supporting the largest cattle, sheep and horses. The downs, more like our level prairies, but once covered with heavy timber, vary greatly in fertility, but are capable of supporting cattle, sheep and horses of the medium size, the size varying with the fertility, and of the highest quality, and the mountains grow the mountain cattle, horses and sheep. Each district, therefore has its own type, let the name of the breed be what it will. Live stock are disposed of, to a great extent, at sales corresponding to the Irish fairs, but the selling is done by auctioneers. There may be one or a dozen auctioneers at a sale. Each one has his own yards, his clerks make the entries during the week and when the sale day comes the stock is bid off by the buyers from neighboring cities or the farmers in the adjoining county. This system has many advantages and some disadvantages. One of the most serious is the almost utter impossibility of successfully stamping out disease, on account of the frequent changes of stock from farm to farm. Its advantage is mainly in the opportunity to advertise and sell stock and the enforced competition of farmer with farmer and butcher with butcher. Such a system would add much to value of live stock in America, and under it, the monopoly of the Big Four would be impossible.

I note the following prices obtained at a sale I attended at Colchester, England, last June: Two-year-old steers, thin in flesh, but fairly well bred, $70 to $100; fat cows, from $50 to $80; fat wethers, from $11 to $13.50; lambs, from $8 to $10. If we could get such prices there would be fun in cattle and sheep farming. While that is not possible there would be a much nearer approximation than there is now if foreign restrictions were removed. It is just as well to look at the question fairly and see what must be done for the removal of these restrictions. English people have a great respect, almost reverence for those in authority. Americans have no more respect for a blunderer in authority than any other. Two of the government veterinary sergeons disqualified, last summer, one of the soundest and best stallions in Scotland because, as they alleged after careful investigation, he had a ringbone. The owner believed he had been wronged and spent no little money to procure the advice of the best veterinarians. The horse died shortly after from an ascident and the feet were dissected and submitted to the best veterinarians in the three kingdoms, and it was finally admitted that his feet and legs were all as sound as a dollar. On no better grounds than this the government inspectors had been finding cases of pleuro among American cattle until the system of inspection and tagging had been adopted by the American authorities. The first is to ascertain the health of the animal, the second to enable the government to trace its history. Last summer the English veterinarians found two cases. Their history was traced up and

it was found that neither one of them had ever been within two hundred miles of pleuro-pneumonia till they reached England. While in Edinburgh we called, in company with Prof. Wallace, on Prof. Williams, regarded as among, to say the least, the very highest authorities in veterinary science and whose works are standard authority in America as well as Europe. He had no hesitation in saying that there had not been the slightest ground for the claim that pleuro-pneumonia existed among any cattle exported from America last summer, and showed us mounted photographs of the microscopic appearance of the lungs in question and also of diseased lungs. He pronounced the disease pneumonia contracted by exposure on the vessel, and claimed he could demonstrate the fact to any competent veterinarian. Time, and time only, will show the British farmer that he is humbugged and America will have to wait patiently. In England the farmer who wishes to grow calves does not want these restrictions removed because it gives him protection in a free trade country. The grazier on the other hand, wants our grade cattle. The trouble is that the foreigners who are interested in ranches are the ones that are mainly pushing the removal of the restrictions and the British farmer is not in love with ranch cattle. Meantime the inferior Canadians are going in, and the local dealers are making large money in buying them up by the boat load and retailing them to farmers. The thing for the government to do, is to give notice that unless some genuine cases of pleuro are found in a certain time, America will close her ports against any kind of importation of live stock from Great Britain. This and the conviction that he is the victim of official blundering, or worse, which with all his reverence for authority he will find out after a while will bring British sentiment to bear in the right direction. Meanwhile let us have patience.

One of the pleasantest days of my trip was spent with that veteran experimenter, Sir John B. Lawes, of Rothamstead, England. Sir John has been experimenting for fifty years on lines of his own. He has a large estate that has been in the family for three hundred years and while an English nobleman, is as approachable an any well bred and intelligent American farmer. He has a very warm side for the American and for the very good reason that American farmers know more about his valuable work and appreciate it much higher than do the Brittish land holding aristocracy. The peculiarity of his experimental work lies in this, that he manures each plat every year with the same kind of fertilizer and compares results with each other and with plats that have no fertilizer whatever. We saw, for example, the forty-seventh crop of wheat grown on the same plat in succession and without manure, which we learn since has yielded thirteen and three fourths bushels per acre, exceeding, as it does every year, the average wheat crop of the world. The land is by no means superior, and the result has been obtained by the most thorough and careful tillage and weeding. On none of this estate, nor indeed in any fields of Great Britain or Belgium, is it possible to grow two crops of clover in succession except on an old garden, manured for hundreds of years, on which we saw the thirty-ninth crop of clover growing in succession. Sir John has been at great pains to verify the theories of the German scientists as to the possibility of clover obtaining its nitrogen from the atmosphere, and his many plats showing the uselessness of nitrogen applied as a fertilizer to grow the legumes give no little incidental

proof of correctness of the new theory, or rather discovery. While every kind of grain on the estate responds at once to nitrogenous fertilizers no one can tell by comparison of the legumes which plat has received nitrogen or which has not.

It is a satisfaction to know that provision has already been made for the conduct of these experiments beyond the life of the founder of this celebrated station, and that he has already made over to trustees half a million dollars, with buildings and lands, for this purpose, and that one of the conditions of the transfer is that a course of lectures, by some one connected with the station, shall be delivered every other year before an association of American farmers. Agriculture, the world over, owes much to Sir J. B. Lawes. We might continue this talk to any extent, but this is probably enough of the impressions of a three months' traveler sojourning among British farmers.

By the way, while there I was visiting a gentleman who took me over his farm. I saw he had about a dozen chicken coops. In response to my inquiry he says, "I have a man employed whose business it is to gather up all the old setting hens within five miles and put pheasants' eggs under them. When they hatch the young pheasants, they are turned out into the field." And, he says, "The Prince of Wales comes down here, and I get more profit off the shooting on my farm than I do from all the produce."

Sir John took me back into his house to a room where he has some of his special pet samples, and showed me a bunch of wheat, about that high, of very good wheat. Says he, "I want you to look at that wheat. It is from the crop of year before last on my half acre of unmanured ground." Then he showed a little bunch of something that looked like weeds. He says, "That is what grew of itself on a little piece off the end of the plat. I thought I would let it grow of itself and see what it would do." It had stalks about that long with a grain of wheat upon each one. He says, "These weeds take up the fertility of the land." He says, "Tell your American friends if they will just keep the weeds down, and give the land cultivation, it is simply impossible to exhaust the soil of America."

Taking me out into the garden he showed me a patch of clover about a rod square. He says, "For one hundred to one hundred and fifty years, this spot was a garden, and was manured continuously until it had an amount of stored fertility that no clover can exhaust." I says, "Why cannot you grow two crops in one season every year." Says he, "I don't know, nor does any one else."

Mr. Wallace's address was well received, and concluded amidst applause.

MR. BAKER: Mr. President, is there any chance for remarks?

PRESIDENT: Yes, remarks are now in order; but allow me to suggest in the same connection that when the gentlemen arise to make remarks, please give their names.

MR. BAKER: I took very much interest, Mr. Wallace, in your statement, as I saw it in the *Homestead*, and it started my mind on the subject of how these plants would be sustained with this continuous cropping on the same soil by the weed culling process. The sub-growth of weed is equal to the surface growth, and this must furnish humus to the growing plants. I have a few times cut off weeds in the garden and left the sub-growth, and found that the crop that was so weeded would grow with prolific strength and mature the crop thoroughly, whereas, wherever the weeds were not cut off, it failed to leave anything more than half the crop on the plat. I got an inkling of this from the women weeding the flower beds. They would invariably cut the heads of the weeds off, and they would keep their beds cleaner than I could. Then I went to work myself and tried the matter of cutting the heads of these weeds off, so the roots may bleed themselves to death as in the similar case I saw in the flower garden. This then is transformed into food for the growing plants because they ferment directly, so these weeds are a great factor in increasing the fertility of the soil. These weeds in old pastures, that are not chopped off, save the undergrowth of grass during the last part of the summer and have been great factors in preserving the grass. Wherever the weed stood, the ground was covered with snow and protected the grass; and where there were no weeds, everything was blown off and there was no snow left to lay until the next spring. I find that the weeds have been a great factor for good for two reasons. They furnish something for the animals to crop off of when the other parts of the pasture are burnt dry in the summer time, and in the winter they furnish a covering for the old grass by catching the snow, which is retained during the winter; and these weeds will be mold in the spring when the old fiber is crushed to the ground again.

MR. VAN AUKEN: I would like to ask Mr. Wallace if the bread they buy over there at three cents a loaf is made from our products?

MR. WALLACE: Yes, I might explain how that is. I was traveling in the car from London to Liverpool. In the same car with me were two flour merchants. One made the remark that he bought his flour in Chicago; that he could buy it as cheap in Chicago, or have it made down in Liverpool, as cheap as the merchants in Chicago could buy it. The other one said, "How's that?" He said, "The dealers in America want to get rid of a certain amount of their flour, and to get it out of the country, they are willing to pay the fare across to this county." How true this is, I don't know. The English do not like to be approached without something of an introduction, and so I just listened to what they said, but it is not such a very strange thing after all. I think you

can buy flour in Belfast, Glasglow, Cork, Dublin or Londonderry as cheap as you can buy it in Des Moines. It is not all our flour. They use India flour, and get flour also from other places. They use flour from all the world in that country, and I think they mix it. Everybody there uses baker's bread. I don't mean that in the strict sense that *everybody* does, but I mean among the farmers you find the baker's bread. It is much more like the bread our mothers baked at home than what we buy at the baker's. There is such an immense amount of bread baked with such a dense population that the cost of making it is a trifle. Then again, it is not pure wheat flour. There is more or less potatoes in it. I am told that it has a certain amount of corn-meal. When you are told that the flour costs about the same as in Des Moines, and that there is one hundred loaves baked where there is one in Des Moines; that there is more or less potatoes in it, and that centres of distribution have brought it down to the last figure, you can see why a loaf is cheaper to the English farmer than to the American citizen. I calculated that we paid about twenty cents for what they paid eleven for. I went to the baker's when I got home and bought the same bread and had it weighed. I found we paid about five cents for what they paid three.

Capt. JORDAN: I have become very much interested in Mr. Wallace's statement, and as he remarked, people see things in a different light. It has been my misfortune to eat a good deal of English bread. I can scarcely think where my friend Wallace found the farmers in England eating baker's bread.

Mr. WALLACE: In Ireland.

CAPT. JORDAN: Oh, I don't know anything about your Irish! (Laughter.)

I was there among the Irish some, but I don't remember whether I got any bread there or not—perhaps I did not. Upon this farmer question, it strikes me as exceedingly strange to find such bread in the cities. In some of the cities you find bread quite similar to our first class baker's bread, somewhat on the order of rolls—what ladies call French rolls, thoroughly baked; but as soon as you get into the country, you find solidly baked bread. An Englishman made a remark over here in regard to our bread. He said: "It don't stay by anybody. I can eat two loaves of it and it don't do any good." He had been very seasick coming over and had a ravenous appetite, and I thought perhaps it was so. That bread was made of foreign and native wheat mixed. The wheat, or any

thing they raise, is very much finer than ours—very much larger and the berry is similar to what I have seen in Oregon. But their machinery for the manufacture of flour is deplorable. It is mostly the old fashioned wind-mill that goes when the wind blows, and with that they manufacture their flour. To make it palatable, they buy cheap brands of American flour, which accounts for their getting it so cheap. They buy it and mix it with wind-mill ground flour to make it palatable, and of this they make this dark colored, heavy bread. Then when you sit down to the dinner table in England to eat, they take one of these loaves and cut it up into about six pieces and give you a chunk about the size of your fist, and take it and eat it without butter. If you had good butter, it is exceedingly weak as compared with American butter. While they have many good things in England, they haven't any conception of making good butter. It is very oily and I will suggest, even at the risk perhaps of making statements that are rather fishy, that they sell it in London by the yard. I tell this to some of my friends occasionally, how they sell butter by the yard. The inquiry comes, "How can that be done?" I find, though, that I am generally sound on the question of veracity, though I may not be believed. It is a fact that they measure off a yard like rope. They run this butter or this oil through a machine very much like our ordinary sausage stuffer, that stretches it out and makes a roll two or three or a few dozen yards long. They then cut you off a yard or a half a yard, or just what you want of it. All the butter that came upon Brother Wallace's table in England came cut up into little pieces about as large as our silver dollar and a little thicker. It is cut off from those rolls that are made with those sausage machines. I love butter milk, but I don't like their butter or bread. I like the American.

But after all they have a scientific knowledge of farming in theory and practice that we Americans know nothing about. We have no conception of practicing scientific farming as it is conducted in England. It is done at a profit, though their expenses are immense. The expense for carrying on a farm of three hundred acres requires an investment, to procure the necessary implements, labor, manures, etc., of about six thousand dollars. A man to carry on a farm of four or five hundred acres will need a balance of about seven to ten thousand dollars to do it with. Now then, you American free-born citizens, think of this English farmer when the crops fail and the rent has to be paid in cash with this

large amount of capital invested, and you will be glad that you are an American and under the American system of farming.

MR. T. J. BROOKS, OF HEDRICK: *Mr. President*—I have had a little practical experience with the foreign market for flour. While it may be true, as he said, that the great milling centers, like Minneapolis and St. Paul, feel benefited to get the flour out of the market, yet that motive does not and cannot influence all mills, and yet a great many of them export flour. They export it merely as a matter of business, and sell it on the foreign market. There are two or three reasons why they can do it. One of them, my friends, is this. You all remember the familiar saying that "the prophet is not without honor except in his own country." It is something like that with flour. The flour shipped into an Iowa village is much better than the flour at home. It often happens that two mills, fifty miles apart, would exchange flour. The outside mill is all right in a foreign town, but it requires a great deal of shipping in broken lots at local rates, and it is put up in expensive packages. The price here is increased by shipping in small lots in expensive packages, and in addition to that is the fact that we Americans must have what is known as roller made flour. We compel the miller to take out fifteen or twenty per cent of the product of the wheat, and that leaves on his hands a large quantity of really a better grade, that he don't know what to do with. He has to have a market for it. It is the best flour that he makes. It is not quite so white and it don't look quite so well, but it tastes lots better. He puts it in packages, then in carloads and shiploads and sends it to Europe at a very small freight rate. This will account largely—when you take the higher wages for bakers and local handling in America—to the price here as compared with possibly lower wages over there. I think you will find really a solid and sufficient explanation in this why a five-cent loaf of American bread can be bought in Ireland for three cents.

MR. COWNIE: *Mr. President*—There is one point in Mr. Wallace's address I wish to refer to, and that is in regard to the American beef in the English market. We all know that while English people will say they are compelled to buy the beef, that they would much rather not have it. A few years ago in shipping live cattle to England, they placed an embargo on cattle that was detrimental to the shippers, viz., to have them slaughtered at the place of debarkation. We all realize that if they could be shipped into the interior of the country, they would realize far more to the American shipper than they do. I have some acquaintance with the beef

they have there. I know how it is there. The Scotch cattle—black cattle—bring the highest price of any in the English market. Anyone who reads the newspapers will see that Highland cattle bring the highest prices all the time—from a half-penny to a penny a pound. The cattle are raised in the Highlands and brought down the mountain and fattened on turnips and straw—as the Scotchman says, "'nips and strass." Sometimes they get potatoes. This beef is different from the American beef. It is soft and flabby. It is no more to be compared to the beef of our corn-fed cattle, as we produce them in Iowa, than a field pumpkin is to a potato. Their beef isn't better, but they want to run our beef down and keep it out of the country—especially those farmers engaged in raising cattle. When cattle are slaughtered and the beef shipped over, as the greater portion of the American beef is now shipped, it is claimed by shippers and by the "Big Four" butchers in Chicago who ship beef all over the continent, that beef requires a certain amount of time after being slaughtered until it is fit to eat; that it has to go through a ripening process, and one of the arguments of the "Big Four"—Armour and Swift—that they use to obtain sales for fresh beef is the facilities they have for handling it; and when they ship it, it requires a week or ten days until it reaches its destination and then it is better fit for use than when newly slaughtered. The English people read these arguments, and one of their most celebrated writers came out in one of the leading magazines in regard to it, holding that though it was more tender, decomposition had set in and it had become more tender; and the people began to think that that was not a very good kind of meat to use—meat that had arrived at the stage of decomposition, and consequently, American beef had to be sold at a lower price. There is a prejudice which is unwarranted against the American beef, and it is fomented and kept up by the men who raise stock there, and who are endangered by the importation of our beef. Dressed beef a few years ago was from twenty-five to thirty cents a pound, and now American beef sells at twelve to thirteen cents, dressed.

A friend of mine, who is an Englishman in Yorkshire, England, has a cousin who is engaged in the butchering business in Sheffield, and in speaking to him in regard to the American beef he says: "That beef you ship us here isn't fit to eat. It is nothing at all like our home beef. Why," says he, "there can be nothing better than our corn-fed beef. Grain is far superior to turnips and our grass and hay is superior to anything grown in England." He

says: "There is nothing at all in comparison with English beef. I can sell English beef for twice the money I can get for American beef." He stayed there during the winter, two or three months, and he showed how they foment and keep up this prejudice against the American beef. When I was going away, says he: "Mr. Mount, let me tell you something in regard to this. Do you see that meat hanging there? I bought that in Manchester. That is American beef. I sell it for the best English beef." He says: "I go out in the country and buy the poorest, scrubbiest cattle I can find, and I slaughter them for American beef, and I am getting my customers pretty well disgusted with American beef." Everything that an Englishman can do to depreciate American beef will be done. I believe, like Mr. Wallace, if they are going to continue this talk about pleuro-pneumonia and hog cholera, I believe in retaliating in kind. I believe at the time when the French put an embargo on pork we should have put an embargo on French wine. I believe that we can get them to take our pork, and I am sure our pork is just as good as their wine; and if the English insist on keeping up this pleuro-pneumonia and hog cholera scare that they are agitating all the time, let us place an embargo, a little bigger than the McKinley bill has done, upon their goods.

MR. WALLACE: While I was on the other side I talked with a man whose reputation is not confined to Europe, but I cannot now give his name. He has charge of an educational establishment and numbers of students. Walking along the streets one day, talking about the relation of the two countries, I said: "I understand you buy a good deal of beef to feed the young men." He says: "Yes." And I says: "Now, just between ourselves, what do you buy?" Says he: "I buy American beef." And I says: "Why?" He says: "For two good reasons. First, because it is cheaper, and second, because it is better; but don't you mention my name, for if my boarders should find out that it is American beef they would all go away." [Laughter.]

Next was a paper by Prof. Patrick, on:

WINTER BLUE GRASS.

PROF. G. E. PATRICK, OF AMES.

On November 24, 1890, Director Spear (of the Iowa Agricultural Experiment Station) and the writer, gathered from a small plot of blue grass, *poa pratensis*, a good-sized sample of that portion which was still bright green, and another of that which was yellow and apparently dead—killed, we assumed, by the frosts of the preceding weeks. The grass, in both samples was, as nearly as it could be so gathered, at the same stage of development, and of the same size, viz.: three to seven inches high.

The samples were carefully sorted over, in the laboratory, so as to have each entirely free from admixture of the other kind, and submitted to analysis. The analyses were made by the assistant chemist of the station, Mr. C. M. Wade, and are believed to be substantially accurate. Results were as follows:

1. On the dry substance (water free).

	PER CENT.	
	Green grass.	Dead grass.
Crude Ash	9.32	12.4
Crude fat	4.69	4.2
Nitrogen-free extract (Carbhydrates)	51.49	48.40
Crude fiber	19.61	26.56
Crude protein	14.89	8.39
	100.00	100.00

2. On the original samples, as gathered.

	PER CENT.	
	Green grass.	Dead grass.
Water	61.73	23.05
Crude ash	3.57	9.55
Crude fat	1.79	3.26
Nitrogen-free extract (Carbhydrates)	19.71	37.24
Crude fiber	7.50	20.44
Crude protein	5.70	6.46
	100.00	100.00

DEDUCTIONS FROM THE ANALYSES.

I. The figures on the dry substance of the grasses show plainly a large loss of crude protein and a proportionately smaller loss of carbhydrates and fat in the dead grass, as result of the killing and subsequent decompositions and leaching. The absolute magnitude of these losses cannot be known with certainty from the analyses, but certain it is that they are greater than would be indicated by the mere difference between the two sets of figures for protein and carbhydrates. The higher percentage of crude ash and crude fiber in the dry substance of the dead grass are, of course, accounted for by the losses of protein, carbhydrates and fat; and, assuming the ash and fiber to have suffered no loss whatever (rather improbable, perhaps, but on the safe side), the figures indicate an actual loss of twenty-five per cent of the dry substance of the green grass; and the whole of this loss, it must be remembered, has (on the above assumption) fallen upon the three most highly nutritive constituents. Simple computation on this line brings out the absolute loss of crude protein as more than one half the amount originally present, and of carbhydrates and fat, as nearly one third their original amounts. But, abandoning calculations of *absolute* loss, based upon assumptions more or less uncertain, what do we find regarding the percentages of nutrients actually present in the dry substance of the grasses as gathered? Answer. We find the crude protein to be less in the dead grass (dry substance) by about three sevenths of that in the green, the carbhydrates to be less by only one seventeenth, and the fat by one tenth.

These deductions are not to be taken in the sense of generalizations; they relate only to the samples examined, and there is always the danger of small field-gathered samples being not truly representative. In such matters we must have accumulated evidence, and to that end this same study is being repeated the present winter.

II. Comparing the two sets of figures based upon the original samples, as gathered, it is seen that the dead grass, because of its comparative dryness — twenty-three per cent water as against sixty-one per cent —shows actually a higher percentage of nutrients all around than does the green grass.

This concentration of the feed, by drying, doubtless, in large measure, explained the remarkably good effects often exhibited by cattle from grazing on blue grass winter pasture. The dead grass has, of course, a wider nutritive ratio, and its palatability and digestibility are doubtless somewhat impaired.

It will now be interesting to compare the blue grass of winter with that at different stages of growth during spring and summer.

Properly, the comparison should be made between samples grown on the same soil—*i. e.*, on the same spot, nearly—but this we are not able to do, since the analyses of summer blue grass at hand were made on samples from a spot on the college grounds some rods distant from that whereon the winter samples grew. The year was the same, however, 1890. The analyses of the summer grass were published in Bulletin, No. 10, of the Iowa Station; the stage of growth of the earliest sample, at least as regards size, corresponds closely with that of the winter samples. Following are the analyses, two of winter and three of summer grass:

ANALYSES OF WINTER AND SUMMER BLUE GRASS.

	* WINTER GRASS.		* SPRING AND SUMMER GRASS.		
	3 to 7 inches high; gathered Nov. 24, 1890		3 to 6 in. h. gathered Apr. 28, '90.	At early bloom, May 28, '90	Just after bloom, June 7, '90.
	GREEN	DEAD			
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Water	61.73	23.05	68.05	62.91	61.24
Dry substance	38.27	76.95	31.95	37.09	38.76
ON THE DRY SUBSTANCE.					
Crude ash	9.32	12.41	11.49	8.47	8.66
Crude fat	4.69	4.24	5.55	2.25	2.75
Nitrogen-free extract (carbhydrates)	51.49	48.40	42.74	50.50	50.79
Crude fiber	19.61	26.56	22.19	29.11	29.92
Crude protein	14.89	8.39	18.03	9.67	7.88
	100.00	100.00	100.00	100.00	100.00

* The winter samples were from one spot, the spring and summer from another, some rods distant.

The table needs little comment. The early spring grass is, of course, the most watery, the dead winter grass the least; the other samples nearly alike.

In the analyses *on the dry substance*, the *green* winter grass is seen to be materially richer in carbhydrates than the early spring grass of (about) the same size, and but little inferior as regards protein content.

The *dead* winter grass is found to be, as regards crude protein, less than half as rich as the early spring grass, and about on a level with summer grass at usual time of cutting; between these two there is also practical equality with respect to carbhydrates and fat (together).

Had the dead grass been exposed longer to the weather — the sample was taken really *before* winter, as stated — it would doubtless have shown even greater loss of nutrients. But, as remarked above, such loss is in some measure counteracted, in its effects upon grazing stock, by the less watery condition of the dead grass.

Captain Jordan called to the chair.

PRESIDENT: Tell me what is your further pleasure.

MR. AMES, of Tama county: I would like to ask Prof. Patrick a question. In these experiments with the grasses, would it make a difference when it was experimented upon whether there was rain to bleach it out. In an early day I went to California and in crossing the plains, there was a grass somewhat similar to our blue grass; and although it was very much dried up, yet there was almost as much nutriment in it as in fresh grass until the first rain came. This grass had dried without any moisture upon it whatever, and the nutriment had all dried there in the blades, but as soon as we got a little rain to wash it out, the nutriment was gone and our stock would not live upon it at all. Would not that apply to this grass the Professor refers to if it were dried up in the summer

time without moisture, would there not be more nutriment in it than if there were rains to bleach it out?

PROF. PATRICK: That is unquestionably true, but we live in Iowa where we have rains more or less at that time of the year. I didn't mention that point, but it occurs to the mind naturally. I will say the result was so extreme in the loss of protein that I was cautious about bringing the results here until I had made some experiments this year. Only yesterday I obtained an analysis from samples gathered this year—gathered by myself. Picked out the dead grass and was careful to get grass only recently turned yellow and selected it carefully from the green grass. Yesterday the analysis was made from the crude protein. The figures were a little lower from both of them than upon the cards. They were twelve and a half for the highest; six and a half for the lowest. Twelve and a half for the green grass; six and a half for the dead grass. The ratio remained about the same—a little more than half protein in the dead grass.

MR. NORTON: It has been our custom for a few years to have blue grass winter pastures. To-day we find our pastures which have not been turned upon since the last of June with a brown coat on the outside, we will say half an inch or such matter at the end, and then there is six or eight inches of green blue grass. The question is, would it be better farming to cut off this blue grass and put the hay in the barn, or to let the stock feed upon it in the pasture. Have we lost any nutriment for the stock?

PROF. PATRICK: I would say the question was answered in the affirmative, especially if there has been any freezing to any extent by which it has become dead or yellow. I should say unquestionably you had lost nutriment. Don't you think so?

MR. BAKER: I would like to make an observation. In the hayfield, there comes up a thunder shower; the hay is just about cured, but the rain comes on and presently the trickling of the water through the hay onto the wagon, or wherever it falls, shows that it is strongly colored with the plant that it filters through. There were also minute particles in the drops. I suppose the softening of the silicon of the plant loosens these particles, so it floats off with the water and colors it. I would like to know, as a matter of fact, if it will run off that way?

PROF. PATRICK: The leaching of hay by raining consists more in carrying off soluble portions than particles. In what I have said heretofore, I have not said anything about solid particles, but soluble matters, such as water takes out of tea.

MR. BAKER: I think that solves the question. I have noticed the fact quite often and I have been curious to know really if this water carried those particles of nutriment out of the fiber by the action of the water upon it.

PROF. PATRICK: Unquestionably, yes.

MR. COWNIE: There is one thing about that analysis of Prof. Patrick's that occurs with actual experience. The crude protein is diminished, but the free extract carbohydrate increased. That is correct, isn't it? In the summer when it is in early bloom, it has increased from forty-two and seven tenths to fifty-one and eight tenths.

PROF. PATRICK: Please bear in mind that this line separates the summer from the winter.

MR. COWNIE: As my friend on the right refers to blue grass pastures, I wish to say a word in regard to the freezing part. We know that there is nothing in the grass kind above the surface of the ground but that is froze, but we also know it is perfectly green. It is not dead. Now the question is, is it really injured for feeding purposes as long as it is not dead. I don't think there is any more growth than with timothy, but take blue grass pasture that has not had any stock upon it since June; it is now heavily coated with grass, and that grass remains green notwithstanding the freezing. You, as I understand it, say that this nutriment was killed in the green grass. Would freezing, as long as it remains green, injure it to any extent?

PROF. PATRICK: Mr. Cownie, you struck a question that occurred to me long ago, when I first began to study the subject. The mere freezing of the grass will injure its feeding material. The assertion attributed to me unquestionably had reference to frozen and dead grass, and in the paper I used the word dead every time because both were frozen—because both were reported as frozen, and unquestionably the dead grass is the one referred to. I have already answered the question. I don't think that the freezing of the grass, so long as it remains alive, will injure it materially any more than it would to freeze a quarter of beef a long time; but if it is frozen, the moment life is extinguished, that moment bleaching sets in; disintegration and decay sets in, and in a short time the nutriment is taken out.

MR. COFFIN: I would like to ask the professor what kills the grass?

PROF. PATRICK: I suppose freezing kills the grass. It is upon that suggestion that Captain Speer first suggested gathering it. I

thought myself possibly it was not altogether freezing that has killed some of this grass, but still I have gone on the assumption that it was, in all this talk. I would like to have your opinion.

MR. COFFIN: I don't believe it is killed, because that same grass after it has laid all winter and perhaps four feet and a half of snow has melted and run down over, it will be green in the spring and as palatable as before it was frozen and more so, because it seems to me that cattle will do better on that and like it better. We find cattle eat it readlily and do well upon it, not only after the tips of the grass have been killed, as you say, but after it has lain all winter frozen and the water has run over it, as I said. This, I think, is the experience of every man who has blue grass pasture, and we value it as highly in the spring after all this exposure as we do in the fall.

MR. BLAKELY: Now, suppose by next May, say the 1st of next May, when we turn out on pasture or ought to turn out in Iowa to graze, the blue grass pasture that has a good deal of blue grass on it at present is then thoroughly dead. Now, the question is, what will be the effect upon the cattle to eat this dead blue grass with a little green grass mixed with it as compared with thoroughly green pasture that is short yet. Is it better rations for them to have all green grass in the month of May, or to have the dead grass and the green grass mixed together? Is dead grass good for anything, and mixed with the other grass, does it amount to anything?

PROF. PATRICK: I should say, if I had animals—any stock that I wanted to pasture, I would rather see them of the spring grass. This winter grass unquestionably has a feeding value, but it is equally unquestionable that its value is much lower than that of green grass. That is certain in my mind, and I think an analysis will show it. I think the green spring grass is eighteen per cent protein, while there is only eight per cent in the dead grass. Suppose you mix it, you cannot then get the combination you do when you feed the green grass.

MR. BLAKELY: Is it best to get all the protein you can?

PROF. PATRICK: Yes.

MR. BLAKELY: We sometimes feed a little old dry hay and find that the cattle do better upon it, and some of us think that they do better with some of this old grass mixed with the green than upon the new grass alone.

PROF. PATRICK: There are many old feeders who know that the digestion of the animal comes into account, and this manner of

feeding is desirable at that season of the year. It is changing the animal from winter feed to the green grass of spring.

COL. LUCAS: There is one objection I want to make on the subject of dead blue grass. It don't die. It gets ripe, turns orange color, and rests for awhile. After the fall rains, it starts out the blades again. It never dies. After the blades have shot out it dies out and goes to seed but once a year. I have measured blades of grass on my place forty-seven inches long that have grown in the fall. If you let it grow and don't pasture it too closely in the summer time, it will grow up, and the grass that matures will bear seed and will stand up and then it mats down. It will bleach out something like celery does, and you find it not dead nor green, but a very light green, and all the stock I have ever had on my place seem to relish that better than any feed I can feed them on, and they do well upon it.

I have had some little experience in regard to turning cattle out on the grass, and I think it will make at least thirty days difference if you have that kind of feed to turn fattening steers upon—fully that. I guess it is a well known fact that when a man has fattening steers, when you first turn them out on green grass it is almost impossible to keep their weight up for from three to four weeks—if you turn them on the green grass it has that effect. If you turn them upon grass that is old with green patches you don't see that effect. It may be better if you can get the same quantity of grass and hay—may be better for some stock, but I doubt if it will be better for fattening stock.

This old grass not only hastens the growth of the new, but there is something in the cured grass that gives it a flavor that the stock relishes, and they are ravenous after it; and when they eat they will not have their teeth on edge from green grass. The best results I have ever experienced is to keep pasture on purpose for winter pasture. When you turn off of it in the spring when you are turning to your other pastures, let it alone until you have fed your other stock fields. I don't care what other kind of stock you have to turn upon it, you will find it will pay you equally as well as a crop of corn, taking the expense of raising corn. That is what we have to look at in this country, is the expense of producing this corn, and we all admit that corn is king, and we also claim that blue grass is the queen.

MR. BAKER: The fact is very evident that the combination is better for the cattle, because they thrive upon it. The young grass

being unripe is very laxative and the old grass is quite astringent, and combining the two together it is digested easily in the stomach and produces fermentation. In the next place, if they have their own choice in the field, they will take the two together invariably. In the matter of frosted grass, it seems to me that the frost ruptures the cells containing the sap, and the action of the snow upon it carries away the nitrogen by evaporation.

MR. MCCLURG: *Mr. President*—I only wish to make a few remarks. On behalf of the citizens of Waterloo I wish to say that we have prepared a banquet to which every member of this Improved Stock Breeders' Association is invited. The banquet will be held to-morrow evening; and I wish to say further, that just prior to the banquet, at the East Side opera house, we wish to give you a little entertainment, and want you to be there at half past 7 o'clock. When you get to the East Side opera house you will be just across the street from the banquet hall.

Further, I wish to say, to-morrow morning at 8 o'clock there will be carriages provided at the Irving and Logan hotels, so that if any of you wish to go out to the stock farms we shall be glad to have you do so.

MR. GOVE: I wish to speak a word with reference to getting some information in connection with the grass subject, and that is on the subject of hay. What I have to say will be brief. I wish to find out from the members whether they have discovered any difference in the coloring of hay that they have gathered and saved with a hay holder as compared with the good old way of raking and shocking or taking it out of the windrow. For my part, I think I have discovered that we get less value of the hay. You get a patch of hay cut down, and if it is hot, scalding weather, unless you have force enough to gather it up and take it into the barn at the right stage, or stack it up dry, it will be affected. If the machine breaks or help fails you, or something of the kind happens, and you have a piece of work left open, it is sure to be detrimental. My practice was to rake up the hay, put half in the windrow and the hot wind would soon dry it out, and we could handle it that way.

PROF. PATRICK: I wish to ask a question of Mr. Wallace. I want to ask Mr. Wallace about those weeds that Sir J. B. Lawes told him by pulling up saved the wheat crop or made it grow so tall. I wish to know whether Sir J. B. Lawes got the impression that growing weeds did the mischief by drawing the nutriment from the ground more or less or merely drawing the moisture from the

ground? The reason I ask this is, several of our American investigators have reached the conclusion that weeds do most of their mischief, not by stealing the nutriment from other crops, but by taking up the water and drying out the ground.

I remember at a scientific meeting at New York City four or five years ago, Dr. Willis Sturtevant made that claim, and was very sturdy in it. Several others have had the same opinion.

MR. WALLACE: I did not discuss that question with Sir John, but the idea that he conveyed to me was that the weeds absolutely poisoned the ground. Now, all over Belgium in that whole country the flax crop, which is the money crop there, is carefully weeded. It is gone over once or twice by women working upon their hands and knees, so close together that their elbows touch, and every little weed, no matter how small, is pulled out. It is then gone over two weeks later for the purpose of killing every possible weed that can come up.

In talking about those two samples of wheat, he did not philosophize about it; he just said, this is what grew with cultivation after weeding it; this is what grew by nature. Get the weeds out of the ground and you cannot exhaust the soil of America or any other country.

MR. SHEEHAN: The committee on officers and location is requested to meet to-morrow at the Irvin House at 8 o'clock.

Motion of adjournment until 9 o'clock to-morrow morning.

Carried.

THURSDAY MORNING—DECEMBER, 3, 1891.

9 O'CLOCK, A. M.

Report of treasury read by Mr. Franklin.

By motion the treasurer's report was accepted and passed to the committee on finance.

PRESIDENT: The chair will name as committee on finance Messrs. Barclay, Cownie and George S. Prine.

We will now pass to the second order on the program, being a paper on "Portions of the State Best Adapted to Dairying," by the Dairy Commissioner, Hon. A. C. Tupper.

(Paper here read and Mr. Tupper received by applause.)

IOWA A DAIRY STATE.

The first creameries were started in Iowa about twenty years ago. Prior to that time butter shipped out of the State was not uniform in color, in texture, in flavor or in any particular. It was designated as "Iowa Grease" uncertain as to its value; usually entailing a loss upon every man who handled it. The claim was strenuously made and vigorously maintained that good butter could not be made in Iowa; the conditions and environment were wrong. All honor to the pioneer butter makers of Iowa who did not believe this nor pay any attention to it, but conceived the idea of the creamery. The milk of a neighborhood was brought in a good condition to the creamery, strained into pans which were surrounded with ice water. The milk was all handled in the same manner, the cream was all ripened alike, the butter produced was uniform in color, grain and flavor and at once commanded place and value for itself in the butter markets of the world. At the Centennial Exhibition held at Philadelphia in 1876, John Stewart, of Manchester, was awarded the Gold Medal for the best butter in the world. Iowa was placed on her feet as a dairy State. Again I say, "All honor to the pioneer creamerymen who overcame the difficulties, wiped out the prejudices and established the unknown capabilities of Iowa as a dairy State. The value of their work cannot be estimated in dollars and cents; if it could, it would figure away up into the millions of dollars. Many of these pioneers have become old; some have gone to "that better country beyond the river." The names of men like John Stewart, Colonel Robert Littler, H. D. Sherman, Charles Sibley and a host of others will not be forgotten whenever the subject of dairying comes up in Iowa. Manchester will ever be the creamerymen's Mecca.

* * * For the first three or four years the creameries were confined to four or five counties clustering around Delaware county. The business has gradually extended until there is scarcely a county in the State that has not a creamery. There is not a county in the State but that is admirably adapted for the production of dairy products, both butter and cheese. In twenty-three counties in northeastern Iowa, bounded as follows: On the north by Minnesota, on the east by the Mississippi river, starting west on the south line of Clinton county, running west to Cedar county, north to Jones county, west to the west line of Linn county, north to Buchanan county, west to the west line of Grundy county, north to the Minnesota line —about three fifths of the creamery butter of Iowa is made. There was shipped out from these counties for the year ending October 1, 1891, 45,876,219 gross pounds of butter; and from the other sixty-six counties of Iowa 35,898,422 gross pounds of butter. Total shipment for the year ending October 1, 1890, 84,830,677; total shipment for the year ending October 1, 1891, 81,774,661.

Prior to the starting of the first creamery the great industry of the north half of the State of Iowa was raising wheat. This was especially true of the creamery counties. The crop had been gradually failing in the central counties of the State. The uncertainity of the wheat crop curtailed its acreage year by year until in 1877 there was little raised south of the four north tiers of counties. There was a fascination in wheat raising to the early settlers of Iowa. Every part of the labor was hard work. It was all

done in the spring, summer and autumn months. After the crop was in the wheat farmer had it easy with plenty of leisure through the months of May and June. Little corn and less tame hay was raised. The chores consumed but little time. The winter was a season of recreation and leisure. A vast deal of hard work had to be done through harvest and threshing. The help necessary to harvest the crop had been reduced to a great extent by the invention of the self binder, but in threshing the reverse of this was true because of the introduction of the steam threshing machine, which accomplished more work per day, but required more help. To the farmer wheat raising looked like a wholesale business. There was nothing picayunish or puttering about it. He liked the excitement and bustle of it.

The last great wheat crop raised in Northern Iowa was the crop of 1877. Wheat yielded from twenty to thirty-five bushels per acre and brought ninety cents on the home market. Never in the history of farming, before or since, did the farmers have so much money at any one time. It produced that fatal thing—a boom. Lands changed hands at an enchanced value. Too many farmers bought the farms adjorning their own at high figures, making large payments and placing heavy mortgages to secure large indebtedness.

In 1878 the wheat acreage was largely increased. The crop was planted early; the ground was in a splendid condition. Sunshine and shower had not been lacking. On the 9th of July the crop promised was in every way better than that of 1877 at the same time of the year. The greater bulk of the acerage of the four northern tiers of Iowa counties was one vast wheat field. As the wind played over it, it resembled the waves of the ocean—a sea of wheat on a billowy prairie. At 9 o'clock on the morning of the 9th of July the wheat plants were wet with a heavy dew. The thermometer was 90° in the shade; at noon 98°. For three days and three nights the same condition of moisture and temperature continued. The intense heat caused excessive sap to burst the stalk. The farmers called it "black rust." As the sap slowly oozed through the orifice, blackening the stem, the bright hopes and grand expectations turned to disappointment and blackest gloom. Thousands of acres of wheat were burned before it was cut; that harvested yielded from eight to ten bushels of badly shrunken wheat to the acre—chicken feed—three bushel, machine measure, only weighing out two bushels. It was worth twenty-five cents per bushel after threshing. Thousands of farmers were ruined and emigrated to Dakota, not a few of them starting between two days.

What to do next was the pertinent question fraught with doubt and anxiety. A radical change had to be made in farming with but little capital on hand with which to do it. Dairying and stock-raising seemed to be the only remedy. To buy cows and milk them, or emigrate, was the alternative. Those who did not emigrate retained the cows they had on hand, saved the heifers, and imported cows from neighboring States. Creameries were started as soon as there was a demand for them. Some of the counties three years after the failure of the wheat crop, shipped over one million pounds of creamery butter to eastern markets. Family supplies were bought for cash instead of on credit, as formerly. Train-loads of fine corn-fed steers that when calves had been fed on skimmed milk, were sent to market. Almost every farm sent its quota of milk or cream to the cream-

ery, reducing the expense of gathering the same to the minimum; also enabling the creameries to run at full capacity, employing the help full time, thus making the manufacturing expense as light as possible. As the years have gone on new creameries have been built, old ones have increased their business until some of the largest counties ship between two and three millions pounds of creamery butter each year to market outside of the State. Washington, Oregon, California, Colorado, Montana, Idaho and Utah receive millions of pounds of creamery butter from Iowa every year. Minneapolis, St. Paul, Milwaukee, Chicago, Boston, New York, Philadelphia, Richmond, Savannah, and New Orleans, all buy large quantities of Iowa creamery butter. Verily Iowa is the heart of the continent in producing dairy products!

If the farmers of northern Iowa who loved the leisure that wheat raising gave them and hate the chores that dairy farming makes them, for they say: "We spend one-half of every day doing chores and do a day's work in the field besides," can put up with the irksome confinement of dairy farming, what is to hinder the farmers of southern Iowa and northwestern Iowa taking hold of dairying? These farmers have fatted steers, raised hogs and horses; have early in life formed the habit of the care of stock, thinking little of the time it takes to properly handle them. While there are many farmers in southern Iowa who are willing to milk, they are numerous enough to make a creamery a success in their neighborhood in but few instances. There have been no crop failures of such a disastrous nature as to drive all of them to be willing to milk. * * *

Many problems that greatly embarassed the dairying industry and in some instances ruined creameries have been worked out. Originally cream was bought by the gauge inch. By such a system some of the patrons of a creamery received twice as much as they were entitled to and others only one-half of what they should have received. The invention of the oil cream test equalized this injustice. Every man is now paid for just what butter his cream makes. In a proportion of the creameries of Iowa, whole milk is received. Until two years ago the patron whose milk would make three pounds of butter to the hundred weight of milk received the same pay per hundred weight as the patron whose milk made five pounds of butter to the hundred weight of milk. Only 10 per cent of the creameries and cheese factories now buy on the relative value plan.

There were some patrons who were too honest to skim part of the cream from their milk, who considered it good American enterprise to breed cows that would run a large amount of water through their udders. The patron who was so near akin to the hog that his neighbors looked at him to see if the bristles were not growing on the back of his neck, has had a fine chance to indulge his leading propensity to fatten off his neighbor. But the day of reckoning has come. As was said at the late Dairymen's Convention at Waverly, "A Babcock milk tester will do more to keep some men honest than religion. He had known it to stop Baptists baptising his milk." With this test, milk is bought on the relative value plan, each man receiving pay for just the number of pounds of butter there is in his hundred weight of milk. * * * * The best dairy authorities hold that from 15 to 20 per cent of the cows milked in this State run their owners in debt. This loss must be made up from the cows that yield their owners a profit before the

dairy can be renumerative to its owners. Little or nothing has been done toward ascertaining the difference between cows as to their milking qualities. Oftentimes we are not acquainted with the cow that yields a profit, neither do we know the cow that leaves her board bill unpaid. When the milk of each individual cow kept in the dairy or as fine stock for breeders, shall have their milk tested according to this plan, which determines precisely the percentage of butter fat contained in each cow's milk, the poor cows will be weeded out from the herd and disposed of, only the paying ones retained. The future sires of the herd will be selected from the cows having the best milking record. This process will improve and build up the dairy herd of the State to such an extent that the present average dairy standard of cows for Iowa will look small indeed.

The great encouraging factor of the dairing business at the present time is that the business has been, is, and promises to be, highly remunerative. The price of butter is proportionately higher than the price of grain. The breeders of fine stock are looking after cattle of a milking strain, and are buying milk tests and determining the milking value of the individual cows in their herds. This, in itself, has a tendency to improve and build up the milking qualities of the future cow.

Iowa's special advantages as a dairy state, are: Every county in the state is well adapted for the production of butter and cheese; our lands are cheap; our water universally good; we raise good grain and plenty of it; by feeding it we market it; grain fed cows make the best flavored creamery butter; our State is centrally located; we have the advantage of the western markets; we ship in car-loads, thus securing cheap freight rates; the car-load of butter condenses more farm produce into a small compass than any other product. The average car of butter is worth $6,000 at the present time.

The dairy products of Iowa, including the butter and milk used in the families on farms and in the cities is worth $35,000,000.

All the counties in the State will gradually go into the dairy business. If the farmers of this State should become tired of raising steers and should decon the calves, as is done in the eastern states, Iowa would soon be the greatest cheese State in the Union. Good calves cannot be raised on whey; hence we do not manufacture one-third of the cheese our people consume.

A beneficent providence gave to some of the States that surround our own natural advantages which were withheld from Iowa. Minnesota was gifted with vast forests and iron ore, her land forms part of the shore of one of the Great Lakes. The Fall of St. Anthony and the head of navigation make the "Twin Cities." Wisconsin has her pine lands, her iron ore and her shores are washed by the waters of Lake Michigan. Illinois was given a geographical position that secured to her the splendid metroplis of the northwest and the coming greatest city of the Union. Missouri has her mountains of iron ore. Southern Dakota has her Black Hills and ores of silver, copper, gold, and last but not least, tin.

Iowa, midway from ocean to ocean, between two mighty rivers, the heart of the continent, sending out its food supplies to the utmost extremity of the nation, aye, and beyond the sea. With its two hundred miles north to south, with its three hundred miles from east to west, it has an area of 35,000,000 of acres, a smaller proportion of which is unfit for cultivation than any other equal area in the known world. The soil, a loam, averaging

from two to four feet in depth, is the accumulation of ages of decayed vegetable matter, and the farmer has the satisfaction of knowing that he can not reach the bottom with the plow. Its productiveness has only been tested to a limited extent. Its capabilities are comparatively untried.

Iowa is, generally speaking, a rolling, undulating prairie, with good surface drainage, only a small portion of it is flat where water stands in marshes, ponds and sloughs, thereby becoming stagnant and unfit for cattle to drink. Iowa has a medium climate. There is warm and hot weather enough to mature corn and all kinds of small grain, pastures and hay. The winters are severe enough to tone up her people to be energetic and industrious. There is none of the lassitude that is engendered in some of the southern climates. The drouths of the last four years have demonstrated that the soil of Iowa will stand more dry weather and produce a crop, than any other soil in the United States.

Nature designed Iowa to be, as she is, the greatest agricultural State in the Union. We may well feel proud of our natural resources and geograpical position.

Iowa is, and will continue to be, the greatest dairy State in the Union, because our people are pre-eminently intelligent. Such a people will utilize the resources of Iowa to their utmost extent; when this is done, the dairy business will be the chief industry in every county of the State.

CHAIRMAN: The question is now open for discussion. If there are any questions you would like to ask the Commissioner he will be glad to respond.

MR. WALLACE. I don't propose to discuss the address. I want simply to make a statement to the Association. During the last few weeks I have been having Hellriegel's work on clover translated in my office. After looking it over I suggested to Mr. Lucas, the translator, that if he would draw up a paper, giving the essential facts, sufficient to show the experiments and methods of experiments to make the whole subject clear to the Iowa farmer that would only take up about half an hour, I would ask the Association if they had time to hear it. I have it and, if you wish, I will read it at any time the Association directs.

PRESIDENT: We must find time for this paper and, owing to the rain, it is a good day to stay indoors, but we don't want to get off the reservation discussion of this paper.

MR. BENNETT: There may be some in the southeastern part of the State who have no creamery and they may think that a creamery is detrimental to the dairy work, but it is not true. A creamery is as great a help to the private dairyman as any one. I will say that while dairy butter sells in the store where there are no creameries at ten to twelve cents a pound, in other parts of the State where we have from ten to twelve creameries in the county, it sells at from

twenty-five to twenty-eight cents a pound, and no one need be jealous of the creameries, in regard to the price, for it will aid dairy butter.

COMMISSIONER TUPPER: Butter that sells as low as eight cents a pound, in towns where they have no creamery, when you call for a dollar's worth of butter in a creamery town, you get but three pounds—nearly double. That is the difference.

MR. BENNETT: In Taylor county it was reported at eight cents a pound.

MR. WALLACE: I bought some butter in Adair county some time ago at twelve cents a pound and got butter that was made by a good farmer, and at the same time the same quality of butter was selling for twenty-five and thirty cents in Des Moines. I made my railroad fare buying my butter in the country and selected a good quality. It is true southeastern Iowa is deficient in creameries. If we had a good creamery, I am satisfied it would advance the price all over the country of good butter and compel farmers to improve their methods. In Adair county last summer good dairy butter was selling at from five to six cents a pound and that was all that could be got for it, and I think the creamery interests all over the country are of the greatest importance.

COMMISSIONER TUPPER: I know that some parties think that the sections of country that have creameries will be prosperons, and if they had creameries in their part of the country, they would be all right. That is not correct. Many places where they have creameries, they are not patient enough. Sometimes they milk cows that kick the bucket over bottom side up, and all sorts of annoyances that are discouraging in the business. In order to start a creamery successfully, they want to find out how many men will furnish the milk and how many will stand by them. Many are apt to think that when the creamery men come among them, it is all lovely and he is a philanthropist, but he is not. He is sent out to sell goods for double what they are worth and usually does it.

If the people of the southern counties want to go into the creamery business, I would advise them to send a committee up to the creamery interests of the state in northern Iowa to compare the conditions there with what they have at home. If you want to start a creamery, start it in a modest manner; start it on a thousand dollars and gradually grow into a better one. Many people have been supplied in that way with a good creamery.

JAMES WILSON: *Mr. President*—I know these people in the upland country. You don't get all there is to learn about them. They are awfully sharp fellows, but they are too modest to tell how much wealth they have up there. I recollect away back in the early days in the time of spring wheat. We finally had an utter failure. They hadn't any dairy cows and had no dairies hardly. They sent down to the southern counties where Wallace, Coffin, and Scott and all those wise men live to come up and tell them what to do so as to get them out of the suds. I was a young fellow then and kind of ran along behind the rest of the crowd. They were awfully slow in those days, I recollect. I merely tell you this to show you how much they have grown. I recollect that they got on a railroad train and ran along about seven miles or such a matter, and when they came to a town the conductor would stop and tell all the news and get all the news that there was in the town, and then he would go down to the next town and some neighborly woman would come down and lean over the fence and the conductor and her would swap lies; and after awhile they got up as far as Osage where Mr. Norton lives. Mr. Wallace and these other big men said, "Go to dairying." Then the inquiry came, "How will we do it? Must we get these red cows?" But they said, "Why, no, just take the common cows and feed them well, getting as good blood as you can, and give them grain such as a dairy cow wants, and I believe that if you work hard and don't eat too much, some day you will come out of your difficulties." That was a long time ago. Now, Mr. Tupper, and these other gentlemen, Gabrilson, etc., owe it to the other men in the southern counties to pay it back and tell them how to do it, because I remember very well when Coffin and Wallace and the other man told them how. I watched it since. These men have become experts in these requirements. They know how to look after butter, and their reputation as well for butter. I have no doubt but lots of good people cannot sell butter as yet in the state of Iowa because they haven't any reputation to go with it, and I have no doubt but what any county in Iowa can do just as well as the northern counties are doing now. The one secret is in getting good temperature and to get good milk for the butter. There is no reason why every county in Iowa cannot do better inside of five or six years than the dairy counties in northern Iowa are now doing. There is no part of the universe where we can make it cheaper than we can in any county in Iowa, because we have the cheapest grass and the

cheapest grain on the face of the earth. We have cold weather enough here to make the ice in the winter with which to control the temperature in the summer time, and the heat we have in the summer time is sufficient to grow succulent feed to keep the dairy cow milking and growing all summer. And the dairyman in Iowa who does not make as much money as those in Manchester, or in that part of the state, is simply wasting his opportunity. The best farming is done because men are impelled or compelled to make the farm produce a cow yearly. The fortunate necessity has not been laid quite heavy enough upon us—necessity to make the most money from the cow has not been laid upon us heavy enough. Men who have the privilege of keeping as pure blooded cows as they please must feed their cows better and make better butter and they will then establish a reputation for Iowa that will make the best butter region on the earth.

MR. WINGATE: I would like to ask the difference in the relative value of the gathered butter system and the separator system.

MR. TUPPER: That depends upon circumstances. Take it down where you live, where they have been educated to the gathered system, it is a good plan. Other places, where they have been learned to take good care of the cream, the separator system will give the most money. It will depend upon circumstances. I think you can run two systems. The difficulty is to get them all to raise the cream right. I have known two inches and a half of cream and the parties not get four cents a pound. It takes but very little poor cream to spoil a great deal.

MR. STOUT: I take it from the discussion here and from the tone of the men from Northern Iowa that the farmer who attempts to stem the tide as it is run upon this line of dairying in Iowa would rise to a position of being ridiculous where he could say in a convention of this kind, or in a dairy convention, as it were, some of the utterances at the Waverly convention, that he didn't feel in harmony, and didn't like the situation of the Iowa farmer, and was not willing to be governed by the conditions of the farmers and the surroundings of the farmers and their families. He would invite criticism from this body and from the average farmer in Iowa. I want to state to you, however, as a farmer of twenty-four years' experience on a farm in Iowa, raising a family in a dairy district, and which has been so for the past fourteen or fifteen years, while I recognize that this has been a prosperous condition for the Iowa farmer, I myself do not feel like being bound down by the condi-

tions upon a dairy farm. I do not feel like compelling my children, nor do I feel like compelling myself, to take up the burden, such as has been described, in order to be successful. I do not want to burden my family nor myself with it. I do not want to engage in labor on the farm that I cannot get a better return for. Give me the leisure after performing eight, ten or twelve hours of labor. What are the facts around me? We have creameries within two or three miles of my farm in every direction, and while I can see progress made by the average farmer around me—and while I have seen prosperity—I have seen it at the expense of sixteen or eighteen hours a day labor. I can go this very morning to any one of the creameries within a few miles' ride of my home, and leave my house at sunrise and find the bulk of the patrons there at the creameries or returning from that place. I can go to-night and find these farmers at seven, eight, nine and ten o'clock, men, boys, and in some instances women, engaged in milking upon those farms—commencing early and laboring late in order to get these returns for their labor. Now, I want to ask you gentlemen if this condition of things has got to be continued in order that prosperity may come to Iowa? Perhaps the answer to that would be that I have the right to choose my own calling; that I have the right to decide whether I shall go into the dairy business or whether I shall not; that I have the right to choose my line of action, and while this is true, it is well to stop and think, and to consider that there are other lines of industry in which the Iowa farmer can get a remuneration for his labor upon the farm.

Now, with respect to the condition, I agree with the statement made here. I paid seventy-five dollars for the first cow I bought in Iowa. I paid thirty cents a pound for the first butter I bought. I fenced the first piece of ground I had upon Iowa soil, and that didn't contain two rods square, in which to confine that cow, and I have milked cows upon the farm. I have raised corn and wheat upon Iowa soil, and I want to say to this body of men to-day that I am not satisfied with the condition for myself to make the improvement of the Iowa farmer simply that of dairying. I am not satisfied to see my neighbor in this condition, groping in the dark, laboring sixteen and eighteen hours a day, and then say the lash has not been put to his back to make him produce enough for the dairy interests or his own condition. I want to say that when we go out from the convention of this State that we have a good expression of the American people, and we want to assume that every man has a right to take up his line of industry, whatever he

may choose, and want to make it a success. We have all over this country laboring questions that are being agitated in regard to the hours of labor that shall be given for certain remuneration. We have about eight hours in the cities, and in the towns and in the Government departments. Do you hear anything of rest in the country, when you come to consider questions of this character? Does any gentleman on the floor say that there is not sixteen hours of labor required in order to produce that result. I want to say in looking around on the farm, I find this condition existing. I find great discontent, and a large number of the children, girls and boys, ready to leave the farm in my community, and to go into other avocations; wanting to leave it because of the burdens put upon them and because it is distasteful to them. If any man has a right to choose, these boys and girls have a right to choose. One of the things that is going to drive boys and girls from the farms of Iowa in this community is the fact we are dwelling upon, this one question more than any other, that the dairy alone is the only way in which we are going to reach success and in which we are going to receive remuneration. I think it is time to call a halt in this direction.

Commissioner Tupper: One thing I may suggest is that many of us are doing too much labor and not enough thinking. I will guarantee that if a man thinks enough to make a choice of his milk cows, and weeds out the poor ones keeping only the paying ones, that he won't have to work sixteen hours a day. If our friend will try this experiment he will be pleased with it. He has too good a head on him to fail, I am not a farmer, but I worked on a farm until twenty-eight years old. I know the vital importance of economy in getting a start on a western farm, and I want to say to you dairy farmers, if you will think more and work less you will be better off. Make it a study in season and out of season. There is no dairy paper anywhere advocating milking or working sixteen hours a day, but with dairy farms goes also stock raising and stock feeding—diversified farming. If farmers would just learn to think as they can do, it will save them so much work that I don't think you would have reason to complain of the irksomness of your task at all on a dairy farm.

Mr. Cownie: *Mr. President*—I have listened with a great deal of interest to the gentleman from Winneshiek as to the dairying. I am not a dairyman, and I don't think that it would be advisable

that we should all think alike in regard to this matter. If we should all rush into dairying or all rush into fine stock, we would overdue the thing. It is not right to follow one special branch of industry. I believe that diversified industry will be the hope of our State, and the more diversified the better.

A great many of you, or the larger part of you, of course, are not dairymen. This is not a dairy convention. You are breeders of fine stock. Most of you engage in raising calves and pigs to sell to farmers of the State to improve their stock. I have been in that business once and quit it. You have continued at it. I think I did a wise thing by quitting. About twenty-five years ago I purchased from A. C. Monroe & Son some brood sows, from another party I bought some male pigs at $25 a piece. When I got a brood of pigs to sell, I held them at $25 a piece. One farmer said that was to much, and he offered me $5 a piece, and thought that was enough to offer for them, it being the price at which you could buy a scrub pig. I held my price at $25 apiece. Hogs were selling at twenty-eight cents a pound if I remember right, and I sold two or three pigs. One proved to be of no use, and the farmer wanted his money back or another pig. I thought that was the last of that business and I took the hired man and castrated every pig, and I would not follow the business you men are doing. I kept those hogs and fattened them, shipped them to Chicago, and I never heard any one find fault with them or bring them back or say that they would not brood. They never say one word. I get a check on the bank for my fat hogs, and that is the end of it. You, gentlemen, many of you, prefer raising pigs to sell all over the State. Now, I would not do it, and if you were all like me the stock interest of the State would suffer. There must be difference of opinion. They used to tell a story about an old Scotch clergyman and his beadle. They had some disagreement, and the old Scotch clergyman says, "John, me man, we canna a' think alike." John had told the minister that he was all wrong, and the minister then replied to him, "John, we canna a' think alike. It wouldna do at all," says the old minister, "looka here, if we a' alike—if everybody thought as I did, we would a' want the same way." "Yes, says John, "and if a' thought as I do no one would have any."

I don't like the confinement of dairying, and yet if you are feeding stock and you don't stay by them every day, you had better quit the business. I don't know anything that any man can go into and be away from it half of the time. I know in the towns, the business men have to study and write and work, and in the

town of Marengo I can name some very prosperous men. I know one shoemaker who has made money, but I never went into that man's building but I found him there. I never saw him on the streets loafing around. A banker that I know who has plenty of money, I never went there but he was behind his desk. He is a slave to his work. Another merchant I know there I never knew him to be out of his store. There are those I know who have a good time for a while, but I can tell you that that good time has a stop to it and there is no business that a man can engage in and neglect it and still be prosperous. Men that are successful are men that stand by their business; are enthusiastic in their work, and are not afraid of work. It does very well for government employes to talk about working eight hours a day. If a man has no more ambition and only wants to work eight hours a day when he is working the farm or brooding stock, he had better go into something else. The man who works twelve, or thirteen, or eighteen hours a day is the man who is going to succeed, I don't care where he is or who he is. Our greatest lawyers and physicians—the greatest men of our day, if you will read their biography, you will find that they were men who were not afraid of work. They were not men who were afraid and shrinking and hanging back. If I had no more ambition than that I would hire somebody to put me out of existence and be through with it.

The dairy interest is a great interest; feeding stock is a great interest; feeding cattle and hogs is a great interest, so is raising horses—that is a grand interest, and it brings an immense amount of capital, and why throw cold water on the dairy interests simply because men are willing to put in extra hours beleiving that by this means they can make more money than they can at anything else. Let the man who has a fancy for milking cows raise cows, and the man who has a taste for raising pigs feed pigs; if he wishes to raise cattle and fatten cattle and ship them to Chicago, let him do so. If a man takes a notion to raising draft horses, let him do it. If you have a notion for trotting horses, I don't know but I would say to go on with that, but I would rather have the draft horse. I see no reason, if a man wants to turn his hand out of the common channel and go into something different from his neighbors, why we should ever throw a wet blanket over him. Let every one go to his own calling and liking, and take hold of that which he very best can. (Applause.)

MR. SMITH: Let the man who wants to work sixteen hours a day do it, but there are other callings that you can do better at. A

man who runs a dairy must let his cows run out until it is late, and for my part, I don't want that kind of work.

L. S. COFFIN: *Mr. President and Gentlemen*—I don't want to enter into the discussion, but the last man who spoke has brought me to my feet with a bound. Here is the great trouble about it all. Commissioner Tupper says the trouble is a lack of brains—that you don't use your brains instead of muscle. Here is the great trouble in my mind, that you don't allow your cows to be in your pasture twelve hours a day. They don't want to be traveling miles to get a spear of grass. Keep good pastures, and have grand good feed for your cows, and put them out at reasonable times and get them up at a reasonable time and milk them, and then sit down to your evening paper. Don't be out at the barn for sixteen hours. It is only because you don't know how to do it that you don't succeed. (Laughter and applause.)

CHAIRMAN: We will now revert to the first topic this morning, viz., "Profitable Sheep Husbandry," paper by Mr. W. P. Young, of Henry county. This paper will be presented by W. P. Young, Jr., on account of the inability of his father to be present.

Here paper by W. P. Young was read on "Profitable Sheep Husbandry—Some facts and figures compared with other farm stock."

PROFITABLE SHEEP HUSBANDRY.

BY W. P. YOUNG.

In discussing sheep husbandry; in comparing the past with the present, and in prophesying the future of the sheep industry, there are so many points to be observed, that some will have to be slighted or brought up in the discussion. It is a settled fact that sheep husbandry is becoming one of the leading industries in this country, and for the next few years sheep will "boom" as has successively the cow, the horse and the hog. A few years ago a farmer could scarcely afford to keep even a small flock of sheep. Now, no rural home is complete without at least a small flock.

We naturally ask, what is the cause of this change? In order to answer we must go back a little. A few years ago sheep were raised almost exclusively for wool; but as they improved in size and form, their mutton qualities became better known; the demand increased, and now mutton is extensively used in the wealthy homes of the city. It was then that the heavy fleeced Merino was in demand, but, owing to their diminutive size, they no longer rank highest as pure breeds.

The ideal sheep now is one that weighs 150 pounds, will fatten easily and produce a fleece of merchantable wool that weighs from eight to twelve pounds. Where now are we to find such a sheep? Scarcely any of the pure breeds are up to that standard. They are, as a usual thing, either wholly for wool or wholly for mutton. The Shropshire comes nearest to being an "all purpose sheep"; but their wool is rather too coarse and the fleece too light. Another difficulty with the pure breeds is that they are too expensive for the farmer to buy. So we see that in order to find the best quality of sheep we must resort to cross-breeding.

I will state our experience for the last four years. We started with a flock of Merino ewes. We crossed them with pure bred Leicester rams for four years. The first two crosses produced flocks of as finely formed sheep as we have ever raised, with a fleece of the best quality of wool weighing from ten to fifteen pounds. The next two crosses held the form but the wool was loose and of an inferior quality. They also acquired the mutton quality of the Leicester and Cotswool sheep—the tallow separated from the flesh unlike the Shropshire or Southdown. After this we tried crossing back with a Merino ram. This produced the desired effect on the wool but the form also took after the Merino. At the same time we crossed with a Southdown ram. This cross brought us the finest quality of mutton sheep; also the finest quality of wool, but the weight of the fleece was decreased about two pounds. For the last two years we have used the Shropshire ram exclusively. We now have a flock that yields on an average from eight to ten pounds of wool, not as good in quality, however, as that from the Southdown ram. The size has increased and they are probably a little more rangy than the Southdown, but the quality of mutton is as good as any we have ever raised.

We have also tried a Shropshire ram on native ewes. The result may be termed a total failure. It gave us a sheep that was lank, hard to fatten; with open, loose and hairy wool. From the result we have obtained, we think that the best start a man can make for a flock of sheep is a Merino basis crossed with a Shropshire or Southdown ram. * * *

With the same capital, $450, we buy forty-five hogs at $10 per head. During the year these hogs will require 1,275 bushels of corn, allowing three and one-half bushels per day. Their offspring, 200 pigs, require feeding about 300 days and will require about 4,800 bushels of corn. The 6,075 bushels at thirty cents per bushel, amounts to $1,822.50. At selling time they average 275 pounds, and at three and one-half cents per pound, are worth $1,925, making a profit of 20 per cent. This, I think, will, hold good for the last two years. There is a great deal more risk in hogs and they require more care and labor.

We have not fed steers very extensively for the last few years, and would hardly be able to compare them; but judging from the few we have fed we think that they would run about the same as hogs.

The care of sheep is very little compared to the care of other animals. The only time they need care is in the coldest part of winter, and when the

lambs come in the spring. This makes it easy for a farmer to care for them in connection with farming.

They are easily held in a pasture and if they do break into the cornfield they do not damage the crop. In fact, it is a good plan to turn lambs into a cornfield for a month, before the corn is ripe, if there are no burs to damage the wool.

I will now conclude with a few remarks about fitting sheep for market. In September we wean the lambs and pick out about seventy-five of the best ewes, under 4 years of age, for breeding purposes. The remaining ewes, together with the wether lambs, we put on good pasture until snow comes. We then commence feeding a slight allowance of grain, about a bushel to the hundred sheep, per day. We continue this up to the first of March; we then increase the feed to a quart per day to the sheep. We continue this for about a month and a half, which is as long as they should be fed. Good hay should be fed in connection with the grain. Clover hay is usually preferred; fodder is good. When not covered with snow bluegrass is much better than hay and largely takes the place of corn. Good pure water should be where they could reach it, especially in the heat of summer. When fattening they should have a clean place to feed, the corn should be put in troughs. Hay should be fed in racks placed as low as possible, for if above them the chaff continually drops in the wool and spoils the sale of it. They should usually be clipped before selling, as more profit may be derived by selling the clippings separated from the sheep, especially if the wool is of a good quality.

The best time to sell is just before grass comes, usually in April. The market is usually good at that time, in fact it is good at any time, and promises to be better for the next few years, for mutton will largely take the place of beef and pork in the future. (Applause.)

CHAIRMAN: We will now listen to Capt. Jordan for a few moments.

Paper here read by Capt. Jordan.

[A copy of Mr. Jordan's paper has not been furnished the Secretary for publication.]

MR. LUCAS: It may be that I am the only Democrat that there is in the room, and if I am, you may take a look at me. The gentleman just said that he knew of but two species of animal but what have been over-fed, and they were the trotting horse and the Democrat. I want to tell my friend, Capt. Jordan, that we are gettin an overdose this year. (Laughter.)

MR. NORTON: *Mr. President*—I beg leave to suggest to Mr. Lucas that Capt. Jordan didn't intimate that they were over-watered.

MR. GOVE: *Mr. President*—I think it was in Oskaloosa at our last annual meeting during the discussion of the sheep question that some gentleman stated that his method of winter feeding was to allow the hogs to follow the cattle and the sheep to follow the hogs, and that he had had good success. I am not a sheep man.

It may be good practice and that they do well. We know that there is a large part of the feed that passes through the cattle undigested that is nourishing and makes good feed for hogs; but whether taking it through the third process and undertaking to make good mutton by it I think is carrying it too far, and I would like to hear from some other gentleman on that subject.

MR. MOUNT, FROM BLACK HAWK COUNTY: Some people are not happy except when making others miserable. I think the gentleman who has just read the paper is one of them. I have had good dogs all my life on my farm, and I believe in having good dogs. I don't believe in their running around and killing sheep at night, but I mean good, reliable dogs. I think a well kept farm ought to have sheep upon it just as much as cows and milk. I am not in harmony with working sixteen hours a day. I don't think it is any more necessary on a farm than anywhere else. I never had any experience with a creamery, but I know of people who have been successful and made a good deal of money out of it.

MR. HARTLEY: As it has just been said, I have no objections to a man keeping a good dog, if he keeps him at home, but of what worth are the curs that run over the country, such as some men keep three and four of, and half the time they are in other men's pig pens, sheep folds, or chicken roosts. If they are a good dog, let them keep them at home.

MR. MOUNT: Make them keep good dogs and pay taxes on them.

MR. HARTLEY: I don't care whether they pay taxes on them or not, if they will just keep them at home.

MR. COFFIN: We want to concentrate this Association upon one point, and that is wolves. We want to concentrate upon that point this winter. I venture that in Iowa there are ten wolves this year to where there was one twenty-five years ago. We must either stop the increase of wolves, or must stop trying to raise sheep. Why, just as I got into the wagon to come to this place, I saw in the field two carcasses of bucks with their insides torn out, that the wolves had killed—Oxford down bucks, and that was within three miles of Ft. Dodge. One summer I had sixty-two lambs killed by the wolves.

MR. ————: If you will get a couple of good fox hounds and keep on your place, they will soon rid it of wolves.

MR. JAQUA: *Mr. President*—I have been raising sheep for the last twenty years, and I think that a dog is a good thing in its place. One of my neighbors, since I commenced raising sheep, has kept a pack of hounds, and I have always let my sheep run out in the

brush; and in those twenty years, while this gentleman has kept a pack of hounds all the time, I have never lost a sheep and never had one disturbed by wolves. I believe dogs in one sense of the word, especially a pack of hounds, are a good thing for an individual who wants to raise sheep. At least I have found it so in my experience. I find the greatest difficulty with dogs is this breed of worthless curs in the country. But the worst dog to have —the worst dog to kill sheep—are generally those that emanate or spring from the breed called cattle dogs or sheep dogs. I have had to take my gun out and destroy them; but so far as the hounds are concerned, a good pack of hounds in the community I regard as a good thing.

MR. WILSON: I live right close to friend Jaqua, and I am inclined to think he drove all his wolves onto my farm. (Laughter.)

MR. BAKER: I love sheep and I learned to handle them when I was a boy, and in fact from them I got my first capital to handle cattle. If a man understands sheep thoroughly, he will keep his sheep in flocks; they are close feeders when they have sweet succulent fodder and white clover and blue grass, if you have it. We always have an abundance of it, three or four inches long. There is a great deal of profit in keeping sheep with it. There is no question about that in my mind. You can make first-class sheep from it, and plenty of first class-sheep will make good wool, which you can always sell. There is no better industry. The grass is never allowed to become dead where the sheep are, and they exhaust the nitrogen in the plant and retain it in the soil, hence the sheep do not make the land poor. Sheep have a small mouth, and they get down to the succulent blades of grass of a nice growth and nip the young grass and leave only the high fodder or tall grass for the cattle.

They have no business to be kept with fat cattle. If you are a cattle man, make it a specialty and there is lots of money in it, and and if you want to raise sheep, keep them in a separate pen and in separate pastures.

CAPTAIN JORDON: I wish to ask one question that I hope may be answered very briefly and nothing else discussed. I would like to know the need and the best manner of watering sheep in the winter.

MR. NORTON: I was very much pleased with the paper. There is a man in Muscatine who has had a great deal of experience in feeding sheep and feeding lambs, and if he is present, I would like to call him out.

MR. FRITCHMAN: I have listened to this discussion, and I wish only to say that it is my observation it is not always the man who works the longest hours who is most successful in his business. I have had some little experience in raising lambs, feeding sheep, and in my experience I have had good success, though there may have been others who have had better success. My rule in raising lambs, I usually have the lambs come about the first of March—from that to the middle of April—and I let them run with the ewes until about the middle of July, when I wean them and feed them until December, and I generally make them average not much less than ninety to a hundred pounds. I find that they are profitable, and the care and work connected with it is pleasant occupation to engage in and is done with much less labor than many other things. I have had some experience in hogs and also some experience in cattle, but not a great deal. I find that I can raise sheep with a great deal less labor. It does not take so much labor to feed them, and they can take care of themselves on grass. The greatest labor I find is during the lambing season. It is during that time they require the closest attention. As soon as the ewes are ready to go on the grass then the lambs are old enough to take care of themselves and require but very little attention. In that way I think I can raise sheep to better advantage and with more profit and far less labor than any other stock.

MR. COWNIE: With cattle, hogs and horses I am at home, but with sheep not so much so, for the simple reason I don't own any. It has been my fortune to live next the Amana society. They are not only sheep raisers, but they have factories and manufacture woolen goods second to none in the United States. I know from personal observation, because I have been with the shepherd time and again during lambing season, and I have spent day after day with him in the barn, and I know the facts precisely as I shall state them. They raised last year one thousand lambs, and last December they shipped these lambs to Chicago. They averaged one hundred and eighteen pounds and they sold for $6.12½ a hundred. These lambs netted about $6.00 a piece after paying all expenses. It is simply a matter of computation, which shows that they got $6,000 for last year's crop. But there is this objection to the sheep industry, that some people might have to it. It means work at a certain time of the year, that is at lambing time. They have the lambs come in March. They would like to have them come earlier but for the cold weather. The shepherd told me that for weeks

and weeks he had never had his clothes off, and had not been in bed an hour of that time. He is one of those fellows who will not trust his business to any one else. I said, "Why don't you get the other men to take turn about with you?" He said, "They're no account. The first thing I know I have a dozen dead lambs on my hands." He says, "I stay right with them;" and he did stay with them night and day, and the consequence is they have very few losses. While I was there one day, looking around, watching and pumping out all I could for my own information—I have good faculty for drawing out information from others—he was standing there with two lambs which were rather weakly. They were twin lambs, and he wanted to put one of them with a ewe who had lost a lamb, and he said, "I'll fix that. I'll show you something." He picked up the lamb and put it down to the ewe, but she would not let it nurse. He says, "I'll show you something. I have seen that before." He took the hide of the dead lamb and put it upon the other one, and she took to it right away.

Now, gentlemen, in regard to this creamery business, I say let us encourage those industries—the sheep industry, the great industries—and I will tell you what it is, when I see my fields in the fall, I have found that it pays to keep sheep if for nothing else than just to have them eat up the noxious weeds. It is as clean as this floor when they get through with it. Several years ago you know what a job it was to plow our ground, and often we would have to put large colters on the plow; but in my own fields I never had to use anything of the kind. I have put sheep in the field in the fall, turning the lambs into the corn field, and they will clean out everything, and it would surprise you how clean they keep the field.

MR. FRITCHMAN: I just want to say one word with reference to the care of sheep during lambing time. The last gentleman who spoke rather left the impression that it requires almost constant time and attention of one person during lambing time. I don't sleep with my sheep, and I have had lambs come when the thermometer was ten degrees below zero. It don't require a person to be there all the time.

MR. COWNIE: This man I referred to had about a thousand sheep.

MR. FRITCHMAN: I have about two hundred and fifty.

MR. C. L. GABRIELSON: *Mr. Chairman*—The paper is one of great interest to me, but there is one question that has been a puzzling one to me, and that is why a sheep that has plenty of clean

water before it will go to a snow bank and eat snow rather than drink the water, is a thing that I can't find out. I have wondered whether it is their condition that makes them want it. One gentleman has suggested the nitrogen—that there is some element of that in the snow. I don't know how it is, but it seems to me wrong that sheep should eat snow instead of drinking water. We know that when we take a handful into our mouth it has an unsatisfactory taste. It does not satisfy thirst. When I watered my sheep with pails, I kept the pails filled. We now have a running stream of water in the sheep barn in our stable, and I believe it is partly because of lack of pure water. One party spoke of the fact that where there is constantly pure water, they won't often drink. We all know that sheep are very fastidious about their drink. They will go and take a sip of water, then go and eat awhile, and then go back and drink again. I hope others who have had some experience with this watering question will speak of it, especially if they know anything about why sheep eat snow.

MR. BAKER. I think I can answer that. The water that comes from above is contaminated with humus. It is charged with impure matter. The snow as it falls from heaven is absolutely pure, and when they have melted it, it is very satisfying.

MR. GABRIELSON. If that is true, why isn't pure snow satisfying to you?

MR. BAKER: Clean snow has been eaten by the handful thousands of times.

MR. GABRIELSON: I will leave it to any man here whether snow isn't unsatisfying in the mouth.

MR. BLAKELY: I wish to ask the assistance of this Association in regard to a matter in which we are all interested. I have some resolutions which were passed at the Sheep Breeders' Association and asked that they be passed here.

(Resoluttons here read by Mr. Blakely.)

Motion was here made that they be referred to committee on resolutions. Motion seconded and carried.

MR. JORDAN: I don't take any stock in Brother Baker's water theory and snow theory, and a lot of his other theories that he and I can fight out at some other time. I have become convinced that it is the sheep's teeth that is in the way of drinking. I have had sheep on shipboard for days, bringing them over from Europe, and I find that it is most difficult to get them to drink. When the sheep is on land, in pasture, it gets everything that is necessary

from the dewy grass, but you put them on shipboard and put them on dry feed and they almost perish from thirst. Pour them water and they will stick their noses in the pails, shake their heads, and seem to be in pain and turn away. In an instant they will come back and stick their noses in the water and again shake their heads and go away. The second time they seem to become somewhat accustomed to it and they will take a swallow, and finally two or three swallows, and then some will drink a quart, and some are so thirsty as to even drink two quarts. Some did not drink at all and we were compelled to resort to drenching with a bottle. After a few drenchings they will usually take hold and drink in the manner indicated. But we have had sheep that after coming across the ocean after a dozen days, perhaps, in passing through the quarantine, fifteen days coming to Des Moines, we were still obliged to feed, and water them from a bottle. Finally, when they saw me, they would make known their desire, and after awhile would drink like any other English people. Some of the prohibitionists in Iowa jumped on me because I was so free in the use of the bottle with my sheep. Now, you can watch and see if it is not a fact. In the summer time you will have no trouble with your sheep drinking, but only in the winter time.

MR. BLAKELY: I want to say one word on this resolution with reference to dogs and wolves. Now, there is a general complaint among sheep men that the dogs are still abroad in the land committing their depredations. I could enumerate a great many instances within my own knowledge within the last three months. The tax upon dogs is a small one, and the assessors are not careful to get them or to make inquiries for dogs, and the owners are fully as bad as the owners of first mortgages and notes in regard to giving them in to the assessors, and the dogs are allowed to run about and particularly at night. They go in among a flock of sheep and go anywhere they want to. The sheep men are compelled to fight the dogs with poison, shot gun and rifle. If our present law was amended doubling the taxation on dogs, which is now only fifty cents, it would have a good effect. In some states the taxation is double that and others treble. I should like to see another law in addition to the increase of taxation on dogs and that is, especially with a dog that gets away from home and from his master and that has no muzzle on him, that it would be lawful for any one to kill them at sight, and this would give sheep men some protection as owners of dogs would be more careful to keep them at home and

chained up at night, or keep them muzzled. Of course it is a matter of muzzling or chaining up dogs, and it is not only a question of sheep for I have known them to kill cattle in my neighborhood, and further than that the dogs running at large not only frighten stock, but frighten horses when men, or ladies especially, are driving, and they run away, and wrecks are often produced by them. I hope this association will take some steps to urge the members of the legislature to action.

The excuse given two years ago for not legislating on this question was the dead-lock and their inability to organize in time to reach these matters. It is hardly probable that this will occur this time, and I hope that every member of this association will go home and urge these matters on their different members.

MR. STOUT: Isn't it true that there is a domestic animal fund in every county treasury in this state, and that this fund in a great many counties if not in the majority, is being turned over into the county fund and not applied by the counties to the purpose for which it is intended.

MR. BLAKELY: That is true. In some counties the Board of Supervisors are careful and allow claims for damages done by dogs. In other counties it is so difficult to get these matters adjusted that parties let it go rather than to undertake it. Of course in these instances where they do not apply it and where the Board is reluctant in allowing damages, this fund is, as by law provided, turned over into the general fund. In some counties there is complaint that there is no such fund, not because there is a lack of dogs, but because there is no inquiry by the assessor and consequently no tax. The matter depends a great deal upon the Board of Supervisors in allowing these claims. The law has been amended somewhat, so that it is not so difficult to get a claim as it used to be. If a dog frightens a team of horses and they run away, the dog escapes into the field, and their is no opportunity to secure damages for the harm done. We want dogs kept at home, or muzzled if they are out of reach of their masters. One trouble is that in many localities, such as mining districts, where men live who are too poor to have a home or a cow, will keep from one to a half dozen dogs that are turned out to feed upon the surrounding farmers, and he thinks as much of every one of those dogs as he does of one of the children and threatens the life of the man that kills them. If a dog is worth keeping, let them muzzle them and chain them up at night, a every dog is required to be in England.

Mr. Gove: I want to say one word. I have been unable to see any reason for paying extra dog tax. I see no reason why I should be compelled to pay part of the damage and pay the dog tax too. I understand this gentlemen wants it increased. He wants a law that will allow you to shoot dogs on sight. Suppose I have a neighbor who has sheep and I have not, and they break into my orchard and bark my trees, why shouldn't I have the privilege to shoot them on sight.

Mr. Blakely: The reason is that the dog is simply a half-tamed wolf.

Here an adjournment was had for noon.

1:30 P. M. DECEMBER 3, 1891.

Chairman: We have a topic that has not been broached before in this convention, and yet one with which we are as familiar as any other subject. We will now have a subject by J. A. Bennett on the subject "The Staunchest Ally Corn."

OUR STAUNCHEST ALLY CORN.

BY J. A. BENNETT.

The name of the Iowa Improved Stock Breeders' Association suggests at once the character of its membership and the nature of its meetings, and while it is essentially a breeders' meeting, the breeder and the feeder are so inseparable that, corn being the main stay of the feeder, it may properly be discussed at our meetings.

In treating of corn we are writing of our truest friend, to whom Iowa owes more to-day for her phenominal progress than to anybody else.

Iowa's importance as a pork producer, and her reputation as a cattle and horse state rests upon "old fashioned corn" and lots of it. Corn alone is responsible for the score of packing houses with their many thousands of invested capital found within her borders. Iowa and corn are so closely connected that the condition of our corn is a fair index to the condition of most of the state. Of its origin and introduction we know but little; of its present production and consumption we are learning much. If it were not for our standard friend "corn," this association would hardly exist, and I fear our noble herd, droves and flocks would meet on a common level with the dunghill, and all wear the fitting name of scrubs.

Corn is a crop peculiarly adopted to Iowa, and when raised by Iowa's improved farmers on Iowa's improved farms and fed to Iowa's improved stock, it has been and always will be a source of satisfaction and profit. Aside from being the means in our hands enabling us to make our live stock the most important feature of our operations, corn has as many advantages to us as the bamboo has to the heathen Chinese. We use it for almost everything. As a human food it ranks next to wheat. We boil it green, we roast it, pop, bake, steam it and fry it. The best bread is brown bread; the best cake is Johnny-cake; the best pudding is meal pudding, and no matter how it is prepared its friends number millions. Much of our sugar, molasses and maple syrup come from corn. It makes an antidote for snake bites highly appreciated by our neighbors across the river. We use the husks to sleep on, the stalks to cover our sheds, and the cobs are made into pipes. From meal they make porous plasters and an elegant tooth powder, and in New York they make fresh laid hen eggs—breed not stated. Corn is everywhere; we are used to it and expect to always have it; the trouble is we don't properly appreciate it or give it half the credit due.

If our oats yield us twenty fold we call it a "big crop"; twelve to fifteen fold of wheat is good as is twenty fold of potatoes. Give corn a fair chance and we will get four hundred fold, with favorable conditions we sometimes get twice it. If some wary adventurer has shot a wild goose whose crop had contained a few grains of cereal, if on planting it he had found and proved this new grain to be one-fourth as valuable as our common corn he would have sold the first five years' supply at a nickle a kernel and the world would have called him friend and benefactor.

Enough has been said in praise of corn; we all like it and are beginning to use it aright, but instead of finding, as one would expect, a uniformity in its production, it may almost be said that no two men raise corn alike. No other crop is treated so shabbily. If, as I believe, Iowa owes her wealth, intelligence and progress, largely to corn, then surely is it highly important that every detail pertaining to its growth and production be thoroughly understood. We want to know a great many things about corn cultivation. One man plows in the fall, another in the spring; one lists, one uses the disc harrow, another the roller and the harrow; we want the whys and wherefors. Go to a crib of corn and look at its contents; not one ear in three will be found a typical ear, there being one "thoroughbred" to about three "scrubs." How closely the different varieties of corn correspond with the different breeds of cattle! We have all seen the great long ear with the heavy husk, a butt almost imposible to break, kernel short, and cob large; our name for this is the Holstein corn.

Then comes the small-cobbed, small-kerneled corn that is raised on clay hills, its ears short at both ends. This corn is guaranteed to keep a man poor as long as he raises it. This is the Tucket or Jersey corn. These are special purpose varieties. One's purpose is to fill the wagon-box soonest, and the other furnishes corn to the man who is too small to raise corn and too big to raise pop-corn. There is the early-maturing or Hereford corn; it grows night and day with a rush until it is about five feet high; is ripe two or three weeks sooner than most other kinds. This is a good kind to raise when better varieties will not mature. We have the short, thick-set ear, deep-grained, medium-cobbed. This corn has too many husks, and a ten-

dency to run to suckers; but it is like a singed cat—better than it looks. We call it the Angus corn. The corn for us is the corn with the large, long ear, good ends and a better middle, deep-grained and full, soft husks and medium early. Its color may be red, yellow or a mixture, but it is always the Short Horn corn.

Good judges have estimated that more careful attention to seed selection would increase Iowa's average yield six bushels per acre, which would mean on her nine million three hundred thousand acres, fifty-five million eight hundred thousand bushels. This means at 25 cents per bushel $13,950,000. Careful men claim that corn can be bred to produce two and often three good ears to the stalk. Advocates of detasseling claim an increased yield of fifty per cent. Cutting and husking in an economical manner also needs our attention. In fact, there is much room for the best judgment and closest observation in the corn growers business as in the stock breeders.

What could be discussed in our experience meetings more profitably than corn culture?

I came from Poweshiek county and if there ever were farmers interested in corn it is "we'uns." If you happen in Montezuma some Saturday, hold down a dry goods box and listen and you will hear. What is corn worth to-day? How much have you got out? Its fine cribbing weather and soon *ad infinitum*. Ten chances to one if a body goes into a butcher's shop for a piece of Sunday beef he will want it corned.

This is a good meeting and we have a pretty good name, but I would suggest, Mr. President, that a summer kitchen be added then our name would be the Iowa Improved Stock Breeders and Corn Growers Association.

MR. BENNETT: *Mr. Chairman*—I heard a remark made in reference to detasseling corn for the purpose of increasing its yield. It is a new idea to me and I would like to know if any farmer has tried it.

PROF. PATRICK: The experiment that was referred to was made in the Indiana experiment station at Lafayette. I might say that Capt. Speer, of the Iowa experiment station at Ames, also experimented before the others did and he found quite an increase in the yield. I believe he detasseled three rows out of four leaving the fourth row with tassels growing. Capt. Speer is here in the house and he can give you the figures and give you quite an interesting account of it.

CAPT. SPEER: *Mr. President*—Corn has been a hobby of mine for a good many years and I will say that I did detassel corn at the experiment station in Ames, but I had a purpose in view. I wanted to cross one variety with another and I did not want to take the trouble to apply pollen to every silk. It occurred to me that I could plant a patch of corn situated somewhat by itself and then go and get a pint or quart of pollen from some corn that did not suit me and cut the tassels off and go along and apply it. I

found it worked as I expected. It saved time, saved trouble, and so far as I could see increased the yield. I did not repeat the experiment after one year, but I have followed up the experiment with corn for a number of years. I have been, during tasseling time and silking time, as much as ten days in the corn field selecting ears and fertilizing them with other varieties of pollen. Last year I brought a few ears of corn through in that way until they were ripened. I put them in the dry room, which was well ventilated, and dried them thoroughly. When thoroughly vented and kept dry you can plant it in the middle of winter or any time you wish and every grain will germinate. That corn I planted the last time on the last day of April. This variety—I planted the very best variety I could find or could procure from the different parts of the United States. My object is to get an ear of corn from twenty-two to thirty-eight rows, deep corn and corn that will mature in one hundred and fifteen days. I find that there is no trouble in fixing any characteristic in any corn that we want. At the station at Ames I found one ear of corn with fifty-two rows around the body. The top of the husk came about here. It was a deformed ear. I planted it by itself and half of the ears that came from that seed have that appearance. I planted it last season and about two-thirds of it has that kind of ears. I do not fancy it, but we can use it for some purposes. It shows, at any rate, that we can produce the crops we want. I have been husking corn for about two years—corn that is as good as there is in the country, yet I find that there is a difference in the cultivation. The time when the corn wants the most nutriment is when it is tasseling, forming corn in the ear. Corn does not have the opportunity to procure the desired food that it does when we have laid it by. It seems to me we ought to follow the surface cultivation as long as we can. You have to use clover and use manure, but I find that I can produce an ear in any shape I want to; put any amount of rows upon it I want; and I can do anything with it I want to, but we want to get a good salable article.

Mr. Brown: It is well known that corn has the greatest sale in Iowa and that it has greater profits than any other grain sold in Iowa, and anything that will increase the product is certainly a good thing for Iowa farmers. I have given a great deal of attention to the cultivation of corn. I have come to this conclusion after an experience: That the biggest crop of corn can be raised by drilling the corn. That is, one grain in a place; then when you use the shallow cultivators only. That will increase the yield of

corn. I have watched that for five years in farming. When I first saw it I ridiculed the idea, but it was pounded into me. I have practiced it for a number of years, and further than that I got a greater yield than I got from the other way. There is an advantage of having only one stalk in a place and you will get a greater yield than you will where you have three or four in a hill. The next important thing is to keep the corn clean, and the next question is, how to do that? By cultivating it one way. I say that can be done—possibly not as clean as cross cultivation, but clean enough for all practical purposes. Shallow cultivation will give greater moisture. I claim that I can show the best condition to-day on my farm of any man now.

Mr. ————: How many bushels do you raise to the acre?

Mr. Brown: Sixty to seventy bushels. I have seen corn raised with this shallow cultivation and it retains moisture better, and the reports I have seen from the experimental stations during the last year in testing the moisture of the soil in what we call shallow cultivation, that the average was eleven per cent greater; that it will retain moisture and make eleven per cent greater yield. I can name several other reasons why this is better. I will give this further reason. That drilling corn leaves your corn in perfectly smooth condition and does not leave it in ridges—it is never hilled up.

Mr. ————: What kind of cultivators do you use?

Mr. Brown: I use the Deere. There is another reason I might give. The soil is not disturbed to exceed an inch and a half and I will warrant you if you will take care of the crust, say an inch and a half of the soil, what is below will take care of itself. Keep your soil pulverized and you need not have any fear but that the roots will go through it. Another reason is that where you have rolling land, if you have a heavy rain the land is not a wash-a-way as much where you cultivate the ground but one way. In cultivating corn, one of the most obnoxious and difficult weeds to control is the fox-tail and with shallow cultivation when they are plowed out there is not ground enough taken up with it and it has to die. It leaves a cleaner field after it and I think there is very much that is in favor of shallow cultivation.

Mr. ————: Which way do you row it?

Mr. Brown: North and south when I can. I believe that the yield of corn in the State of Iowa, ought to be increased from ten to fifteen bushels to the acre, and I believe that there is no better way to bring that about than the system I practice.

Mr. Wallace: The question was raised a moment ago about detasseling corn. I noticed the experiments in a corner in the "Homestead" and I suggested that the farmers should experiment on small patches detasseling each alternate row. Some two or three men have tried it. One gentleman at Winterset reports a decrease from detasseling of sixteen per cent. Another man trying the experiment was foolish enough to try it on his premium three acres on every other row. He is a Scotchman and he says he is not going to believe the Homestead any more. He spoiled his alternate row. I heard of a gentleman who detasseled a whole field and had a splendid crop.

Mr. Vale: I am one of the victims of this theory and if you do not believe what I say on this subject, all I have to say is "Go thou and do likewise." I took a section of corn and went past my house in fifty-six rows to the northwest and operated in cross sections, detasseling five rows in a body, going a little further leaving one row and detasseling one, and going still further north detasseling two rows and still further detasseling one row. My purpose being to ascertain whether it signified anything; whether they were detasseled five in a body or each alternate row. I discovered about a month after, perhaps, that I had fallen down badly on my job, but I waited for the actual test. When I come to crib the corn I gathered a load and weighed it and I went to gathering, husking and weighing, gathering each detasseled row by itself. In gathering you will remember that there were fifty-six hills in a row that were not detasseled and in weighing the corn I found that I had from seventy-eight to ninety-two pounds in the detasseled corn. And 102 pounds was the lowest yield that I found in the row that was not detasseled and from that to 126 pounds, and the rows that were detasseled did not average a yield of corn eighty-six pounds to the row. Eight of the rows that were not detasseled made a weight of 113 pounds to the row, a difference of twenty-seven pounds to the row in fifty-six rows—a difference of twenty-seven pounds in favor of undetasseled corn. Taking the number of hills to the acre it makes a difference of 14 85-100 to the acre in favor of not detasseling. That is my experience and I started out with very strong prejudices in favor of the experiment.

Mr. Wilson: We went over some experiments at the station and found substantially what you did.

Capt. Speer: I wish to say further in regard to that that in the first place you cut the tassels off the corn, and when the silk comes on the ear ready to receive them in the five rows that you say you

cut off—if the weather should be fair while the pollen drops it drops near the hills if there is not wind enough to carry it. The principle, however, is right, and should improve the crop. If you do not take the tassels off the probability is the ears will be self-fertilizers. I think if you detassel every other row you will have a better yield than if you detassel five rows at a time.

I do not believe we pay attention enough to rotation. We keep raising corn, oats and wheat without reference to the soil and the soil loses its original vegetable mould that there was when we first broke up the prairies. If you go to the valleys along in the bottoms in any section in the state that has been cultivated for the last twenty years you will find that the grass is two or three times heavier than when it was broken up. If we are going to raise big crops of grain we have to keep the vegetable mould in the ground to keep moisture so that it can be pure. Why we keep growing corn as we have done once a year on an average yearly for ten years and it is not profitable, especially when corn comes down to twenty cents a bushel. I have grown eighty bushels to the acre by drilling the corn as the gentleman stated, and by using surface cultivation and retaining the moisture it ought to yield sixty bushels per acre in Iowa, and one-half of the ordinary crop is not more than 33½.

MR. VALE: I think what Capt. Speer says is true with reference to detasseling several rows in connection, but I discovered my lowest yield was the one that was detasseled by itself and the next lowest was the south row on the row adjacent to the standing corn with the five rows of tasseled, the center row being my best yield.

I am glad to introduce to you now Mr. T. J. Brooks, of Hedrick, who has a paper with which he will now favor us. (Paper here read by Mr. Brooks.)

HOW TO USE THE SURPLUS.

BY T. P. BROOKS.

I more than half suspect that not many of you have at any time in the past felt a pressing need for information on the subject of this paper. But

why should I not come to this council of Iowa stockmen with the simple faith of the child who carried her umbrella to the church where the deacons had gathered to pray for rain? Besides, it is not the disposition of a surplus so large as to be burdensome of which I wish to speak. That sort of surplus is both too rarely met with among western farmers, and too well able to take care of itself and its owner, to require consideration in a gathering of this sort. The surplus of my present thought is an accumulated hundred, or a few hundreds of dollars beyond what is actually required for the purpose of carrying on the farm economically. Such a fund is now in hand, or within easy reach of every prudent, reading and thinking farmer of Iowa who has a good eighty of land paid for and reasonably improved. And, lest there may be a stray thought abroad to the contrary, let me here say that the farmers of Iowa are, as a rule, a set of thrifty capitalists who need ask no favors of any class of people in the world. That they do not always receive a fair share of the good things that the world has to distribute to the race as the result of a year of human toil, is undoubtedly true. But they have submitted to this withholding of a part of their due because they were able to stand it, and preferred to do so rather than kick up a row.

From an examination recently made, I find that the farmers of my congressional district—the sixth—now have on deposit in seventeen banks, selected by chance, cash to the amount of $1,112,000. I do not know that it would be fair to count the sixth district an average section of the State on this point. In the more recently settled portions the deposits would not run so high, while in the older and better improved sections they would exceed those of the locality examined. But if we multiply the average deposit of these seventeen banks by the number of banks in the State, we have the sum of $58,748,000 as the present cash holdings of the farmers of Iowa, or something more than $38,000 for each congressional township. It is true that a small part of these deposits represents sums that have been gradually accumulated for the purpose of paying off mortgage indebtedness making permanent improvements or meeting current expenses. Yet, it is equally true, that a large part of these funds are permitted to lay in bank often from year's end to year's end, with little or no accumulation of interest, or more frequently they are used to overstock the farm or to buy adjoining lands which can often be neither easily or economically handled. Either of the latter methods is far worse than the former, for while the idle fund adds nothing to the owner's capital it requires no attention and is in no serious danger of being lost. But the over stocking of the farm with domestic animals and the over stocking of the farmer with land, are two of the most disastrous practices common among us at this time.

Through one or the other of these channels this substantial evidence of earlier success is often made to vastly increase the cares and burdens of the farmer, without any corresponding increase to his comfort or income. The farm that, as a rule, comes most nearly affording the ideal home, with a safe and ample income for all ordinary purposes, is of moderate size only, is cultivated as diligently by the owner's head as by his hand, and is neither overstocked with domestic animals nor expensive machinery. And these spare dollars are capable of rendering a much higher service to their owner through the local factory, shop and general trade channels of the community than through any effort to broaden the acres or multiply the stock on

such a farm. When used in this way the fund consumes no amount of care and attention that belongs to the farm, while at the same time, it renders a double service. It brings back, as a rule, a moderate return for the investment, and, by aiding to advance the general prosperity of the community, it raises the market value of each acre of the farm, and gives additional value to the annual output therefrom.

And again, such investments, when carefully and prudently made, usually result in bringing the farmer into a better understanding and more harmonious relation with the balance of the world; and so make him a better citizen, a happier man, and a more prosperous and better contented farmer —results greatly to be desired. For it has become pretty generally understood that the farm is about the best place on earth—from which to move to the town. Of the reasons for this I will only stop to point out two—one social, the other economic. A desire to be closely associated with his fellow beings is inherent in man, and as he rises in the intellectual and moral scale, this feeling becomes more and more pronounced. And the general spirit of intelligence that has in recent years spread itself over our entire country, by reason of the unprecedented and marvelous cheapness and excellence of the modern newspaper, and kindred civilizing and educational forces, has brought with it a spirit of rebellion against the isolation of the farm, and a desire to get close to the little trading centers and in communion with the social and intellectual life to be found there.

Again, partly by reason of the fact that the farmer usually sees the tradesman in his Sunday clothes, as it were, with his long day, his ceaseless vigilence, and weary efforts to make his bills receivable and bills payable meet in harmonious relations on a common level, all carefully pushed into the background, he often comes to the belief that the calling of the latter brings with it more of the good things of life and less of toil than falls to his own lot. So he remains on the farm, often with a heart tinged with sourness because of the belief that through some one's else fault an undue proportion of life's burdens has been thrust upon him. And, for a truth, the belief is sometimes well founded. Or, being unwilling to submit to the supposed imposition, he quits the farm, with all of its trials and its pleasures, its invigorating, healthful life, its scant and its bountiful returns for expended effort, and seeks the supposedly more profitable occupation of a tradesman — often with indifferent success and often with dismal failure. But whether the change brings success or failure, he has quitted the safest occupation on earth, and a freedom, and a purity of home life which he is all too apt to seek elsewhere in vain. And so it has come about that some method of uniting the advantages of country and town is a most serious problem of the day. We must find some way of bringing the farm and the town into closer and more harmonious relations. The social, and moral and intellectual advantages of the town should be accessible to the farmer without the necessity of his quitting the farm while yet in the prime of life, and under the necessity of prosecuting some avocation to maintain or build up his accumulation of property. And to this end, I would urge the farmers throughout the State to freely use their available spare means in aiding to build up the little towns and villages, as well as the larger towns and cities, in their respective neighborhoods. The direct financial return would probably be moderate, for the local merchant and manufacturer has no

bonanza in profits as a rule, but the indirect profit from such a course would be vastly more, and the social and intellectual return would be still greater. In this way — without having his care and attention drawn away from his regular avocation — the farmer becomes a forceful factor in the upbuilding of the community, and familiarizes himself with methods, character and profits of his neighbors — the tradesmen. And he becomes a broader and more evenly balanced man, less suspicious of the rest of the world, and yet less liable to be taken in. He brings his farm and his farm life more directly into the marching column of current events, and becomes a participant in the best thought and life of the community. For when you once drag him from his isolated intrenchment, no head is clearer, and no heart or hand stronger or more willing to act. He is thus brought to see more clearly that all the right forces of a country or a community have a common interest in each other — that the farm and the shop, and the store, and the factory must pull together with reasonable harmony before the greatest degree of prosperity can come to any of them — that they are all members of one great family, and all directly interested in the the common prosperity; that their true interests are mutual and reciprocal, and that not one of them can be seriously crippled without injury to all. One of the most serious drawbacks to the material progress of our country has ever been the fact that we have not always all been able to bring ourselves to recognize and act in accordance with this seemingly obvious truth. And, perhaps, the farmer, because of his wide distribution over the land, and his isolated life, has been slowest of all in recognizing this material force.

And again, this same isolation has left him the greatest sufferer in the the internecine strife that has been going on in recent years among the various members of the commercial world. After all, it is the prosperity of one's neighbors that renders his own possessions desirable. And a live town near at hand, with shops, stores and factory, schools and churches, and loyally patronized by the surrounding territory, counts for a large share of a farm's value, both as a home and a salable piece of property. And, on the other hand, it is the well improved and productive farm that makes hundreds of such towns in our State possible. The town needs the farm, and it knows it. But the farm can with difficulty be brought to recognize that it has any particular use for the town. And yet, in case of unsatisfactory relations arising between these two neighbors, the farm is apt to be the greatest loser. For, while the townsman can usually change his location with no serious inconvenience, there is no class of people so firmly rooted to the soil as the farmer. And he should feel a deeper interest in the growth and right development of the community of his home than any other person, because he is more closely tied to that community than any other. And it is his local town that brings the churches, the graded schools and that elevated social life which, like running water, tends to purify itself by its own activity. It brings the wares and commodities of the civilized world much nearer the farmer's door than would otherwise be possible, and by the necessity of its own consumption affords him the greatest possible aid in securing these commodities with his own products. The tradesmen and shopmen consume a large proportion of our farm products, and the closer we bring that consumption to our doors, the greater will be our profit on

what we raise. And if one dollar out of every five of the farmer's surplus fund should go immediately into the local shops, factories and trade channels through the State, with the good will, the hard, common sense and even-going integrity of the farmers behind it, what a wonderful leap toward material and lasting prosperity our noble State would take! But do you ask how this could be done without taxing the farmers with the oversight and care of such investments, to the injury of their regular avocations? Of necessity, this work would be done through the instrumentality of the joint stock company or corporation. It could not be done otherwise; and it would be prudently, safely and wisely done through this channel. Nor am I unmindful of the fact that here in Iowa we have expert testimony of a high order to the effect that this class of corporations must go, in the interest of the public weal.

But I cannot accept the proposition without more and stronger reasons than have yet been brought to the surface. And I wish to here enter my earnest protest against the wide spread inclination to approve the suggestion of Judge Hubbard. That he is a man of acknowledged ability, and wide experience, and that his method would be an easy way of untying the corporation knot, I will readily concede. But I protest that that arm of the modern commercial giant that has been instrumental in bringing to a successful issue ninety per cent of all the great achievements of which this age is proud, and for which we expect to be remembered by coming generations, should not be amputated without a serious and prolonged consultation among the doctors. That great evil has come to us through the abuse of corporate power, all must acknowledge. And so have great wrongs been perpetrated through the abuse of the elective franchise, and the prostitution of the ballot. But who, for this reason, will rise up and say that we must abandon our present form of government? Or, because the modern steel blade, in careless or vicious hands, is a dangerous instrument, who can be found to argue that therefore we ought to resume the use of the granite bludgeon of the stone age? The corporation is a growth of civilization, without which it is difficult to see how we could have attained our present advanced position in the arts, in commerce, and the material prosperity of the age. And it seems absolutely certain that without its aid we could not now maintain our present footing for an hour.

That Judge Hubbard and his able compeers have often been successful in their attempts to over-ride the best interests of the public with corporate power, is ample reason why we should carefully provide against the possibility of abuse in the future; but it affords no more reason why we should deprive ourselves of corporate advantages than does the liability to occasionally bite one's tongue afford for having his teeth extracted. But it is proposed to retain this form of organization where its work is of a purely public nature. Ah, but these are the very sinners against which the greatest complaint is lodged. It is these great public concerns that, by reason of their unwarranted assumption of rights and powers that belong only to the people that has raised the public dander. And if this gift from the public can not be made to act at all times and in all places with reasonable justice and equity toward its creator, then it should go, root and branch. There can be no lopping off of the weak and least offensive members, that the strong ones may have more room in which to grow still stronger and more

arrogantly oppressive. But, happily, there is no necessity for our attempting to get on without the aid of this modern power. Proper restraints will be speedily devised when the evil has once grown sufficiently great to unite the people in their opposition.

The stock company is peculiarly well adapted for these small investments of farmers; and in no other way can they so safely and with so little trouble to themselves lend a helping hand to aid in pushing forward the best interests of the community. The advantages that come through an aggregation of capital under the responsible management of a single head, with the good will of a whole community that comes only with direct pecuniary interest, is of such value that it cannot well be over estimated. And the time has come in Iowa when the farmer should make free use of this form of organized efforts, in the interest of greater and more permanent prosperity. With us, the town and factory are the counterparts of the farm, and as they grow and prosper, in so much is the fruitage of the farm increased. And with the farmer actively interested in the commercial affairs of his neighborhood, the so called labor problem would speedily retire. For the farmer is both the leading capitalist and the foremost laborer in Iowa, and hence, the natural arbiter of this matter. And, as above stated, no one else is so deeply interested in this, as well as most other economic questions that arise from time to time in his neighborhood, as the farmer. The laborer without capital may move on a day's notice to other fields of operation, and the capitalists who is not a laborer may change his location at pleasure. While the farmer must, for the most part, abide by the issue, and accept whatever of good or evil may chance to befall the neighborhood of his home. Then let him bestir himself in the direction of his greatest prosperity; and become aggressively alive to the fact that he is essentially a part of a community, and that the performance of a service for that community is a blow struck for self, and that, too, in the direction that promises the highest results. Let him shake off that too prevalent suspicion of his tradesman neighbor, and join him heart and hand in all right efforts, to push the common good up to a higher level, and into a broader and purer atmosphere, where each shall show by his daily walk and conversation, and the trend of his business transactions, that he recognizes the indisputable fact that all his personal acquisition that are worth the having, rise and sink with the common interest.

MR. COWNIE: *Mr. President:*—Some of my friends appreciated what I said yesterday so much that they wish me to give my system of raising hogs a little more in detail, but it is getting too late. I might be like Wendell Phillips, left with only the reporters to talk to. Wendell Phillips in delivering one of his anti-slavery addresses was not appreciated by his audience, and facing his audience he says, "I have here an audience of two thousand people," and then turning to the reporters; "I have here," he says, an audience of two million"; and for an hour and a half he poured forth his eloquence to the newspaper reporters, thus talking to two million people. Now, if Brother Wallace will consent, I will give you my

experience in raising hogs. Speaking once more about the men who are engaged in feeding cattle, this morning at the table, speaking of the method I had adopted—to avoid repeating as much as possible and not to weary you, as there is quite a number here engaged in that business, and while I am always eager to get information myself, I think you all realize by this time that I am also willing to tell you what I know—I will tell you my experience in shipping stock. There is just one thing in shipping cattle to Chicago. I don't think it is necessary to make a secret of it for the simple reason that buyers are always pleased to get stock in good condition. You all know that to receive cattle in Chicago or to have them arrive there in good condition is the exception and not the rule. We are all aware of the honesty of the granger. He is the only honest man. The merchants will cheat, and the lawyers will differ in their opinion, but I tell you, gentlemen, the granger is honest from the crown of his head to the soul of his foot. [Laughter and applause.]

If you go out to buy cattle to be delivered on a certain day, they generally go out, if there is a lot of them, and stay there all night to watch them so that they won't salt and water them before they weigh them. These fellows in Chicago are suspicious of the honest granger. A great many cattle are shipped that way. A good way is to deprive them of the grain one or two days before shipping. I find it the universal rule. I have inquired of every shipper I have met, how he prepared his cattle to ship. "Why," he says, "I take grain from them; I feed them hay, and I get all the grain out of them I can and feed them nothing but hay for a couple of days before shipping and they are all right."

"What is your shrinkage?"

"Anywhere from fifty to one hundred and twenty or twenty-five less." I have had fifty pounds shrinkage and sixty pounds shrinkage in shipping, and I have shipped cattle to Chicago when they weighed more than when we left home. I have been in the habit of feeding about four car-loads of cattle every year for a great many years and I have saved instead of losing, but I don't do as other people do. I have a way of my own. I have no patent upon it, and I am willing that every one shall be benefited by my experience. Before you ship your cattle, don't go to work and salt them and then fill them up on water. That does for the honest granger that sells to the buyer, but if you ship your own cattle, don't do it. They won't thrive well, nor do well. A neighbor of mine had his cattle prepared in this manner and didn't get the

price that he wanted. He came to me as I had three carloads of cattle and says he, "You give me a pass and I'll go down to Chicago with you," and I says, "All right." It kept him all night long working with his cattle to keep them on their feet, and as soon as he got to Chicago, he put for a saloon. As soon as he got back, he said, "Where are my cattle," and I showed them to him and he says, "Those are not my cattle." You could not have told them. There seemed to be nothing in them at all, while mine looked just the same as they did in the yard. He had salted and watered them and they were scoured out until he couldn't keep them on their feet and had more trouble with them than car-lots of my own. I have reasoned it out in my mind, and two or three days before I ship—I know what I am to ship—I begin feeding about one half of the grain. I give them all the hay they can eat —timothy hay. Don't give them clover—give them the best timothy, and then the morning I ship them I give them all the corn they can eat and they eat a pretty hearty breakfast. Now you see the philosophy of it. Being deprived of the grain, they are filled up with the dry hay, and I don't give them any water or salt and I get them there on full feed, and these cattle will ride right along into Chicago and there will be no trouble with them. They will drink water when they get there and you will have little or no shrinkage. This is not done to beat the buyer, and I have had buyers compliment me on my cattle looking so well. Some cattle buyers came to me and asked me how I could bring the cattle in such good condition. I tell them that they are well matured is all there is to it. If you will try shipping stock that way, you will find that it is money in your pocket and your cattle will go through in better condition and the buyers will appreciate it.

CHAIRMAN: It is impossible to continue this discussion longer, and I shall now introduce Mr. Wallace on the clover subject.

Hon Henry Wallace here read a paper on "Clover."

MR. WALLACE: This paper is simply a history of Prof. Hellriegel on the subject, Where Clover Obtains its Nitrogen." It is not a paper by myself, but by my request. Mr. A. G. Lucas translated this from the original.

WHERE THE LEGUMES OBTAIN NITROGEN.

BY A. G. LUCAS.

That the legumes have the power to extract free nitrogen from the atmosphere is not a theory but a demonstrated fact. Its demonstration is due chiefly to the investigations of Prof. Hellriegel and Dr. Wilforth, of the Bernburg Experiment Station, Bernburg being the capital of the duchy of Anhalt, in northern Germany. The bearing which the fact has upon the maintenance of fertility is so vital as to lend a peculiar interest to the experiments by which it was ascertained, for according to the dictum of Liebig, "The pole-star of all agriculture progress is to learn how to draw from natural sources as much nitrogen as is exhausted by production." The strong interest, therefore, which attaches to these experiments warrant a somewhat detailed description of them.

In 1862-3 and 4, Prof. Hellriegel carried on a series of experiments at the Dahme station based upon the idea that if certain chemical elements were essential to the development of plant life, then each of these elements must exert a definite quantitative effect—that is, that a given quantity of a given element applied to a given species of plant under conditions otherwise favorable to growth, would always enable it to produce the same quantity of dry matter. So far as the cereals were concerned, this was found to be true with respect to nitrogen as well as other elements of plant nutrition. With a decrease of nitrogen the yield decreased, with no nitrogen in the nutritive compound, no development occurred after the nutriment in the seed was exhausted, and in every instance production bore a direct and well recognized relation to the amount of nitrogen supplied to the soil.

But the behavior of the legumes is so different. They were able to grow without any nitrogen in the soil. Red clover grew luxuriantly in sand watered with a fertilizing solution containing no nitrogen whatever, and peas developed normally and brought forth good seed under the same conditions. But under precisely the same conditions other plants of the same species starved. In a multitude of experiments, conditioned precisely alike so far as fertilizers, warmth, moisture and all the usually recognized essentials of vegetable growth were concerned, some did well, some poorly, and some did not develop at all beyond the germinating stage and the exhaustion of the nutriment in the seed. Equal applications of fertilizing compounds seemed in some cases to work well, in others not so well, and in still others

to do actual injury. The yield after considerable quantities of nitrogen showed no constant relation to the amount of nitrogen applied. The cereals responded to the rule, so much fertilizer, so much yield, but the legumes seemed utterly lawless and Prof. Hellriegel decided to keep quiet until he found out why.

Every experiment plant nutrition involves a large number of factors. For nearly ten years Prof. Hellriegel devoted his entire attention to the determination of the conditions outside of fertilizers, necessary to the normal development of plants, such as quality of seed, volume of soil, its mechanical condition, seed time, light, warmth, air, moisture of soil, etc. These occupied his time until 1873. By that time he had settled these questions so that he felt confident that he knew under just what conditions normal growth might be relied on—what conditions furnished a measure of development, so that when one of them was intentionally changed, any change in development could be confidently ascribed to the changed condition and to no other cause.

Circumstances then intervened which prevented him from resuming the experiments until 1883, when he became connected with the Bernberry station. Here he took up the old line of investigation reaching the same results as before—with the cereals the development and yield was large or small accordingly, as the amount of nitrogen fed to them was large or small while with the legumes which analysis shows contain larger quantities of nitrogen than the cereals, the yield did not depend at all on the quality fed to the soil. The yield was often poor when considerable quantities of nitrogen were used as a fertilizer and it was often good when none was used. They were able to grow and assimilate larger quantities of nitrogen in soil that contained no traces of nitrogen whatever.

In experimental work, in order to reach results worthy of confidence, it does not do to take any soil that comes handy, put it in any vessel you please and add any fertilizer you please, and then after sowing the seed, put it under glass, and when the leaves turn yellow and the ground seems dry, give it water and wait for results. On the contrary, every factor in the problem must be accurately known, weighed and measured, so that when any one of the factors is changed and a variation in result follows, the variation can be proved to be caused by the change and by nothing else. Farmers, for example, understand that everything depends upon soil. Prof. Hellriegel chose as his experimental soil a fine, washed quartz sand, such as is used for making white glass, so that nothing might depend upon soil, and so that he might know that the plant obtained no nutriment except such as he gave it in fertilizing solutions. Repeated analysis of the sand showed that while it was not, strictly speaking, chemically pure, it was as near so as anything ever is or can be made, and the traces of foreign substances could only be expressed by a long, meaning less decimal fraction.

The culture vessels in which the plants were grown were of white glass, all of the same size, and when filled were made of the same weight, so that the percentage of moisture could be kept precisely the same in all the culture vessels by daily weighings. The sand with which they were filled was first fertilized with a fertilizing solution in a porcelain vessel and then crumbled into the culture pots so that there might be no packing. The seeds were selected by the aid of delicate scales, weighing each one and

throwing out all that seemed light as well as all that seemed heavy, so that all might be of medium size and weight with the least possible variation. They were then sprouted between sheets of blotting paper and when germinated perfectly another examination was made as to healthy appearance and normal condition of rootlets; equality of vigor was the end sought. Twice the number of seeds were then sowed that were intended to be retained, and when they came up they were weeded down to half, normal vigor and equality of development guiding the selection of those that were to remain. The fertilizing solution applied in each instance was four grammes of carbonate of lime, and

Kallummon phosphate	0.5444 grammes.
Kallum chloride	0.1492 grammes.
Magnesium sulphate	0.2400 grammes.

with varying quantities (and sometimes none) of calcium nitrate as the supply of nitrogen.

These details are given as illustrating the close attention that was paid to every step of the experiments so that no accidental circumstance might interfere with the certainty of the results, or authorize a doubt that when a change in result followed a change in conditions, the one was caused by the other. The plants were grown in the open air with perfect mechanical devices for protection from storms, the attacks of birds, excessive heat, etc., and the moisture was kept at fixed percentage, ascertained by previous experiment to be the most favorable to normal development.

These being the culture methods adopted, let us first consider a typical experiment consisting of fourteen plantings of the cereal barley. The culture vessels, the sand for soil, the percentage of moisture, the selection of seed, the manner of germination, etc., are all as described. The germinated seeds are sown April 23d; they come up from the 27th to the 29th of April and are harvested August 1. Fourteen vessels are used and in each there are seven plants after the final weeding. To each pot or vessel has been given of

Calsium phosphate	4. grammes
Kaluminous phosphate	0.5444 grammes
Kallum Chloride	0.1492 grammes
Magnesium sulphate	0.24 grammes

And in addition nitrogen is added as follows:

Vessel No. 1	336 milligrammes
Vessel No. 2, 3 and 4	224 milligrammes
Vessel No. 5	168 milligrammes
Vessel No. 6, 7 and 8	112 milligrammes
Vessel No. 9, 10 and 11	56 milligrammes
Vessel No. 12	28 milligrammes
Vessel No. 13 and 14	milligrammes

The results are that during the first week all the plants do equally well. They are living on the seed. On the 4th of May the plants in Nos. 13 and 14, which have received no nitrogen, seem to lag a little and this rapidly becomes more perceptible. It indicates exhaustion of the nutriment stored up in the seed and the approach of nitrogen-hunger. For the next few days the remaining culture plants seemed to do well. May 9th, No. 12 (with 28 milligrammes of nitrogen fed) dropped behind, and a few days later, 9, 10 and 11, with 56 milligrammes, follow and in a few days, the others, up to No. 1, could be identified by their appearance, so that by the fourth week in May, even from a distance, the row of culture pots formed a distinct picture revealing the amount of nitrogen that each had received. This appearance was justified by the resultant yield. That which had received a sufficient amount of nitrogen yielded thirty-five fold; that which had received none yielded practically nothing and the intermediate culture pots yielded in proportion to the nitrogen that had been given them.

This result is the rule with all the experiments with cereals. Those of the various years vary slightly in detail, but not at all in principle. The yield is governed by the amount of nitrogen given—less if there is less, greater if it is greater.

Next take a typical experiment with the legumes, field peas being the species. All the conditions are the same except that six germinated seeds are sown to each culture pot and are weeded down to three. The same fertilizing solution is given, and in addition nitrogen is supplied to each pot as follows:

No. 66	336 milligrammes.
No. 67 and 68	224 milligrammes.
No. 69	168 milligrammes.
No. 70, 71 and 72	112 milligrammes.
No. 73, 74 and 75	56 milligrammes.
No. 76	28 milligrammes.
No. 77, 78 and 79	00 milligrammes.

The result was that the plants in the various vessels all came up evenly and well, and no difference could be detected up to the end of the second week. The third week there was a difference, not in growth, but in color. Those that had received no nitrogen were somewhat taller, but a light green, while those that had been fertilized with nitrogen were a darker green, and the more nitrogen the darker. The fourth week a difference in development appeared. Pots 77 to 79 that had received no nitrogen fell behind and showed signs of nitrogen hunger. The new leaves formed were smaller and seemed to be formed by pumping out and drying up those that had developed earlier. The other numbers grew normally, and by the end of the sixth week the whole row of experimental pots very accurately reflected in their condition and appearance the amount of nitrogen that each had received in the fertilizing solution.

During the seventh week, however, the condition of the plants suddenly changed and without any apparent cause. No. 77, which had received no nitrogen continued to be in a starving condition, but two plants in No. 79 revived, and a little later two in No. 78 did the same. They changed from a sickly green to a healthy green, and the new leaves grew stronger and broader than those previously developed, and did it apparently without consuming the previously developed organs. From this time on they made rapid growth, and by the eleventh week they had overtaken those well fertilized with nitrogen, and some of those well fertilized failed to grow, so that from this time on until harvest there was no relation between condition of the several culture pots and the amount of nitrogen that each had received. The harvest followed this generous result, and analysis showed that some of the plants contained less nitrogen than had been placed in the

soil, some more, and some showed large quantities when none at all had been given save that contained in the seed.

Three years of this kind of experiment, with invariably this kind of results, established two fact, *first*, that the legumes found a source of supply elsewhere than in the soil, and, *second*, that they might or might not thrive, even though the soil was amply supplied with nitrogen. In short, the harvested plant contained the usual amount of nitrogen, but it was just as likely to contain it where there was no nitrogen in the soil as where there was.

The legumes, therefore, had some source of supply other than the soil, but in some cases it was able to avail itself of the supply and in others it was not, even though the conditions were, to all appearance, precisely the same. What was the source? And why could some plants draw upon this source, while others of the same species could not?

It is impossible to follow in detail the experiments undertaken to answer these two questions, for they cover two hundred and thirty-four pages. But they are as interesting as the most ingenious plot that any novel ever contained. One cannot read them without admiring the patience and intelligence of the investigator, nor without admiring science truly so-called, as he sees the inquiry gradually removed by experimental evidence, until one by one the facts are all put by as demonstrated, all bearing one way, and leading up to the final solution.

It is discovered that plants which did well without nitrogenous fertilizers had tubercles on their roots; that those that did not do so well had fewer tubercles, while those that did not thrive at all had none or scarcely any. The connection between the presence of tubercles and the power to find nitrogen elsewhere than in the soil is, of course, soon suspected, and numerous investigations only serve to cofirm the coincidence and crystalize into a law of cause and effect the presence of the one with the other as the result. The absence of tubercles and the absence of growth and assimilative power also became a law. There is no visible cause for the tubercles; what, then, is more natural than to suspect an invisible cause? And what invisible cause could be more likely, or had more of nature's analogies to render it probable than that the tubercles were of bacterial origin?

Let us try. Put unsized wadding—which lets in air but strains out bacteria—over the pots, and what is the result? No bacteria can get in; result, no tubercles are formed, no nitrogen is taken up, no development of the plant follows. It starves. That is Nature's answer to the intelligent and patient inquirer.

Some of the pots containing legumes thrive; some do not. None covered with wadding thrive. Why? The inference is inevitable that whether they do or do not thrive depends upon whether bacteria in the air chances to reach them. This particular kind does not habitually float in the air. It may or may never reach a particular culture pot. But the ground where peas or clover has been cultivated must be full of it. Make an infusion of such soil, and after it settles pour off the clear water, and with it water a culture pot that is languishing. Straightway every pot so treated revives, grows and assimilates nitrogen. Take some of the same infusion and heat it to 70 degrees centigrade—equivalent to 158 degrees Fahrenheit—and water a culture pot. It languishes as before and does not acquire the power to assimilate nitrogen. A very small quantity of the infusion suffices to produce luxuriant growth. It is not nutriment but a nutriment finder that is contained in the infusion—bacteria which multiplies itself with inconceivable rapidity and becomes an efficient and tireless nitrogen gatherer.

But not all infusions from soil on which legumes have been grown will thus stimulate the growth of a particular species. Ground on which peas and the clovers only have grown will not furnish an infusion that will revive and stimulate serradella lupina or *vice versa*. The inference is inevitable that the bacteria, while similar, are not the same. Yet the legumes do avail themselves of nitrogen in the soil. Sterilize the soil and add an insufficient quantity of nitrogen and some growth follows. Water with the infusion from some soil in which the same species of legume has grown and it will eventually thrive, but during the interval between the exhaustion of soil, nitrogen and the development of bacterial formation, there will be a hunger period.

In sterilized earth no tubercles appear on the roots of legumes; if a soil infusion that has been boiled is added no tubercles appear, and, of course, no power to assimilate nitrogen is developed. If on one side of a culture pot a suitable soil infusion is poured and the other is watered with the same infusion boiled, tubercles develop on the roots on one side and the roots on the other side starve.

Time forbids further citation of the many changes made in the experimental conditions which invariably cause variations in the result that prove the same point. I cannot do better than conclude with this quotation from Prof. Hellriegel, which is abundantly sustained by his experiments:

"I hold it is certain that the legumes experimented with have the power, with the assistance of microbes, to employ the free, elementary nitrogen of the atmosphere for their nourishment, and to collect it in the form of albumen. This source of nitrogen is inexhaustible, and will alone, under favorable growth conditions, suffice for the needs of the legumes and enable them to make a normal and even a luxurient growth."

James Wilson—You will remember that a year ago something was said about the College, and that the gentlemen were not all agreed. It is not necessary to go into the past on this subject. Your whole afternoon could easily be taken up by discussion on the topic of industrial education. The World's Fair where nations are to compete, and where attention is called to all the products of the earth—nation after nation sets itself to work to assist, among these different countries, in gathering together the different products and articles of manufacture. The peace and prosperity of these old countries demand encouragement of their manufacture. It became evident to the Congress of the United States that something should be done for the education of the American people. The apprentice system of the old world had been abandoned here, and it frequently became necessary to send to some of the old countries for superintendents in various lines of mechanical work. The Congress in 1862 authorized the establishment of industrial

institutions, that farmers and mechanics might be educated. In the money devoted to that purpose, Iowa had between six and seven thousand dollars. The amount of lands given at that time was forty thousand acres for each representative in Congress. The Cornell University in the State of New York was a greater endowment not because of the superior wisdom of the people but because of the tenaciousness of Mr. Cornell. There is more money to-day in Iowa than any other in the Union except the State of New York. This is the annual meeting of the Stock Breeders that I have attended with scarcely an omission, and in which you will all bear me out, and in each of these meetings we have discussed our needs and wants, and if the legislature hasn't been doing what the gentlemen want them to do, they must blame themselves. I was six years in the Iowa legislature and saw gentlemen sent up each winter to represent what the school needed. It has been doing a big work of its own. These schools are doing well and many of them have gone ahead of the State Universities. I was sent up to Ames to try to organize, or to try to make them serve the farmer's interests, and one of the first things the trustees did was to send Dr. Beardshear and myself to visit the Agricultural Colleges and to learn something. Now, there was nobody that went up that needed to learn so much as I. We went to the different States. We found up at Minnesota that their theory of the education of the farmer is to give them what would be about the equivalent of your high schools here, and have them go into these colleges themselves and tell them what the farmer wants. You have learned something about the rule of three, and know something about steers and horses, and you have heard us give lectures on reading and now you are fixed, and farmers don't need anything more. Up in Wisconsin where the great Prof. Henry lives, a man for whom I have the profoundest respect; a man who is doing the greatest work of any man in the United States—I noticed Henry as popular. When the legislature is there, they get anything he asks for because he asks for it, yet I found him domiciled in a house that is not fit for an Iowa barn. Henry is doing his very best with his short course of school. He has three students in the long year's course.

We went to Michigan and found that they were not doing what had been done in New York college in the early day. In fact, it was a science school. We went to Canada, and found that the two year's course was what they needed there. Looking it over and knowing this, that the Iowa farmers were putting their boys in the high school, and sending them off to attend college and then to

come back and help them on the farm—I knew you wanted something better than that. I look upon Ames as having done the grandest work of any college I have visited. I am not a college man. Educating has not been part of my life, but I have been trying to study the turn of things up there as much as possible and to get things fitted up to their work. There are some very strong men there. Dairymen all express gratitude for the work done by one man in testing milk, a thing which Professor Patrick has revolutionized in the discovery of those things that affect milk—those things that make it sour, etc. There is a strong corps of teachers teaching the auxiliary studies, and the course is so arranged that when a student graduates he is as strong a man for the business of farming as for a lawyer, doctor or minister as when he comes back from any college. That is the work that is being done there. I know something about farming, farming societies in Iowa, and something about the farmers of Iowa. Heretofore we have not had time to do anything much but get money. I will give you an illustration of the family I was raised in. The girls got a pretty good education—the girls, in fact, got to be pretty intelligent, but the boys never knew much. There are not many boys in the agricultural course up there. The institution has been doing excellent work with regard to educating mechanics. There are strong courses there, and I am not there to pull any of them down. I am there with all the powers I can bring to bear, to build up the agricultural course, if you gentlemen want such an agricultural course built up. If the farmer's boys of Iowa want to go up there and get such instructions as will point to the industry of their fathers—the industry that is bringing Iowa to the rank in which it is becoming known in the world—educating the directions in which money is made—if such education is desired by the young farmers of Iowa, it is being prepared for them there. The course is growing. It was created last spring at your demand. There are something like a dozen young fellows taking it now. I don't expect that it will graduate these young people from that course to go back to work on the farm, because all that we can educate for several years will be needed in other colleges that do not know enough in regard to the education of farmers to educate them as they should be. This is the work that the Iowa college is going to do for several years. A gentleman read a paper to-day in regard to the organization of farmers. How is that going to be done unless you educate them to do that kind of work? Who are the boys educated some time ago? Why, the boys went off to the work there was the most money in.

Railroads had to be built, and many of the boys went there. All over the State of Iowa two or three hundred high schools have been built, and young men and women have been wanted to man these schools, and the boys have gone there, etc.; but now the high schools are all manned, the railroads are built, speculation does not pay so big a profit on lands, bonds, etc. The men who may be competent in the next generation will be judges and statesmen and members of various professions. Boys now represent that kind of an education. The experiment station is connected with the college station. That is over and above all. We are trying to solve every day questions; trying to ascertain the value of this food and that food, and the value of food for the race horse; the draft horse, the beef and mutton, etc. We are not going to let you off, as my friend Stout suggests, with eight hours a day. We are working all the hours that is in us, every one of us. We haven't money enough for all the experiments we should conduct. In the Minnesota school they have twice as much money for the station as we have. Prof. Henry puts $40,000 in his experiments; here we have $15,000. The people will come asking for our investigations and our experiments on cattle, sheep, hogs, etc., but we are not going to have enough to pay for printing half of those things that we are carrying on now. I, as one of the committee, believe we should ask the State to print those bulletins. We ought to have enough of these printed so that all who want them can have the result of our experiments. We will not be able to do the work to please everybody, but we will do what we can. We have had some success in the right direction already, and I ask for the adoption of this resolution and I want the stock breeders to go to the Legislature and say to them that we want these things done.

MR. TUPPER: I would like to know what proportion of the money goes to these professors who teach those auxiliary studies and what proportion goes to the agricultural and mechanical professors.

MR. WILSON: The mechanical professors do not get any station money at all.

MR. TUPPER: The money that is paid to the college professors —how much money is paid to the men teaching the auxiliary branches and how much money goes to the people teaching the studies that are made mandatory to teach?

MR. WILSON: I havn't got the catalogue, but I will send you one which will give you the explanation desired.

MR. GOVE: Can you tell what per cent of the young men who have been to your college have gone back to the farm?

MR. WILSON: No, sir. I cannot tell. The demands then were not such as there are now. There was a demand for men to build railroads, teach school, etc. These are pretty well filled now. I think the future will show more young men going from those schools to the farms for the reason that I know a great many well-to-do Iowa farmers who have been in the state for generations and who have raised families and put them through the college that their checks happened to be connected with, and I have known those boys when they got through to go back to work on the farm. Iowa has been established for generations. There is as good openings for educated men there as anywhere else, and I believe and hope the young men will go back to the farm after such an education as they can get there.

MR. GABRIELSON: Has not Congress augumented the appropriation by some fifteen to twenty thousand dollars?

MR. WILSON: No, sir. That is for the education in college, not for experimental money. That is for education in regular college work.

Here the report of Committee on Resolutions on behalf of the World's Fair was read by Mr. Payne.

WORLD'S FAIR COMMITTEE.

The World's Fair Committee would submit the following report:

Resolved, that a committee be appointed by this Association to consist of one member from each subordinate organization to look after the appropriation of funds for the Iowa exhibit before the legislature this winter, and that this committee ask for at least $50,000 for the live stock exhibits, and, at any rate, for not less than one-sixth of the entire amount appropriated. Committee as follows:

Cattle, C. W. Norton, Wilton Junction. *Swine*, A. J. Lytle, Oskaloosa. *Sheep*, G. W. Franklin, Atlantic. *Dairy*, G. L. Gabrielson, New Hampton. *Horse*, to be nominated by the Association.

Resolved, That a standing committee of seven be appointed by the Breeder's Association, who shall be the nomination of each subordinate association, that shall be a committee that shall co-operate with the Iowa Columbian Commission in all matters that pertain to their respective industries.

Cattle, C. S. Barkley, West Liberty. *Swine*, W. W. McClung, Waterloo. *Dairy*, O. T. Denison, Mason City. *Bees and poultry*, Engen Secor, Forest City. *Sheep* and *horses* nominated by this Association.

Resolved, That we request the State Board Agriculture to make a World's Fair class, in 1892, limited to Iowa for all stock they intend for exhibition at the World's Fair, offering same as the regular and sweepstakes premiums,

such premiums to be paid when said stock has been exhibited at the World's Fair.

Respectfully submitted,

L. M. VAN AUKEN,
C. E. HARTLEY,
F. R. PAYNE,
Committee.

Motion and adoption of above report carried.

Report of Finance Committee read, and by motion adopted.

Report of Committee on time and place of annual meeting, nomination of officers read by Mr. Norton, and by motion carried.

Gentlemen of the Improved Stock Breeders' Association—Your Committee on Officers and Place of Meeting for the year 1892, would respectfully make the following report:

For President—C. S. Barclay, of West Liberty.

Secretary and Treasurer—Geo. W. Franklin, of Atlantic.

Vice-Presidents: First district—W. P. Young, Mt. Pleasant. Second district—C. W. Norton, Wilton. Third district—W. B. Kelly, Vinton. Fourth district—L. M. Van Auken, Mason City. Fifth district—A. V. Stout, Parkersburg. Sixth district—J. C. Frasier, Bloomfield. Seventh district—Capt. Jordan, Des Moines. Eighth district—W. O. Mitchell, Corning. Ninth district—H. C. Wallace. Tenth district—L. S. Coffin, Ft. Dodge. Eleventh district—H. C. Wheeler.

Place—Humboldt, Humboldt county.

Respectfully submitted,

C. W. NORTON, *Chairmrn.*

O. T. DENISON: There is one resolution that is overlooked, and I would like to report on it or introduce now:

Resolution that we ask the legislature for 1892 to publish the proceedings of the Dairy Association the same as this Association.

MR. BENNETT: Allow me to state for the information of those not present at the last meeting, that this Association, now, for the first time is an incorporated body, and, as the other associations, is entitled to the printing of their documents the same as any other.

MR. GABRIELSON: I believe all will agree that I have shown myself interested in the agriculture of the State of Iowa. I am at present connected with our local dairy association, holding the position of secretary there, and I feel still more interested in the progress of our Association. It represents an industry perhaps second to none in the State. The State of Wisconsin furnishes a fund of fifteen hundred dollars a year to transact the business of its dairy association and promote its interests. Minnesota is getting along and doing all it can, and I feel that the resolution which Mr. Denison has offered is a little too weak. I would like to amend it by

asking this association to endorse a request for a thousand dollars to be devoted to the dairy interests, and I hope that the amendment will be seconded.

MR. VAN AUKEN: In behalf of this request of the president, I wish to say to those who were not present at Waverly, that while we are a great institution here, it is pretty small in numbers, as compared with what we had in Waverly. We had a hall as large as this full every day. We had a Pullman car load of visitors, and started out from New York and Baltimore and came through on their palace cars. Prof. Henry was there, Prof. Parsons, and a host of dairy workers; and I think that any of you who were there will see the necessity of having these proceedings published, so that people throughout the length and breadth of our own State, as well as other States, may be benefited by it.

MR. LUCAS: I think when we consider the dairy interests of the State of Iowa, the demand is a very modest one of a thousand dollars, and I hope it will be endorsed by this meeting. While many of us are not interested directly, we are indirectly. I hold I am interested in every avenue of industry the same as every other citizen.

MR. COFFIN: While I have no doubt but that this resolution as amended probably will pass—that the resolution itself will pass without question, still I want to say just one word here. It is an easy matter for us to pass resolutions, but it may not be an easy matter for us to get what we want by passing that resolution, unless each one of us take hold and work. I am not afraid but that we can commence with the legislature; this association representing as it does the stock of this State, scattered all over the State, probably every legislator in the House is acquainted with you or some of you—almost every member—and you can reach them either by personal letter or personal interview; and if you will bear this in mind you can secure what we want. We must have them. The fact was brought out here this morning by the Commissioner, that eighty-one million pounds of butter were shipped out of this State last year—gross pounds. Well, now, at a quarter of a dollar a pound, just think of the money that represents—the income that comes into this State, and that income can be doubled if the instructions that we got at that Dairymens' Association could be read by every man or woman that is interested in making a pound of butter in this State. Isn't that so, Mr. Denison?

MR. DENISON: Yes, that's so.

MR. COFFIN: Thousands of farmers are making butter as well as they know how, and if they could get the information brought out at that State Dairymen's Association, it would be invaluable to us all. It is the easiest way to instruct farmers that there is.

MR. TUPPER: One year ago, I came before this body and listened to your proceedings with fear and trembling. This is the great agricultural meeting of Iowa. It was so then and it is so now, but the thing that does me the most good is to see the liberal interests of this convention. You recognize the dairyman's interest and take it by the right hand and whoop it up better than the dairymen can.

MR. BENNETT: The farmers should be unanimous in this. I received a note from Mr. Denison saying he had been invited to go to Waverly. I went and raised the money necessary for the expenses of the convention in not a great many minutes, and every cent of it came from men who were not interested in dairying at all—from men in other lines of work, but interested in the general good of the State. The fact is, we farmers are the ones who kick against helping ourselves.

MR. DENISON: We should ask the legislature for a thousand dollars to pay legitimate expenses of the meeting, if it is necessary, in Iowa, but not in the way of compensating anybody. It is a labor for the whole State, and I think it is not fair or just that one person or a dozen persons should bear the whole expense. I might say that a year ago at the meeting of this association, a committee was appointed to ask for a dairy school in connection with the college at Ames, and one was established there. As a member of that committee, I have spent many nights and days traveling about establishing schools.

Our Dairy Association this year has been incorporated under the name of "The Iowa State Dairy Association," and the officers put under good and sufficient bonds properly approved, and whatever appropriation the State gives us will be judiciously expended for dairy interests—not for the benefit of any one, but for the advertising and spreading widely of information on dairy subjects. I want to say, the most difficult thing we have to encounter in this Dairy Association is this. There may be men and women in the State that think he or she know all about dairying, when it is really one of the most difficult things we have to do. There has been more wonderful progress in dairying than in any other science, excepting electric lighting or electricity, in the last few years. Everybody knows about dairying and a few years ago, they didn't know

anything about it. The more we study, the more we learn that which is useful in regard to it, and I hope this motion to ask the legislature to appropriate a thousand dollars for this purpose will carry.

Motion to ask the Legislature for an appropriation for a thousand dollars in the interest of the Dairy Association of Iowa was here put and carried.

CAPT. JORDAN: A committee on legislation has been appointed to see that resolutions of this Association are carried out at the next Legislature.

MR. VALE: I think the matter Capt. Jordan refers to is this, that perhaps all of the subordinate associations belonging to this great agricultural body have named committees to go before the Legislature in behalf of the wolf body with reference to legislation on the wolf and dog question, and preparations have been made by these subordinate bodies, but the desire is now that this body also name such a committee. Is that what you refer to?

CAPT. JORDAN: Yes.

MR. VALE: It is fit for this body to take such action as is proper.

MR. BLAKELY: It seems to me it is important that this should be done, otherwise, the Legislature looking over the proceedings of our meeting, might gather the idea that we were not very much in earnest. I make the motion that a committee of three be appointed to wait on the Legislature and ask for these appropriations.

Motion seconded.

CAPT. JORDAN: I should rather trust it to a committee of one, as it costs something.

MR. BLAKELY: I remember being appointed several years ago and being told that we would not have to spend more than a day or two to go before a joint committee of agriculture of the two Houses at some room some evening and present the matter. I don't believe it will be very difficult for this committee. I didn't find it so then, and I hope the gentleman appointed from the Sheep Breeders' Association will find it so now.

MR. GABRIELSON: Without intending any discourtesy to the presiding officers, I wish to suggest that I believe it is one of the rules of the Association that the presiding officer should be inducted into office.

MR. VALE: There is a motion pending, and perhaps we had better dispose of that matter first. The motion is that a committee of three be appointed to wait on the Legislature and ask for the proposed appropriations.

Motion seconded and carried.

CHAIRMAN: Keeping in mind somewhat the districts of the State I will appoint Mr. A. J. Blakely from the north, Capt. W. H. Jordan of Des Moines, for the central part of the State, and Mr. J. W. Blackford in the south as that committee.

CAPT. JORDAN: I most respectfully decline to serve for the reason that I can not do so. I can not serve on that committee.

MR. VALE: We will stand by our first conviction, Mr. Blakely from the north, Capt. Jordan at the hub, and Mr. Blackford at the south.

Now, gentlemen, bring on your new material. Will the gentleman making that suggestion bring forward the president elect?

MR. GABRIELSON: Upon further consideration of the matter, Mr. Chairman, I believe I am wrong in this matter. This report is usually brought in at the very last, and the president elect is inducted into office the last thing before adjournment.

MR. VALE: Will some one present Mr. Barclay?

MR. LUCAS: I would ask if the constitution does not require our president to be elected by ballot? I think it does unless it has been changed.

MR. VALE: I believe it does.

MR. LUCAS: Wouldn't it be well to have the Secretary instructed to cast a ballot for his election? I move that he be so instructed.

Motion seconded and carried.

Secretary here cast the ballot of the entire association for Mr. Barclay for president for the ensuing year.

CHAIRMAN: *Gentlemen of the Association*—It affords me great pleasure to introduce to you your president for the coming year, Mr. Barclay. (Applause.)

MR. BARCLAY: I feel that this is taking the advantage of me. I was not expecting anything of this kind, but, gentlemen, I assure you that I appreciate the favor you have conferred upon me; and I also further assure you that I shall do everything in my power to make the meeting of the next year a success and to further the interests of this Association in every way that I possibly can. Again I thank you. I now leave the meeting in the hands of the present presiding officer, as I feel it is his duty to conduct the meeting until its final close. (Applause.)

MR. LUCAS: I now move you that the president be authorized to cast the unanimous ballot of this Association for G. W. Franklin, as secretary and treasurer.

Motion seconded and carried.

President here casts the vote for the entire Association for Mr. Franklin as secretary and treasurer for the ensuing year.

Here by motion the secretary was instructed to cast the ballot of the entire Association for the vice-presidents.

The votes were so cast.

CHAIRMAN: Now, if we are going to go back to some of the discussions we have cut off, we can do it, but allow me to make this announcement: At 7:30 P. M., we are supposed to repair to the opera house on the east side for the purpose of witnessing an entertainment of an hour's duration, specially prepared by the people of this city for the Association, after which we will repair to the banquet hall near by.

Gov. Packard, being called for, responded as follows:

Mr. President and Gentlemen: I have had an opportunity to say everything I wished to before these committees were appointed. These committees have reported and it has been adopted. So far as I can see, everything is in excellent shape. I am very much obliged to you, gentlemen, but I am not one of those who take every opportunity to make a speech, because it is not in my line.

MR. BARCLAY: I see with us to-day Dr. Parsons, from the Bureau of Industry, or State Department, at Washington, and I think we ought to hear from him on matters of interest pertaining to that department. I think the Dr. will be pleased to give us a talk.

DR. PARSONS: *Mr. President and Gentlemen of the Convention:* I do not know what to talk about. I was before the breeders of cattle yesterday, and the breeders of swine yesterday and the day before and they had me talk twice—in the afternoon and evening both. I will tell you when a man has the rope to go as far as he wants to, with such capacity as I have, it don't take long to tell all he knows.

MR. VAN AUKEN: Tell us how they fix those hogs.

MR. PARSONS: The way hogs are fixed is just this way: This is an important business to talk about, the daily pork inspection. Every hog has to have a piece taken out and it must be taken from the right place. Trichina will be found there if any place in the hog. There is likely to be in the tenderloin as any place. A piece must be taken from each of these animals and it must be carried to the microscopic room. There is a man who makes it his business at each slaughtering place, where hogs are slaughtered for export. He takes a little piece out of the diaphram and tenderloin—a box that will hold 108 or 109 rolls, twelve in a roll, like little pill boxes, and one number is taken out and by means of these boxes there is a perfect record kept of them. These numbers are inter-sections and his numbers must agree with those of the packing house. Another man takes these reports to the superintendent and the case is

not opened until the microscoper or whoever has charge of it opens it. It cannot be opened until the party in charge of the microscope opens it. As soon as he has opened and examined it he will set down in a little book, which is tabulated; and if it has trichina, he will mark in one column "Yes," and if not, in the other column "No." When trichina is found it is described thus and so and the number is kept of each examination, and the report of the man who makes the examination and the one who makes up the specimens must agree. One must be a check upon the other; and this is the way the work is done.

MR. VAN AUKEN: There have been a few cattle passed without any examination, or at least the authorities have been accused of passing them without being inspected properly, and they have been traced back to where they came from and the fault found. Isn't that right?

DR. PARSONS: Yes. They make their examination though, after it comes over. We found the charge against our cattle in Europe was wrong, and they have acknowledged it publicly—the scare they all had a few months ago, which was talked over even in the Parliament. Now, this trichina is another matter.

PROF. PATRICK: The doctor has told us how the microscopist examines his samples and marks one found and another not found. I want to ask the doctor how often it is found—in how many cases out of a thousand?

DR. PARSONS: It has been allowed in years gone by, it would run two per cent, or a little more. The chief microscopist in Chicago, a man of large experience in that line, says that you will find now in Omaha, Kansas City, Boston, Milwaukee and Chicago, that that is just about the average as it was supposed to be, probably about two cases in a hundred. I think I have seen cases in Chicago where we examined fifteen hundred hogs and found only about one per cent, and I have found but four in fifteen hundred.

Now, the question was asked, something about dressing the meat. We have had scares in regard to trichina over there, and I recollect in one instance it came back through the various channels to one of the packing houses in Chicago, and it turned out at last to be a canard. The German people want their meat dry salted. It is packed in salt and sent over, and every box of meat has the United States stamp on the back and is nailed down with five nails and the brand nailed over it, and that brand must be on every box. So we are trying to accommodate them as well as we can.

The inspection began a long time before the embargo was lifted, and it was because of the inspection that was commenced at Chicago that Germany lifted the embargo. There is no doubt about that—because it was commenced—they acknowledge that was the reason, they had so much faith in it. We have heard as to the situation. That is about all the reason that there was. It was reported that the threats to place duty on sugar scared them, but that is nothing to us and I think Germany was not so easily frightened. But this argument was put into active operation, that every hog that went to Europe would be inspected microscopically, and it has become a pretty important thing to the farmers. I can not tell you how many have been sent from Chicago. I know that the orders are piling up on some of the packers faster than they can fill them—can not fill them because we can not inspect them faster, and can not enlarge our force and facilities for want of money. There was no appropriation made, but we are examining between two thousand and twenty-five hundred in Chicago each day, and it is done with forty microscopes. Sitxeen microscopes run for two houses in Milwaukee, and Kansas City and Boston are doing their share. Cincinnati put in claims. Armour is slaughtering about ten thousand hogs a day and would like to enlarge his work and so would all of them, but we can not do any more than what is being done. From the way the orders are coming in we ought to have more work done but in inspecting fifteen hundred to two thousand a day at Chicago they are doing more than all the other places put together. Half the cattle that reach the old country would not get there but for the examination that is made.

MR. STOUT: What provision is there, and how is provision made for the expenses of this investigation?

MR. PARSONS: It is done by Congress through the Secretary of Agriculture.

MR. STOUT: Have you any way of knowing how much you need?

MR. PARSONS: He will know by next Congress about how much will be needed, for he will then have had experience and can tell almost to exactness. The appropriation will be increased—there is no doubt about that.

The cost of examining hogs is but in its incipiency. I believe it it figures up now to about five cents a hog. I believe the cost of examining our beef—with all the examination of every animal that goes from the slaughter house, and putting on wire tab—there is one on every quarter that goes abroad—with all this work going on, it only costs about three cents a beef.

MR. ——: And only one in fifty of the hogs has trichina in it?

MR. PARSONS: Something like that.

MR. ——: What becomes of that one hog that is not good enough to go abroad?

MR. PARSONS: I suppose I have helped to eat him, I don't know. I suppose you mean to ask me whether that hog goes into the rendering tank. He is supposed to.

MR. ——: Then this trichina meat isn't sold in the Chicago market?

MR. PARSONS: Not that I know of.

MR. ——: Do you know where such a hog goes to?

MR. PARSONS: I do not, but it is supposed that he goes into the tank. Out of four hundred, you usually find two or three trichina hogs, and I would as soon take them and eat them as any other hog.

MR. ——: I would like to ask when the authorities are enabled to inspect fifteen or twenty hogs a day, how will it affect prices on hogs in the market?

MR. PARSONS: Well, when the farmers of Illinois, Missouri, Iowa and Kansas ship sixty and seventy thousand hogs into Chicago, I will say that you will never get better prices for half fatted hogs. You may have a thousand microscopes, but if you will send sixty or seventy thousand hogs, and you get scarcely five thousand such as will be exported, you can get the price you desire. That is the way it is going now.

MR. ——: You spoke of throwing out two or three out of every hundred of the hogs there?

MR. PARSONS: When the hogs go down the shoot on the run, they pick out such as they want, and they will have orders for thirteen pound hams, for fifteen pound hams, for twenty pound hams, for twenty-four pound hams, and twenty-seven pound hams; and they have to fill those orders even if they have to take a fifteen pound ham and trim it off to required weight. The buyer will sometimes say that they could fill an eighteen pound order, but customers want fifteen pound hams.

MR. COFFIN: At times it seems as if we cannot get hogs small enough, and that is the reason the farmers are sending in these small hogs.

MR. PARSONS: Well, they take spasms in regard to these matters. These hogs are put in bulk and are not kept distinct and separate.

We want the American hog when it goes to Europe to go a respectable hog. We want them to go there so that the people

there may realize that we have something good. We cannot take the trichina out of the hog, but those that are free from it will go and those that are not will not go.

MR. COWNIE: I understand you that sometimes fifteen hundred hogs may be passed and examined and but two or three only be affected. Have you ever noticed that when these hogs get there, certain lots would be entirely free from it while others seem to be more seriously affected. It is a fact taking these hogs in the gangways and those in the house no matter how they have been mixed in the yards, they will gather together in bunches as they have been raised and fed. I have noticed that time and again, that they will go off and separate themselves right off.

MR. PARSONS: I don't know anything about hogs until they are slaughtered. I can tell that the hogs that have the most trichina in them are old brood sows, and the cows that have the most tuberculosus are old milk cows. I cannot tell you how to kill trichina or tubercolosus. I look upon these as a sort of seasoning to the meat. We have been eating them all our lives, and that is the reason we are so healthy. [Laughter.]

MR. BLAKLEY: We have heard considerable about diseases of cattle and hogs, and several sheep men are desirous of knowing whether there is any objection to the introduction of sheep in foreign countries because of disease.

MR. PARSONS: Not that I know of. I have not been inspecting the sheep. I was told that they were inspecting sheep over there, but I don't know it.

MR.———— Are there any insidious diseases that make them objectionable like tuberculosus and trichnia.

MR. PARSONS: I don't know what they are looking for exactly in the sheep, but they can ascertain in a short time whether the meat is affected or not.

MR. ———— Can they detect anything in regard to hog cholera by use of the microscope?

MR. PARSONS: We are not looking for that. Trichina is all that is complained of and all that we search for yet.

GOV. PACKARD: *Mr. President and Gentlemen:*—In the first resolution, I think it was, the convention recommended that the World's Fair provide for stock classes, and I think also that the Secretary should be requested to bring that to the notice of the party in charge of the live stock department at Chicago, Mr. Wm. R. Buchanan. I move that the Secretary be instructed to forward a

copy of the resolutions, also writing a letter transmitting them saying that they were adopted here, and thus present it to his notice.

Motion seconded and carried.

Mr. Coffin: This question that has been sprung and so often referred to about the "Big Four" and about their controlling the prices of cattle, if they do control the prices of cattle, the question is how are we and the farmers all over the northwest and the stock raisers to get out from under that thing. There is a question here, and a very important question to the stock breeders of all countries. At any rate, it is an important one to those who raise animals for meat and one which they should consider. I wish we could have had time to go into that question pretty thoroughly. We, all of us farmers of the state, find a great deal of trouble in disposing of some of our fat cows. We want to dispose of them here at home. We find the price is so low we feel vexed when we are offered a cent and a cent and a half for heifers and cows, and in Chicago, we get nothing for them there. The question is, how are we to get the worth of these animals. It is an important question that concerns every farmer in Iowa. The question in my mind is, is there any foundation for the suspicion of the monopoly combination of the "Big Four." Do they control the prices? Is there anything else that is hurting us besides that? I am aware of those who believe that there is something else hurting us somewhat, but we find this a fact—my friend, Mr. Mott, tells me he just got returns, from cattle he shipped in, of $5.60 and some he sent in a little while ago he got $6.00 for. Is there a combination that hinders us from getting any more, or is that a good price when everything else is considered.

One of my neighbors is a milkman furnishing milk to a town. He tried a year or two ago to raise his own heifers to make his own cows ready for butter. He happend to get on his hands a quantity of undesirable stock and the farmers would not buy them, and he put them in the cars and took them to Chicago where he got from 75 cents to $1.25 a hundred. He says, "I got rid of it." Isn't there some way by which we can get value received for this stock; good, fair, fat cattle, such as we have, to take at the hotels—all that we get is nothing more or less than this cent and cent and a half a pound beef stuff that they buy of us farmers, that is the butchers and the hotel fellows, and the people in town pay ten and fifteen cents for that very stuff. With respect to the combination, where is the trouble? I believe, gentlemen, in every considerable town where there are three or four meat markets, there is a combination that hurts us. There is no mistake about it in my mind. There

is a combination that hurts us. I pay in Ft. Dodge fifteen cents for sirloin steak. Three weeks ago, I was in Brooklyn, New York, and I went into a meat market to buy some meat for the table of my daughter-in-law, and I paid fifteen cents a pound for it. We called for sirloin, and it was magnificent steak. There is something wrong here somewhere. We do not get the value of this beef. that is not really fed to be sent to Chicago. For some reason, we don't get the value. Is there any way for the farmers of Iowa to get out from under this sort of thing? Shall we combine together and open up a meat market in every town? Let us do something of that sort.

Mr. Stout. I wish to offer a resolution to be adopted by this Association to the effect that the next legislature be requested to memorialize Congress to get sufficient money appropriated to the agricultural department at Washington for the inspection of pork for all who may ask it. I desire to offer that as a resolution from this body.

Resolution recorded.

Mr. ———— I would like to add a word to that resolution—the words "those who desire it for the purpose of importation." There is no law for inspecting pork for any other purpose.

Amendment accepted and resolution carried.

Mr. Gove: I wish to shoot in a word or two on the subject of the condition that Mr. Coffin speaks of. I don't know as I have any relief or see any relief, but I think I can see that this "Big Four" or others in connection with that combination were people farseeing enough to see that they could bring about this state of things and reap a profit from it; and in connection with that I will say, that the butchering business has been revolutionized. That is, the selling of meat since they have been sending meat out in quarters supplying local butchers, the butcher business is a half or two thirds revolutionized to what it used to be. The business of the butcher, to gather in cattle and kill them for the local market, was a business carried on with considerable labor and it is certainly a difficult business to kill, dress, and handle beef. On the other hand, this system has enabled men with wide experience to step in and take charge of it who have none of the dirty work to do. If we prefer to get it that way and are able to do so, I don't see how we are able to get out from under their power.

Mr. Wallace: I don't think there is any more important question before this Association, nor do I think this Association can, at this time, formulate any method that will furnish release. Yet, at the

same time, I think we can take some steps to see what is the matter with it. Why not have a "Big Six"—why not have a "Big Four Hundred" equal to Mr. McAllister's in New York. In my mind, that goes to the very core and root of the question. At Des Moines to-day they are selling the meat from Kansas City to the butchers at somewhere from three to four cents a pound per side, dressed weight. The butchers there tell me that it is put down for the simple purpose of running them out, and that they will be obliged to deal in that kind of meat, and then there will be no market for cows within the radius of Des Moines, and I believe it. Now, why is it that four men—there may be five or six, but I don't know—why is it that the combination of a few men who are in that business are enabled to have exclusive control of that business and keep other people out? The body in session at Omaha and which will probably be in session in a few days at Kansas City, will probably be able to tell us what is the true and real reason of it. One reason why there is not a "Big Four Hundred" instead of a "Big Four" is because the railroads give rebate to these men and refuse to give it to the farmers. While they are complaining of the depression of their capital stock and telling about the shrinkage of the earnings and their stories of men dismissed and suffering from lack of operators, it requires all the power of the federal government to keep them from throwing away their revenue and putting it upon a few packers who have concentrated in the business two or three points, and thus enabling these men to get what they please.

I think if you get down to the very bottom of this question you will find that the fault lies right there and nowhere else. Whenever you get equal justice from the railroad interests—whenever you get this system of railroad rebate—there is money in it to make a "Big Four Hundred" instead of a "Big Four," and then you can get competition and now you have practically none. Now, we hear a great complaint against butchers. My complaint is this, that they haven't realized the importance of adapting their business to the times. They haven't in such cities as Des Moines and other cities yet adopted the system in vogue, and they are compelled to place meat at the lowest possible rate. So long as the butcher insists on killing his own meat he must do it at a large cost. Necessarily he must do it at a large expense per beef. I think the whole matter will right itself if we get federal laws with reference to the railroads. Make it so there is no rebate on refrigerator cars to those men who make large shipments and then you will have competition from Chicago, Kansas City, Omaha and everywhere. I understand this "Big Four" have their own refrigerator cars and the railroad companies pay for their use in shipping over their lines. This monopoly demands passes all over the United States for their friends. I understand that in Kansas City there is a paper railroad that has not a mile of track but has seventeen directors, and all of them have passes over all the railroads in the United States because they are railroad people. Now, if you imagine you are rid of all your trouble when you solve the railroad question you are grievously mistaken. You will never have the competition you desire unless you give every man equal justice and forbid, by the exercise of federal law, railroads from giving large rebates to the money interests all over the country. (Applause.)

MR. BLAKELY: I want to ask for information, as Mr. Wallace has investigated this matter a good deal, why is it that our nice fat heifers weighing ten to twelve hundred will sell in Chicago at two and a half and three cents, when steers of the same size and condition will sell for two cents more. Tell us how that comes to be.

MR. WALLACE: I looked over the "———— Messenger" last week and found, for instance, American steers selling for four shillings, I believe, and four pence, and Iowa steers at about the same, and fat heifers at four shillings. Over there fat cows and heifers are a little cheaper. I suppose it might be stated that as four shillings is to four pence, there is about that difference. There would be no dressing. There will always be more shrinkage in the cow and heifer than in the steer. In this country, we make a very wide difference simply because they can do it. The men who backed it can do it. I would as leave eat a heifer as a steer.

MR. STOUT: It seems to me we should deal with this question as intelligent men, taking the conditions as they are. I am a feeder and have to go upon the market. Take the statements made here with respect to the idea of what steers are bringing in Chicago to-day; it is the best brands of cattle that are quoted at $5.50 and $5.60—if a man takes the stock journal and reads the quotations for the week he will find that the bulk of the steers sell for about $4.00, and that only about one in a thousand sells for $5.50 or $6.00. The fact is I hate to sell a twelve or thirteen hundred steer for $4.00 that cost me $3.50, but I have got that to do. Upon my farm, dairy grades of cattle are the profitable cattle for me, but I know that I cannot fail to find a poorer lot of cattle to go into the market with them. The complaints or the complaint of a good many of them are, in my mind, imaginary. After returning from the market of Chicago and looking over the stock there and then

come home and look at my own and my neighbors' dairy stock, I want to say to you that the stock they want these prices for is not worth it. A large part of this stock is bought for dairying and is not good beef and never can be made good beef. While the ups and downs of the market are such as they are with western ranch cattle any man that will go into the Chicago market and look at the conditions as they existed this summer and have several summers past will find cattle coming in from the ranches together with cattle purchased in Iowa after five or six months grain feeding—equal almost in loin quarters and quality of flesh. I say to you as neighbors there is no possible way for you or me to make successful competition against that class of feeding. It is the ranch in this country that affects us as feeders. Now, as to the low price we are getting, we are simply flooding the market with this half fattened product, and we have got to look this question squarely in the face. There are difficulties, no doubt, in the directions we complain of that we might properly investigate but we must do it upon intelligent lines and not let bias and prejudice govern us when we are trying to solve this question.

MR. BLAKELY: My inquiry is not why small hogs sell for more than large ones, or steers for more than heifers, but why we get so small a price for our cattle when such prices as fifteen cents a pound are paid for steak here at home.

MR. COWNIE: The same question has occurred to me and others in quest of information, and I have made inquiry among these men and have also inquired of Swift's head buyer, and he gave me the same reply Mr. Wallace has given—"simply because we can get them." Swift's head buyer admitted to me that a good fat heifer was better than a steer. He said he preferred them himself. "But," says he, "when we go to buy that kind of stock, we can get good steers equally as well and we can get them at about the same prices that we pay for choice heifers and that class of stock, heifers and choice cows—young cows do not enter into competition except with butchers. We take cows and steers and they enter into competition with shippers for the eastern markets. We don't ship heifers east.

Sometimes we have trouble with them mixing them up with the steers but it hardly cuts off all idea of shipping heifers east. Secondly, we are confronted with this fact in selling them to butchers in Chicago: If a heifer should come in season when standing in the yards, when they are fat, they have a great deal of trouble with them and that I think, probably, is one reason we do not realize as much on heifers in Chicago.

I would like to ask Mr. Wallace about the interstate law. We are expecting great things from the interstate commerce law. I would like to know why this law could not be amended so as to reap a greater benefit from it, and that is a matter I have thought about a great deal. The fact is Swift & Armour and the Morris combination own all their own rolling stock. They ship all their own beef east in their own cars. Before this interstate commerce law went into effect those men had rebates. I used to ship stock and I had a rebate and others here probably had. But the "Big Four" own their own rolling stock. They pay the company so much to transfer the cars to New York, Boston, or Philadelphia, so much a car to take it there, they don't give them a rebate, but the way it is done—and I am talking about what I know—the way it is done is simply this; one railroad says, "We will take them cars to New York for $50 apiece." Another road says, "We will take them for $50.00 apiece—we cannot cut on the rates." Another road says, "We will allow you $10 for the use of those cass." Another one says, "We will give you $20 apiece for the use of the cars." Now, how are we going to get behind that? The interstate law cannot touch it in the least. It is not a rebate. They simply pay for the use of the cars and one company can afford to give you but $10 and another one $20. Another company will go and split the difference and come to an agreement that they will allow you $15 a car. We can go to work and build cars. Armour & Swift and those shippers send out carload after carload that way. You will see train after train marked Armour & Swift. They own every car and our interstate commerce law has done nothing at all to keep these men out. Can Mr. Wallace tell us how that can be attempted. This is a point worth consideration by a large number of us because we cannot furnish our own cars.

MR. WALLACE: It is my impression that the interstate commerce, I won't say positively, but it is my impression that the interstate commerce commission has investigated this matter and that the amount of rebate must be reasonable. I presume the rate charged is not material. I cannot state definitely what the ruling was. If you look up the testimony before the grand jury you will see that Swift received fourteen thousand dollars rebate from one railroad in six months. Look up the report of the jury in Omaha and you will find that the bill clerk of one of the railroads has skipped the country. The charge is made that he put in cars at twenty thousand pounds and billed them at thirty-five thousand pounds. That there have been violations of the law is so notorious and open that the grand

jury has been compelled to take it up, but you will never get it righted until the evil is remedied.

It is true that our best stuff sells at five or six dollars and that we have a lot of stuff that is not worth more than a dollar. The farmers have become disgusted with this combination and have quit buying the best bred cattle. If they can get a $25.00 bull they buy it. The cattle in Iowa are no better than they were five years ago. The complaint in Montana is made that cattle raised on the farm are not as good as the cattle on the range. For the same reason they use scrub bulls and the farmers are absolutely panic stricken. They are running away from the steer and they are going to hogs, horses, sheep and anything. They have an idea that corn is never going to be cheap again, and when you have that condition of things, you will get the price as slow as you want to. I don't mean to say that the whole abuse lies with the railroads, but I say the power of oppression grows out of that abuse and they use it to some extent, and you would do the same, gentlemen. There is not a farmer in Iowa but what would do the same. We all have a good deal of human nature.

MR. COFFIN: I have written this resolution so that it will go on record. We have so much worthless stock, and we want to encourage the breeding of better stock. That is what we are organized for. We want to show the farmers of the state where the shoe pinches. I here read resolution.

Resolved. That it is the duty of this Association to agitate the question of "how the farmers can get a fair price for their cattle they have to turn off, that are not such as they would wish to send to such markets as Chicago."

Adopted.

MR. ASHBY: Mr. Coffin asks what the alliance is for if it is not to cure this evil. The explanation does not explain why it is that butcher stuff sells from one to two cents perhaps per pound, with the price of beef such as it is. Mr. Coffin advances the idea that it ought to be made pay by farmers opening up butcher shops of their own. To say that there is a combine in Chicago, and that Kansas City butchers are importing packers and are putting down meat to certain figures, does not do the matter justice. We pay from four to twelve and a half cents a pound for the same meat that we get one and two for. We farmers should undertake co-operative stores. Let us open markets. We have an idea somehow that competition is necessary in business, and if a country grocer starts up at some

four corners, the minute we hear of it we immediately want another store up on the other corner to give us competition in trade.

A friend of mine in the northern part of the state complained that they had but one railroad. He said they wanted another road to give them competition in that line of business, Now, we are all situated that way. Go into every town and there are four or five butchers. I hold the remedy lies in your hands to determine what is a fair price in this matter, and to sift down the buyers and sellers to a point where they can afford to do business and allow you those prices. As soon as they can, you must expect those four or five men to make the profits. Any butcher's shop that sells one beef a day can make the hide and tallow pay costs of butchering.

MR. BLAKELY: I believe we all agree that one of the great difficulties is the quality of the stock. I want to say that it is true that all over the state the farmers of Iowa have for the last half dozen years been using scrub bulls, and feeders declare to me time and again that the last year or two they are finding poorer steers to feed than they found half a dozen years ago, and this because of poor stock. Still, again, this matter holds true that first rate heifers do not bring what they are worth, or what the average steers bring in Chicago. It is true that the railroads are beating us in every way and shape and are violating the law, and it does not seem possible to catch them while running matters in that way. Now, I have come to the conclusion, and I believe a great many other men wiser than I am have come to the conclusion, that the way to regulate these railroads is for the government to own and equip at least a portion of them and conduct them so as to make reasonable earnings, and let the people have the benefit of them; and then if the other fellows that own parts of railroads do not ship at fair rates, the people can take their stuff to some other parallel line, along with the government lines. It is not a new thing—it is carried on in Europe. Through Germany where they have such enormous expenses, they furnish cheap transportation. In Australia, they have cheap transportation; the government runs the Insurance and electric light business, and there is no way by which millionaires can be made, nor paupers, under that system. The corporation business is done by the government for the people, and I believe we must come to that yet.

Here the resolution of Mr. Coffin was put and carried.

MR. COFFIN: This is a very important one. It is a matter that has been overlooked. Gov. Packard called the attention of several

members of the Improved Breeders to it, that there is no class provided in the Columbian Exposition for fat steers. The Government wanted this Association to throw its influence in favor of such a class, and for that reason I have written this resolution:

Resolved that Iowa Improved Stock Breeders Association respectfully ask the Columbian Fair Commissioners to provide for a class of fat steers of both pure bred and grades.

Resolution carried.

Here the meeting adjourned sine die.

REPORT OF COMMITTEE ON RESOLUTIONS.

Resolved, First. That we favor liberal appropriations by the General Assembly to properly represent the State at the Columbian Exhibition, and that the board of control is hereby petitioned to have full provision for fat stock in the premium list, and that $50,000 be appropriated for live stock.

Second. We insist upon an enforcement of section 4042, of the Code of Iowa, relating to adulterations of milk and dairy products, and ask that the dairy commissioner be instructed to enforce it, and that means be provided to that end, and from Congress we demand the enactment of the Conger lard bill, and State control of bogus dairy products.

Third. We favor an appropriation by the State to help in conducting farmers' institutes, and that Senator Vale, Henry Wallace, O. T. Denison and the President of National Farmers' Alliance of Iowa, be a committee to draft a bill.

Fourth. We see no hope of exterminating wolves except through liberal bounties direct from the State, and in the inferest of the growing sheep industry we ask for such bounties, and that dog tax be increased.

Fifth. That the coming General Assembly is hereby petitioned to print the bulletins of the experiment station and make provision for the growth of the Agricultural College.

Sixth. We express hearty sympathy with and keen appreciation of the work of Secretary Rusk in his efforts to clear obstructions from the way of our farm exports to foreign countries.

Seventh. We favor such improvements in railway equipment as will have a tendency to protect the lives of citizens and incidentally increase the comfort of live stock in transit.

Eighth. That in the death of Hon. J. B. Grinnell this Association has sustained an irreparable loss of one who was an enthuastic worker for this Association and its objects, and in every philantrophic cause, that we miss his genial presence and his hearty support in every line of progress.

Ninth. That this Association is opposed to the opening of the Columbian Exposition on Sunday.

Tenth. We watch with interest the progress of suits in the federal court to punish rebates on railways.

Eleventh. That we cordially thank the people of Waterloo for their hospitality and kind attention during our visit.

JAMES WILSON,
O. T. DENISON,
S. B. PACKARD,
HENRY C. WALLACE.

TREASURER'S REPORT.

Iowa Improved Stock Breeder's Association in account with the treasurer for the year ending November 30, 1891.

1890.				
Dec.	1.	By balance on hand per annual report.....	$ 3.72	
1891.				
March	1.	By fees received to date.....	239.00	
		By received from Jos. Steward for vols.....	.50	
		By received from D. A. Peterson for vols.....	.35	

PER CONTRA.

1891.			
Feb'y	10.	To paid C. L. Dahlberg, stenographer	$ 57.30
		To paid Maclean & Co., printing	15.75
		To paid secretary's expenses to Oskaloosa....	20.14
		To paid secretary's expenses to Des Moines, editing the proceedings	19.42
		To postage for December.....	5.86
		To postage for January	4.97
		To postage for February.....	2.09
		To paid Z. C. Luse for missing vols.	5.00
March	30.	To paid Dahlberg for 300 letter heads.....	2.00
April	1.	To postage on 246 vols., report to members..	17.22
		To postage on sixteen copies to press.....	1.12
		To postage for March	.72
		To paid freight on two boxes books.....	1.03
		To paid paper and twine for wrapping.....	.50
		To paid express on letter heads from Des Moines.....	.25

April	30.	To paid postage for April	$ 2.22	
		To paid postage for May	2.00	
		To paid postage for June	2.01	
		To paid postage for July	.06	
		To paid postage for August	3.05	
		To paid postage for September	.56	
		To paid postage for October	4.12	
Nov.	30.	To paid postage for November	2.42	
		To paid postage on programs to members	2.64	
		To paid postage on programs to stockmen	4.00	
		To paid postage on programs to press	.32	
		To secretary's salary for the year	25.00	
		Balance	41.80	
			$ 243.57	$ 243.57

GEO. W. FRANKLIN, *Treasurer.*

LIST OF MEMBERS.

A. M. Adams,.....Humboldt
N. B. Ashby, Editor of Farmer and Breeder.....Cedar Rapids
J. T. Ames & Son.....Traer
E. C. Bennett,.....Tripoli
J. G. Brown, Pork Producer.....Marshalltown
B. S. Brownell,.....Independence
J. A. Bennett,.....New Sharon
J. T. Brooks,.....Hedrick
C. S. Barclay, Short Horns and Poland Chinas.....West Liberty
J. G. Brown, Clydes, Poland Chinas and Short Horns.....Solon
A. J. Blakely, Short Horns and Merino Sheep.....Grinnell
L. Brodsky, Short Horns.....Plover
H. B. Barney, Holstein Cattle.....Hampton
A. M. Bingham.....Jesup
H. H. Brownell, Short Horns, Poland Chinas, Hampshire sheep.....Vinton
W. A. Bryan, Short Horns.....New Sharon
J. W. Blackford, Herefords and Poland Chinas.....Bonaparte
Richard Baker, Jr., Short Horns.....Farley
W. A. Bryan, Short Horns.....Montezuma
Bowdish Bros.....Waubeek
B. T. Barfoot.....Ridgeway
C. M. Baxter, Draft Horses and Short Horns.....Lewis
Prof. C. F. Curtiss, Assistant Director State Experiment Station.....Ames
L. S. Coffin, Short Horns and Shropshire sheep.....Ft. Dodge
John Cownie.....South Amana

J. A. Craver.....New Sharon
Wm. Cook & Son, Short Horns, Cotswolds and Chester Whites.....Marion
T. J. Close.....Jesup
Allen Cocroft.....Independence
F. N. Chase, Secretary Columbian Commission of Iowa.....Cedar Falls
C. B. Campbell.....Waterloo
C. Cadwalder.....Waterloo
D. M. Clark & Son.....New York
Hon. Edward Campbell.....Fairfield
D. D. Donnan, Clark's Horse Review.....Chicago
O. T. Denison.....Mason City
D. S. Day.....Humboldt
F. A. Decker.....Waterloo
C. L. Dahlberg, Stenographer.....Des Moines
G. W. Dickins.....Hedrick
H. T. Dildine.....Kinross
J. C. Frasier, Short Horns, Oxford Sheep.....Bloomfield
P. F. Freeman.....Independence
W. O. Fritchman, Shropshire Sheep.....Muscatine
G. W. Franklin, Cotswolds, Chester Whites, Light Bramahs.....Atlantic
A. Fallor, Fallor's Tabulated Stock Register.....Newton
J. C. Frazey, Short Horns and Poland Chinas.....Shelby
B. F. Gove, Roadsters, Short Horns, Poland Chinas.....De Witt
C. H. Gelo, American Farmer.....Rockwell
C. L. Gabrielson, Short Horns, Shropshires.....New Hampton
C. Gilchrist, Short Horns and Poland Chinas.....Walker
W. F. Harriman.....Hampton
H. W. Hammond, Poland Chinas and Poultry.....Waterloo
M. Hoover.....Goldfield
J. D. Herrick.....Fredericksburg
Eli Hoover.....Waterloo
D. F. Hoover.....Waterloo
C. E. Hartly, Shropshire Sheep.....Monroe
H. T. Homer.....Waterloo
P. G. Henderson.....Central City
H. D. Holister.....Audubon
James Hamand.....Schaller
G. Jaque.....Traer
W. H. Jordan, Importer of Shropshire sheep.....Des Moines
Jordan & Dunn, Short Horns and Poland Chinas.....Waubeek
J. S. King, Short Horns.....15 Mile Grove
L. L. Kleinfelter, Ed. Farmers' Institute.....Mason City
Prof. D. A. Kent, Professor of Agriculture.....Ames
H. B. Kelley.....Vinton
A. J. Lytle, Poland Chinas.....Oskaloosa
W. M. Lambing.....West Liberty
E. W. Lucas.....Iowa City
O H. Lyon, Short Horns and Poland Chinas.....Rockford
Hon. Wm. Larrabee.....Clermont
Albert Lufkin, Roadsters.....Newton

Hon. W. O. Mitchell.....Corning
W. P. Miller.....Bristow
W. M. McFadden, Secy. Poland China Record.....West Liberty
S. A. McCandless, Short Horns, Poland Chinas, Cotswolds.....Belle Plaine
P. McCusker.....Ossiam
Hon. John McHugh, Short Horns.....Cresco
W. R. Matthews & Sons, Roadsters and Short Horns.....Sully
D. Mott.....Eagle Centre
C. Murdock, Poland Chinas.....Waterloo
Hon. Oliver Mills.....Lewis
F. A. Miller.....Shelby
W. W. McClung, Poland Chinas.....Waterloo
J. W. McMullin.....Oskaloosa
Wm. McLoud, Berkshires and Light Brahmas.....Keota
G. W. McKay, Holsteins and Chester Whites.....Geneseo
J. C. Norton.....Wilton Jc.
C. W. Norton, Short Horns, Poland Chinas and Shropshires.....Wilton Jc.
John Osborne, Short Horns.....La Porte
D. J. Patton, Cheese.....Hampton
J. H. Page.....Geneva
Hon. S. B. Packard.....Marshalltown
M. K. Prine & Son, Short Horns and Berkshire swine.....Oskaloosa
F. R. Payne, Poland Chinas.....Kalo
Prof. G. E. Patrick, Professor of Chemistry.....Ames
August Post, Draft Horses, Holsteins, Sec'y. State Alliance.....Moulton
Chas. G. Rogers, Short Horns.....Grundy Center
J. W. Richards.....Waterloo
R. Redman, French Draft and Short Horns.....Leighton
C. F. Robe.....Jesup
Gen. L. F. Ross, Red Polled Cattle.....Iowa City
J. J. Smart.....Dakota City
J. M. St. Clair, Short Horns and Grade Percherons.....Mt. Auburn
Geo. W. Snoor.....Mt. Auburn
A. V. Stout.....Parkersburg
Dan Sheehan & Sons, Short Horns.....Osage
L. Smith, Short Horns, Poland Chinas, Cotswolds.....Keystone
F. A. Shaffer.....Campbell
S. H. Shepperd.....St. Anthony Park, Minn.
R. P. Speer.....Cedar Falls
John R. Sage, Director Iowa Weather Service.....Des Moines
John R. Shaffer, Sec'y. State Agricultural Society.....Des Moines
Horace Sanders.....Iowa City
S. S. Sessions.....Algona
H. I. Smith, Short Horns and Poland Chinas.....Mason City
S. H. Taft.....Humboldt
A. C. Tupper, State Dairy Commissioner.....Osage
Robert Thomas, Merino Sheep.....New Sharon
O. P. Thompson, Holsteins.....Hampton
W. H. Taylor.....New Hampton
W. H. Vaughn, Chester Whites.....Marion

Hon. B. R. Vale, Holsteins, Chester Whites.....Bonaparte
L. M. VanAuken, Poland Chinas.....Mason City
J. Vannatta.....
Geo. VanHouten, Red Polled Cattle.....Lenox
J. W. Wadsworth.....Algona
Henry Wallace, Editor Homestead.....Des Moines
H. C. Wallace.....Orient
Barnett Wilson, Short Horns and Cotswold Sheep.....Earlham
Simon Wagner.....La Porte
C. Wilson.....Earlham
John Wingate.....Burr Oak
E. Watenpaugh.....Sumner
Prof. James Wilson, Professor of Agriculture.....Ames
L. M. Wallace.....Vinton
Robert Walthall & Son, Short Horns.....Corning
G. H. Whitcomb, Choice Stock Farms for Sale.....Northwood
W. H. Withington, Holsteins and Poland Chinas.....Toledo
W. P. Young, Short Horns, Poland Chinas and Shropshires.....Mt. Pleasant
P. H. Bendixen, Holstein Cattle.....Gilmore
B. S. Brown.....Hampton
Dr. J. C. Shrader.....Iowa City
Geo. Morse.....Bradford
B. R. Bohart, Red Polls.....Elvira

APPENDIX.

APPENDIX.

SHORT-HORN MEN AND SWINE BREEDERS MINGLE.

The Iowa Short-Horn Breeders' Association and the Iowa Swine Breeders' Association met in joint convention at Waterloo, on Tuesday morning, December 1, with Mr. W. M. Lamming of the *Iowa Homestead* temporarily in the chair. The opening paper was read by Prof. C. S. Curtiss of Ames, on the subject, "Feed and Care of the Sow and Litter," and it awakened a discussion which occupied the remainder of the session. In the afternoon President C. Murdock, Waterloo, of the Swine Breeders' Association, delivered an address of welcome chiefly directed to the swine breeders whose business he characterized as an industry which had done more in paying off farm mortgages and educating families than any other in the State. He found especial cause for felicitation in the fact that at the last great swine show at Des Moines, the greatest collection of swine ever assembled at a fair, Iowa hogs won two-thirds of the premiums, and he closed with a brief eulogy of the remarkable resources of the State.

"The Iowa Hog" was the topic of a short paper by Mr. F. R. Payne, Kalo. This he declared to be, like Joseph's coat, of many colors. He is symmetrical in form and has a history which is recorded in his pedigree. He is the product of brains in breeding, is docile, easily managed, and has good hog sense. He represents much money; the total value of the hogs shipped to market from Iowa farms for the past year was $19,398,549, and taking into account the number killed by local butchers and farmers the total value of the hog product for the year was not less than $25,000,000, not including the extensive trade in pure bred swine. The Iowa hog, more than any other farm animal, represents the comforts and luxuries of life, and the future before swine breeders is very encouraging

"The Breeder's Mission," as seen by Mr. L. M. Van Auken, Mason City, is to improve the blood of the best animals he can secure until they can be relied upon to produce something better than themselves. He should study his markets and furnish his customers with the sort of stock they demand and at living prices. He should study the value of feed and its economical administration and should attend such meetings and institutes as will keep him posted in his industry, and he should be willing to impart his information to others. The breeder himself should be a thoroughbred by birth, and whatever stock he keeps on his farm other than that of which he makes a

specialty should be of high character also. He cited briefly the work of some Iowa breeders and pointed out the successes which they have attained.

Dr. F. E. Parsons of the United States Department of Agriculture then spoke at some length, describing the system of inspection of cattle and hogs carried on at leading markets by the department and setting forth the necessity and value of such inspection to the export trade. Among other statements of interest was that to the effect that the examination for trichinæ is revealing about the same per cent of diseased hogs as had been found by former investigators in this field. Iowa furnished more than one-fifth of the export cattle which go through Chicago, as he had found on an examination of the records. An interesting description of the methods of cattle and hog inspection closed the address.

"Origin and History of the Jersey Red Hog," was the topic discussed by Mr. Wm. Roberts, of Paton. He traced the history of this breed from its origin through its evolution from a hog, essentially coarse, to the Duroc-Jersey of the present day, which he declared to be the equal in all respects of the older established breeds.

At this point in the proceeding the Short-Horn breeders took charge of the conduct of the meeting with President Daniel Shehan, Osage, in the chair, and Secretary C. W. Norton, Wilton Junction, at the table. Excerpts from his address are submitted: * * * Can any one name any branch of farming that has paid better for the last year than has the breeding of the right kind of Short-Horns? Just compare the price of good Short-Horn beef with the price of all other kinds of farm produce, and taking the price of production into consideration shall we not find that the balance is not against the "red, white and roan?" Did any of you gentlemen ever know a time when the proceeds of the sale of a good herd of Short-Horns would buy more of the necessaries and luxuries of life than at the present time? Just think of two hundred pounds of beef getting a suit of clothes good enough for any granger to wear on a trip around the world. Or did you ever before see the time when three pounds of good Short-Horn butter would buy nineteen or twenty pounds of the best granulated sugar? It will do it in my town to-day. But some may say: "You cannot make more than a small quantity of butter from Short-Horn cows." Why, sir, the Short-Horn cow, through her grades and crosses, is giving us 70 per cent of the butter consumed in America to-day. And I stand ready to state before any audience that a large proportion of our Short-Horn cows are first-class milk and butter cows. I am milking on my farm at present six full-blood Short-Horn cows. Four of them came in last April, one in May and one in October. Since that time they have averaged about one pound of butter per day, and this without a pound of ground feed during the time. We have always thought that such cows were at least fair butter cows. Now, as far as beef-making is concerned, I suppose that most men are willing to concede that the Short-Horn is a good beef animal. In this connection I will give a piece of personal experience. Last spring we put thirteen three-year-old steers into the feed lot on the 6th of April. They averaged at that time 1,130 pounds. After the first ten days they had all the corn they would eat, also good hay until the 25th of May, on which day they were sold, and weighed on an average 1,302 pounds, a gain in forty-nine days of 172 pounds, or three and five sevenths pounds per day. In the same lot was a four-year-old

heifer that, after raising her first calf, failed to breed. She roughed it all winter with the store cattle, was put in the feed lot at the same time the steers were, and at the end of forty-nine days was sold for $60.40; yet we had an ex-governor at Waverly a few days ago who said you could not have beef and milk combined in the same animal. In view of such facts as these, and such incidents may doubtless be found all over the State, I believe we are justified in saying that some branches, at the least, of the Short-Horn business have paid. * * *

Mr. Richard Baker, Farley, formulated his ideas on "Raising and Development of Short Horn Cattle for profit by Natural Law." He emphasized the basal necessity of a good sire. Then the calves should be raised by hand and the yearlings made good feeders if they had not been stinted. He had known the Short-Horn-Ayrshire cross to give good results, and had a good word to say for Devon beef. Stunted cows should be avoided in the breeding herd. Calves should not be allowed to run with the cows, and the objections to this system on the part of both the cow and the calf were stated in Mr. Baker's succinct manner. Shade, grass and water are prime factors in this development for profit. All animals should have two acres of grass per head, and eighty bushels of fodder corn makes fine, fat flesh with outdoor feeding. Stockers should have corn, one feed a day for one hundred days, and fodder corn is just the thing for them. They should be finished off with shock corn fed on grass land on the ground. Never overfeed nor underfeed. Hay and straw at noon and water and salt were all comprehended in this natural method of feeding; or corn on the cob may be fed in finishing. If the corn is too hard to be crushed by the teeth of the feeder, it is too hard to be fed to the cattle. He emphasized the necessity of shelter, and thought a wooded hillside best. Dry beds must be provided. This system only includes two parties—the land-worker and the feeder. There are no middle men—millers and the like. The man raises corn and grows grass and turns it into his cattle, and thus farms and feeds on horseback. He laid special stress upon letting grass grow. The only way to have grass is to grow grass. Pastures cannot be grazed bare and make beef.

The discussion of the feeding subject was prolonged. Mr. C. S. Barclay, West Liberty, testified that with corn at thirty cents and oil-meal at $22.00 per ton, many feeders in his vicinity had sold corn and bought the oil-meal, and after a trial could not be induced to change the practice of finishing off with oil-cake. Secretary C. W. Norton had sown flax with oats and obtained a fine ration in the combination. He used two or three quarts of flaxseed per acre. Mr. Gabrilson had a good word to say for running oats through the cutting-box. President Shehan had never been able to make as good gain on cattle with corn and stover as with corn and clover hay, together with a little oil-meal, bran, etc. Col. E. W. Lucas, Iowa City, thought that flax and oats together would draw too heavily on the fertility of the field. He preferred growing clover. With this discussion the afternoon session was brought to a close.

In the evening Mr. Gabrilson, New Hampton, took a very conservative position in treating of the "Silo for Economy and Comfort." After four years' experience he said of the silo, "With all thy faults I love thee still." Everybody who had a silo could have just as good results with it as are reported from the experiment stations, but all farmers were not able to take

such care of their corn-fodder as was given that at the stations which has been fed in trials against silage. By comparing the different steps in the preparation of corn-fodder and silage respectively from the growing corn he demonstrated the economy and comfort of the silo on the farm. He closed with a quotation from Prof. Henry: "The silo is a short cut in the problem of saving the corn crop."

Mr. Barclay was by no means convinced of the soundness of Mr. Gabrilson's position. He stated that he runs his corn, ears and all, through the cutter and it packs closely without heating and is all eaten without waste. President Shehan was not yet a convert to the silo. He cuts his corn, binds it with twine, shocks it and then stacks it. If the corn is cut and cared for properly it is all right and will all be eaten. Twenty hills are put into a shock and he stacks it as high as these shocks can be pitched from a wagon just as small grain is stacked. This statement called out from Mr. Coffin and others that it must be mighty small corn or mighty big men if twenty-hill shocks were pitched to the stack. Mr. Shehan said the corn was big Iowa corn and with two to four stalks to a hill such a sized shock could be easily handled by an able-bodied man. He did not believe that farmers could afford to go to the expense of putting up silos and buying the necessary machinery to fill them. Col. Lucas has had great success in feeding colts, and yearlings on corn-fodder and clover hay, the latter one feed a day. He declared that farmers have been letting go to waste hundreds of thousands of dollars in their corn-fodder. Prof. Curtiss thought that the feeding of corn-stalks, clover hay and winter pasture was the secret of a great success which most farmers had not yet got hold of. It is generally supposed that winter pasture is not a success, but if the grass is left to grow in the summer fall stock can graze it all winter. In that way horses and sheep especially can be wintered more economically and better than in the stable.

Mr. Barclay made a brief report of the late Fat-Stock Show. It was one of the most profitable and instructive of the series of exhibitions, he thought, and he complimented the management on the arrangement of the exhibits and the conduct of the show. He reviewed the Short-Horn classes and declared the ring of two-year-olds the best exhibit of the entire show. He was ashamed of the part Iowa played in this show, as only two steers were sent from the State. He did not think that Mr. Harrah's steer should have been beaten by the one which was placed over him, but thought that the third premium steer might well have been placed first. He believed that it was a great mistake to send a judge the first thing into one of the best rings of the show. He should get his "working clothes" on first by working over some of the less important classes. Short-Horns are always first on the list and therefore always suffer from the first day's judging before the judges get down to business. He did not think any man was competent to do his best work until he "got his hand in a little" at it. After all, the judging on foot is merely theory which has not panned out on the block.

Mr. Coffin recurred to the subject of feeding. Time was when people thought they could not raise Short-Horns without stuffing them on "gingerbread," but they have learned better. Many do not yet understand the value of winter pasture. When he goes through the State after the last of September he finds the cattle roaming over bare pastures or shut up in yards

and fed with hay, and they thus waste away until corn is husked, when they are turned into the fields and gorge themselves on stalks. In October his cattle were in better shape than at any time during the the summer. The blue grass in the timber that they would not eat in the summer kept growing, and now they are eating that and are rolling fat—in fact first-class beef. The great thing to learn is not to overstock pastures. Farmers should have more feed for cattle where they can go and get it without so much labor in feeding. Iowa farmers must have more pasture.

An address on "Cattle and their Diseases," by Dr. Parsons, closed the exercises for the evening. In the morning, the Short-Horn breeders being in separate session, "What I Know About Short-Horns" was told by Mr. William Cook, of Marion, in a brief paper reminiscent of his early experiences with the breed. The appended will interest:

* * * From the observations and experience for a period of over fifty years I am led to the conclusion that the Short-Horns are and ever will be the farmer's cattle; that the men who raise and feed the cattle that make the choice beef of the world, whose herds number from one to five or six car-loads a year, almost universally raise Short-Horns; that to cross a Short Horn on any other race of cattle he improves them. Put a Short-Horn bull to a Hereford cow and the offspring is an animal of finer points and of earlier maturity; to an Angus or Galloway, a greater weight of carcass and a finer quality of beef; to a Holstein-Friesian, the produce is a smoother and larger animal, and if a cow richer milk; to a Jersey and you get largely increased size and a larger flow of milk, and of equal richness of the pure Jersey.

Notwithstanding the boom that has been given the other beef breeds, the Hereford, the Angus and Galloway, by millionaire bankers, merchants and retired insurance men, the Short-Horn holds the proud position of twenty-five years ago, and to-day seven eighths of the best beef cattle in the State of Iowa are Short-Horns and their grades, and over sixty per cent of the tops that go to the Chicago market from all parts of the country, cattle that sell for four cents or upward, are of Short-Horn breeding. And although Mercedes and Mary Anne of St. Lamberts have made such phenomenal yields of milk and butter, thereby giving the Holstein-Friesians and Jerseys such a boom as dairy cows, the fact remains that more than three-fourths of the cows in our State that furnish the milk for the creameries and private families, from which such great quantity of the very best butter is manufactured, are of the Short-Horn family. * * *

President Shehan pointed out the wide distribution of the Short-Horn cattle and the important part they play in the farm economy of milk and beef production. Mr. S. T. Spangler, Aurora, reviewed the history of the leading markets of the country for many years past, which is a record of the domination of Short-Horn blood in the improved cattle of the country. They are the gold coin, the rock-bottom of all cattle-breeding, he said. He had found a dash of the Cruickshank blood always produced improvement in the milking qualities.

At this point the committee on resolutions presented its report through its chairman, Henry C. Wallace, Orient. The Association's sentiments were thus voiced:

1. *Resolved*, That we appreciate the honor done us by Secretary Rusk in sending a special representative to our meeting, and we are grateful for the courtesy both to the department and Dr. Parsons, who so ably represents it.

2. *Resolved*, That the gratitude of the cattle-growers of America is due to Secretary Rusk for his earnest and far-reaching efforts for the opening up and development of foreign markets for American live stock and cereals, and we earnestly recommend to Congress the necessity of appropriating sufficient funds to still further extend these markets.

3. *Resolved*, That we enter our most emphatic protest against the indiscriminate slaughter and tanking of lumpy-jaw cattle, as practiced by the so-called Illinois Board of Live-stock Commissioners at the Chicago market. That their course is wholly unjustifiable is proved by the universal experience of life-long stock-growers and also by the most competent scientific testimony as to the nature of the disease.

4. WHEREAS, The live-stock industry is one of the greatest importance in Iowa, and should be fitly represented at the Columbian Exposition.

5. *Resolved*, That we ask the Iowa Legislature to devote not less than one-sixth of the entire amount appropriated for the Iowa exhibit to the live-stock interests.

6. *Resolved*, That we request the State Board of Agriculture to offer liberal premiums in the stock departments, especially of cattle, for exhibits shown at the State fairs in 1892 that are intended to be carried over for exhibition at the World's Fair in 1893.

7. *Resolved*, That the State Board of Agriculture be requested to give the question of expense to exhibitors of stock serious attention.

Referring to the third resolution Mr. Wallace spoke strongly on the subject, denouncing the authorities for the indiscriminate tanking of every animal which comes to the yard with a lump on its jaw, whether it is the disease actinomycosis or merely the result of a blow, and he thought that the association could not speak too strongly in condemnation of this sort of robbery. Mr. Barclay explained the seventh resolution by saying that the expenses attendant upon an exhibition of stock at the State fair were entirely too high on account of railroad rates, entry fees, stall rents, and feed bills, and this condition had resulted in driving from the cattle department especially nearly all Iowa exhibitors. Mr. Donnan, of *Clark's Horse Review*, declared that no corporation in the country could do business on so profitable a basis as the State Board under its present system of high fees. It charges more tolls upon its exhibitors and returns them less in premiums and purses than any association of the kind, so that it is no wonder it makes money. A reform is very much needed. Upon motion of Mr. Barclay a committee of two—later named by the President as himself and Secretary Norton—was appointed to bring this matter to the attention of the board and ask relief.

In discussing "Iowa's Interest in the World's Fair" Mr. Barclay merely suggested that the State Board of Agriculture and the Legislature should make appropriations for the purpose of defraying the expenses of Iowa exhibitors of live stock. After thanking Secretary Norton for his work in connection with the Association's cottage on the State Fair grounds, officers were elected as follows: President, Daniel Sheehan, Osage; Vice-Presidents: L. S. Coffin, Fort Dodge; Wiley M. Fall, Albia; M. Flynn, Des Moines. Secretary-Treasurer, C. W. Norton, Wilton Junction. Directors: R. A. Matthews, Sully; W. W. Vaughn, Marion.

In speaking of the present condition of the industry Mr. Barclay stated that he had never had so many inquiries for bulls—good bulls, for everybody is asking for prices on that kind only. Good bulls are very scarce, he thought, and he believed that the outlook was never better for breeders of meritorious Short-Horns. After the transaction of some routine business final adjournment was ordered.

A SESSION OF THE SWINE BREEDERS.

The Swine Breeders' Association held a separate session on Wednesday, at which a paper entitled "Pure-Bred Hogs for Pork" was read by Mr. W. M. Lamming. It will be given in a future issue. The disscussion which followed took the form of a general "talk around," which has become a distinguishing and favored feature of every gathering of swine-breeders.

The committee on resolutions reported the following, which were adopted.

Resolved, That the work of Secretary Rusk, in extending the foreign markets for American live stock and cereals, deserves our strongest commendation, and that Congress should place at the disposal of the secretary ample funds to facilitate the further extension of these markets. More especially is money needed to increase the inspection of pork, and enough should be supplied to place inspectors at every point where a demand for them exists.

WHEREAS, The live stock industry is one of the most prominent in the State,

Resolved, That our State Legislature be requested to appropriate ample funds for the purpose of encouraging the exhibit of Iowa live stock at the Columbian Exposition; and your committee suggests that a committee of one be appointed by this association to look after this matter during the next session of the Iowa Legislature, and that this association appropriate means to pay the legitimate expenses of said committee.

WHEREAS, Experiments in the inoculation of hogs as a safeguard against cholera have been attended with reasonably successful results,

Resolved, That our State Veterinarian be instructed to carefully investigate this subject, and if further experiments now in progress should terminate favorably, we respectfully ask our legislature to establish a bureau of inoculation which shall be free to the farmers of the State who show themselves competent, after instructions, to use its virus for the purpose of inoculating their hogs, and that sufficient appropriation be made from the funds of the State to cover the necessary expenses.

Resolved, That a committee of one be appointed by this association to cooperate with the Iowa Columbia Board in working up the swine exhibit at the Columbian Exposition, and whose duty it shall be to see that there is a worthy exhibit of Iowa hogs.

In pursuance of the suggestions in the foregoing, Mr. A. J. Lytle, Oskaloosa, was appointed as legislative committee, and Mr. W. W. McClung, Waterloo, was named as committee to co-operate with the Iowa Columbian Commission.

IOWA SHEEP BREEDERS' AND WOOL GROWERS' ASSOCIATION.

This Association met at Waterloo December 2d at 9 A. M., President Franklin in the chair. The attendance was good. Minutes of the last meeting were read by the secretary. The president excused himself from giving an address, as the prepared document was left at home, but he was glad of the mistake, as several excellent papers were awaiting the attention of the Association.

W. O. Fritchman, of Muscatine, first on programme, read a paper entitled

MIDDLE WOOL SHEEP.

Mr. President and Gentlemen of the Iowa Wool Growers' Association—I am proud to stand before you to-day and be a member of this Association. In endeavoring to discuss the subject which has been assigned to me, which is that of "The Middle Wool Sheep," I shall confine myself to the breed with which I have had the most personal experience. I presume the middle wool sheep will take in all the Down families. My experience in sheep breeding has been principally with the Shropshire Downs. This breed, I presume, needs no introduction to an intelligent sheep man. The Shropshire breed, as well as others of the Down families, have attained a remarkable popularity within the last few years in all parts of the United States, and is now considered the most valuable breed for the combined production of mutton and wool. In selecting a breed from which to start my flock, my desire was to select one best adapted to the wants of the market and to my surroundings. I felt quite certain, after some years' experience in breeding the Shropshire, that I have not gone amiss in selecting this noble breed, which I believe stands second to none in the combined production of mutton and wool. The qualities which have given them this eminent position are not alone their aptitude to produce great weight and quality of both wool and mutton, but they are very prolific, good nurses, and readily adapt themselves to almost any locality where any breed of sheep can thrive.

Another good quality of this breed is that they cross well upon other breeds, especially on grade Merinos. No doubt there are men in my presence that would say a cross between the Downs and Merinos would make an excellent sheep for both wool and mutton, yet they would be something like the man we have heard about who said, "Bran and sawdust was good to feed a cow, but the more bran there was in it the better." So I presume that some of you feel that the more Merino blood there is in the sheep the better; while we feel that the Shropshire will take the place of the

bran, yet I believe there is ample room for all breeds and have the utmost faith in sheep breeding as a means of profit.

I believe that we are to enter a more healthy period for sheep breeding than ever before known, and believe that sheep husbandry, where surroundings and other things are favorable, entered upon thoughtfully and earnestly, is our most profitable department of farming. I firmly believe that our State of Iowa is as well adapted to the raising of the "golden hoof" as any State in the Union. My experience with the middle wool sheep has been very satisfactory, as I have found them good feeders, mature early, and command the highest prices in Chicago and eastern markets. I shipped a load of grade lambs last December, which came mostly in March and April, that averaged a little over one hundred pounds in Chicago.

One year ago I raised one hundred and forty-five per cent of lambs. This year I had a better per cent, but lost more lambs. I saved, however, about one hundred and twenty-five per cent, and received for my straight medium wool twenty-four cents. This wool is also a quality which is sought for and commands highest prices.

The middle wool sheep are filling a long felt want in the hands of the farmers of this country, and since sheep husbandry has ceased to be profitable entirely for the production of wool, it has been necessary for those who are raising sheep, especially for the wool, to pause and see whether it will pay them to continue this business or to dispose of their flocks. But the middle wool sheep have come to our rescue and it is no longer a question with us whether to continue or not, in the raising of sheep, as we have in these, a sheep that is nearly if not quite as good for wool and far superior for mutton. My reasons for favoring the middle wool sheep in preference to the coarser, is that they are less liable to catch dirt and chaff, as they are of a denser fleece, which is more easily kept clean, also the exposure to fog and rain does not affect their general appearance near so much. If you happen to go onto the market with a load of sheep in damp weather, the medium wool sheep will present a far better appearance. As it is with horses, so it is with sheep, the general appearance and cleanliness has much to do with their selling.

I have noticed, from personal observation in the stock-yards, that there is no class of butchers' stock that the general appearance adds so much to the selling value, as the sheep or lamb, and I am confident that there is no breed of sheep that can be exposed to rain and mud, that can go on the market and present as good an appearance as the Downs, and I verily believe that this is one of the many reasons why the Downs outsell all other breeds of sheep for mutton.

And now before I close to give the floor to older and more experienced members of this society, let me add just one more advantage that we can justly claim over the breeds of both fine and coarse wool sheep. We do not need to exert ourselves near so much to find points in favor of the middle wool sheep as our opponents do, and of course do not require near so much talking in order to sell a sheep.

Questions asked, elicited the facts that Mr. Fitchman kept over three hundred head, but divided them into several flocks. He fed ewes' suckling lambs, roots, clover hay and bran, and commonly raised one hundred and twenty-five lambs from one hundred ewes. Lambs came in March and

April and were weaned in July. He did not succeed in getting lambs to eat much meal or grain till after weaning. Immediately after weaning he kept lambs up a few days on dry feed to get them to eat grain, and afterward gave them good pasture and access to the corn fields as soon as the corn was in roasting ears, to clean up the weeds. He kept up the grain feed of oats and some corn bran, and oil-meal. About Christmas wether lambs weigh one hundred pounds. Last year at Christmas a carload brought $7 per hundred in Chicago. The flock average nearly eight pounds of wool.

Mr. C. L. Gabrilson, of New Hampton, read the following paper on "Care of Sheep."

CARE OF SHEEP.

Mr. President—Fellow Sheep Men:—Your secretary has invited me to prepare a paper for this meeting, and although in writing to me he did not say it in so many words, he intimated that something with a sheep or wooly flavor was wanted, which would stir up your quiet, easy-going sheep men to lift up your voices in protest or confirmation of what may be said.

Now, I am a mild-mannered man myself, but for the good of the order I'll try! So here goes.

In all ages and wherever sheep are cultivated, they have been held up a emblems of honesty and sincerity, and the man who is much among his flock should grow in these graces, so that in my address there must be nothing which might be construed into my being here to fleece you, nor even to pull the wool over your eyes.

So, then, instead of bringing to your notice the merits of that particular kind of sheep which has proved profitable for me, I will speak of

The Care of Sheep.—Since all breeds have the same characteristics regarding likes and dislikes, quality of wool, fecundity, and habit of growth are results of the breeder's skill in selecting, coupling and feeding. The truth is, although as sheep men, we are enthusiastic over our flocks, neighbors, while admitting the utility of an animal whose hoof is golden, are exceedingly slow to introduce it on their farms; and while the dog nuisance is sometimes given as a reason for not entering this industry, "I'm not fixed for sheep," is almost the stereotyped answer when this matter is discussed. Now we can sympathize with such, for were in the same fix, and found that, like Horace Greeley's plan for the resumption of specie payments, "The way to resume is to resume!" So in getting ready to keep sheep the way is *to keep sheep*, and then you must provide the means for their care.

Fences.—Sheep are more easily fenced against than hogs, because they do not root, but a bunch of sheep is an unhappy flock if ill fed. Five or six barbed wires, the bottom two four inches apart, the next one five inches above, the next eight inches, and top wire about three feet from the ground will keep sheep and lambs confined. But, in order to have this arrangement satisfactory the fences must be snug and shipshape from the start in spring or it will be hard for them to forget the open places. Then, too, the well-fed animal is seldom breachy, except from habits learned under other conditions.

Results of Feeding.—Sheep digest their food more thoroughly than most farm stock, and therefore require less grain or hay to produce satisfactory results. There are not many experiments on record of sheep feeding. The latest which has been given out comes from Madison, Wisconsin, and there the lambs outgained pigs in growth and economy of food, which is a wonderful fact when we take into account the well known appetite and quick digestion of the growing pig. But the advantage in favor of sheep above other animals is its continued and complete digestive power through life, as compared with swine and cattle after maturity.

Sheep Suffer from Wet more proportionately than cattle, because their fleeces hold the surplus rain water which otherwise runs off the short-haired cow or steer. This water must all be evaporated, and most of this is done by animal heat that is drawn from the body, which, in turn, must be replaced from stored flesh and food eaten. In this respect the fine wool sheep, with abundance of oil in their fleeces, have the advantage of the more open wooled mutton sheep, but shelter against rain is readily provided and they are easily trained to go under cover when the rain begins to fall.

The early Lamb.—It is the early lamb, like the early calf, which is most satisfactory when raised. But ewes about to lamb must have warmer quarters than store sheep require; but the lambs, like the calf, will endure cold after it has dried off and gets enough to eat. We have had considerable loss of lambs during the past two years when ewes have yeaned about the time grass is starting and they have had access to it. Our lambs born on dry food have got through all right, but a discouraging mortality of the innocents took place among those born when the ewes would spend their time nibbling at the starting grass. Hereafter we shall keep the flock off the fields until the grasss has a fair start—just as we find it best to do with cattle. A sheep is a helpless thing when once attacked by disease, and a new born lamb is still more so.

The water question as applied to sheep in winter is a puzzling one. Why they should prefer to eat snow in winter to drinking clean cold water is more than one fellow can find out. Sheep are not great drinkers under any circumstances and are very fastidious about drinking—a sip now and a sip then seems to please them best. To accommodate them in this habit and to avoid snow eating we have conducted water to the sheep barn so that a running stream can be made to flow through it.

Sheep v. hogs No hogs are kept on this farm, so that the surplus of skimmed milk and butter washings is given to the sheep, lambs and weaned foals, and here the refuse from the dairy finds an equal or better market than if fed to pigs.

Gentlemen, I have only touched lightly upon the care of sheep, intending that what has been said shall be suggestive rather than exhaustive.

Secretary Blakely accounted for Mr. Gabrilson's loss of lambs as resulting from too liberal feeding of the ewes just before and immediately after lambing, producing a very large flow of milk and causing fever in the

udders. He advised milking out the first milk from very full udders, and any excess that the lambs could not take for a few days. He had known calves, as well as lambs, to scour and die when the cows were fleshy and fed a good deal of corn, just before and after dropping their calves.

Prof. Kent, of the Agricultural College, endorsed the secretary's advice, and cautioned against full feeds of grain—especially after the sheep had commenced running on grass—either immediately before the birth of the lamb, or for a few days afterward.

J. J. Smart, of Dakota City, said his horses got most hurts from low-down barb wires. Some advised tight, smooth, low-down wires for sheep, but barb wires for hogs.

C. E. Hartley, of Monroe, said where horeses were kept, a wire should be placed high up so the horse will hit his nose and not paw into the lower wires.

Messrs. Franklin, Fritchman, Thomas and Blakely all agreed that cattle and sheep do well together. Secretary's Short-Horns attained heavy weights pastured with a large flock of Merinos, but if pasture was overstocked, sheep might do well and cattle poorly.

Hon. L. S. Coffin, of Ft. Dodge, said he could put one sheep to every two acres of pasture without injury to the cattle. The sheep ate the weeds refused by the cattle. A few sheep were an advantage to the pasture, but he warned against overstocking with any kind of stock. Even velvet weed, rejected by other stock, and a very obnoxious and difficult weed to eradicate, is eaten by the sheep when the plant is young.

C. E. Hartley advocated salting thistles, and thus induce sheep to knaw them into the ground.

Mr. Gabrilson had not been successful in killing weeds with sheep.

Mr. Smart had noticed some pastures where not only the weeds but the grass seemed almost killed by overstocking with sheep.

Mr. G. Jayque, of Traer, said that sheep on any feed were constant drinkers, but were dainty and wanted pure water. Velvet weed, the worst weed we have to contend with, is kept back by sheep.

Capt. W. H. Jordon inquired as to the best method of watering sheep. The general verdict of those who spoke on this subject was that the supply of water should be constant or often repeated, and near at hand, as sheep prefer when on dry feed, to drink a little water frequently. Also, that it is better that the water should not be too cold, that sheep would not go many rods from their shelters on very cold stormy days and drink ice water out of a trough if snow could be had to eat, or unless they were very thirsty.

C. E. Hartley read a paper prepared by L. M. Hartley of Salem, Iowa, as follows:

Mr. President and Gentlemen:—Much has been said upon the rearing and handling of sheep. Some writers have well studied the subject, others are mere novices and really know but little to the purpose. What knowledge I have, has been gained by personal experience. I therefore have no theory to promulgate, but shall try to relate a few substantial facts.

My home farm is situated in the northwest corner of Lee county, Iowa, near Salem, which is in Henry county. It consists of nearly 800 acres and is mostly situated in a prairie valley, the outskirts being gently rolling land. It has no timber on it. The land in the valley is well tilled. On this farm I now

have over 1,500 head of sheep; on the ranch in Marion county we have over 5,000 head. I shall only speak of those on the home farm.

My first experiment in sheep raising commenced in 1876 with about 300 head of Merinos. I provided for them sheds of sufficient capacity to cover them. These sheds were built of lumber, well ventilated and boarded up on three sides, the south being left open. I provided racks for hay. I fed oats and corn with plenty of good timothy hay and clover. They also run to hay and straw stacks. I handled them with dogs as most men do and thought the dog indispensable to sheep farming. I now think him a greater nuisance than the sheep shed. I procured the best bucks that the country afforded. I handled these Merinos for some years and the best increase I could get by this management was 60 per cent; the clip run from nine to eleven pounds per head; the price obtained for the wool was from seventeen to twenty-two cents; the lambs brought me in market from $1.50 to $1.75 per head.

After running this flock three years I got hold of 100 head of the big long legged coarse wooled woods sheep. I got them because they cost me almost nothing. I put them on the back part of my farm away from the fine wooled sheep, where they ran during the winter to hay stacks and on meadow. they had no care nor was there any running water in the pasture. My Merinos had good well or spring water each day.

These coarse wooled sheep were all with lamb, when I got them, and commenced dropping their lambs in February and were done by the middle of March. To my astonishment I found they had increased 150 per cent, neglected as they were, and when the lambs were ready for market I realized on them at weaning time $4.00 per head. The clip from the old sheep was only about four to five pounds each and brought me about 25 cents per pound. This experiment satisfied me that there was a better sheep for mutton than the Merino, to say the least. I was not satisfied with the coarse sheep on account of the small product of its wool, but for the increase no one could ask a better showing.

The manner in which these coarse sheep had been treated also gave me the idea that sheep would do better to be reared as nearly in a state of nature as possible, so as to give them food and care at the proper time, and also that a breed could be found that would thrive and take care of themselves, and at the same time produce a good yield of wool and make a fair increase and be more prolific in the pounds of mutton produced. With these facts before me I investigated the merits of the different breeds and procured some Cotswold ewes and also obtained four full blood Shropshire bucks, and the best I could find. I let them to the Merino and Cotswold ewes. I found the increase from the Merinos to have gained forty per cent, and the Cotswolds a greater gain.

I kept my sheds for another year after getting into the Shropshires, but I found that sheep on remote parts of the farm, away from the sheds, did the best. I found that in the summer time they would come into the sheds and stamp and fight flies all day, filling their heads with dust, and that they would contract a cough and crowd together, to their noticeable detriment. I finally fenced them from the sheds. I still kept the sheds for the sick and weaker sheep, but I found that shedding even sick sheep did not help their condition in a general way. I found that if you have got a lot of weakly

sheep that shedding is the worst expedient that can be resorted to. A clean new pasture in grass time, and in the winter a fresh field which sheep have not been using, with good, wholesome food and pure water, far exceeds all nursing and doctoring that you can bestow. I give in these cases bran, oats and ground oil cake. Proper troughs must be provided to keep this feed dry. This mode of operation will soon make good mutton of your sick sheep, while shedding is almost sure to kill half of them.

I finally, about ten years ago, became convinced that shedding for sheep was expensive and worthless, in fact a decided detriment to sheep raising. Shade is as necessary in summer for sheep as food, but it should not be obtained in a closed shed. Trees or hedges are far better. If a shed is built for the purpose of shade only, it should be high and open, of small dimensions and on elevated ground, so sheep will all the time get air without being crowded in flocks.

I finally tore all sheds down and find that I never did anything in the sheep enterprise that contributed so much to the advantage of sheep culture. It has opened up a new era in handling and successfully raising sheep. I have for the past eight years successfully pursued the industry without the shed, and you all remember the character of the winter we had some four years ago. In that, the severest storm we have had for twenty years, I did not lose one sheep. Many of my neighbors, some of whom are successful husbandmen, derided the idea of discarding the sheep shed, but are now running their flocks according to my idea, having abandoned all shelter.

It is proper here to say that I have let go of everything but the full blood Shropshire. I run the half bloods for a time, but finally worked all into the full bloods as nearly as can be done from grades. I would say, however, that most of my flock now is from full blood imported stock on both sides.

Formerly, under the old management, we lost over ten per cent of aged sheep, when we provided sheds for them, during the winter months from October to May. Now the loss does not amount to one per cent during the period named. My flock clips on an average 10 pounds per head. The increase is about 125 per cent in large flocks. I run them in flocks of about 1,000 or so, except in lambing time when 100 to 150 ewes are kept together.

While I advocate the greatest freedom and the least hampering for the sheep, as the best mode, you are not to understand me to say that sheep require no care, and that attention, and strict attention too, are not requisite. I say no such thing.

There is no animal known that has been provided by nature with such a protection against cold, as the sheep, and the Shropshire does not come in contact with either cold or wet that chills him through and causes him to sicken and die while he is kept in the proper condition. No snow storm affects him, neither does the falling rain. Nature has provided him with a protection that wards off the inclemency of the weather. I found that the Cotswold would take water into his fleece and carry it for a long time to his great discomfort. The Merino's fleece does not take water so much, but his constitution is too feeble. I tried the Southdown, but found his fleece no better than the old woods sheep and his lamb but little superior to the Merino. Now while you are rearing sheep in the open air, without being crowded in the disease-breeding shed, you still have to extend care and be vigilant if you make a success of this great enterprise.

When the snow storm comes you must, in the evening, bed a sufficient piece of ground behind some wind-break, such as a hill, hedge, grove, orchard or the like, for them to lie upon, and if it continues to snow you must continue to bed with straw each evening till the snow stops, and then your sheep have a bedding place for some time, or till snow comes again. Your sheep treated in this manner will arise from his bed and shake off six inches of snow from his fleece and feel fresh, vigorous and meet the wagon loaded with hay or fodder half way. When it rains let it rain. If you have a good blue grass sod the Shropshire will take care of himself and keep his skin dry and his lungs healthy. A poor sheep has but little oil in his wool and his fleece will take in water and he will sicken and die and a shed will not save his life. So you see that much depends on feeding, in fact this is the great care required.

Again in lambing time, great care is necessary. Not only sheds come into requisition now, but good warm rooms with heat in some of them, and vigilant herdsmen are indispensible. If the weather is good and a lamb is dropped and takes care of itself for twenty-four hours, all danger is over. Shepherds should continually visit the flocks of ewes both day and night in bad weather and be prepared with ambulances so they may remove the ewe about to lamb, or the one that has just done so to a dry warm room and care for her and the little ones till the storm is over.

In feeding the common flock I have discarded altogether the hay rack, nor do I allow the sheep to run to hay or straw stacks, as it is detrimental to both the sheep and the fleece. The blue grass sod is preferable on which to feed hay, or corn in the ear. In fattening for the market I use the trough.

I have realized from my wool not less than 25 cents per pound for many years, and for my lambs at weaning time have realized $4.00 per head.

I am proud of my flock and know that I have made a great advance, though the change may seem too radical to suit many who have had more years of experience than I.

The Secretary said pure air is as essential to sheep as any other stock and if we cannot have it with sheds we better have it without them. He had heard men with fine bank barns complaining that their sheep did not do well. The trouble was lack of ventilation. The little windows in bank barns and other close sheds are entirely insufficient to carry off the carbonic acid generated by the lungs and the ammonia from the excrement of 300 or 400 sheep crowded together. The sheep, too, should be sent out into the fields in fair weather for exercise and to get part of their living. But with good air and sufficient room he had found sheds most desirable and cheaper than hay and grain to retain flesh and keep up animal heat.

The following resolution was introduced:

Resolved, In order that we may retain information as to the honesty, efficiency, and financial soundness of wool commission houses we request the members of this association to report to the secretary their future sales of wool, the commission house consigned to, or the firm sold to, the grade and condition of the wool sold, and the price or prices received and whether the transactions are satisfactory, that the secretary may report to members of the association.

It was argued in support of the resolution that wool growers did not always have an opportunity to sell their wool at home just when they desired

and were often reluctant about sending to a commission house for fear of unsatisfactory results. It was said wool commission men were no worse and perhaps no better than commission men in other lines. Some are honest and efficient and some the reverse, and the object is to find out the good houses and patronize them and let the others alone. Some commission houses are not sufficiently careful to make the best possible returns to the producer of a few hundred or few thousand pounds of wool. There is no continuous trade to be courted. The farmer may never be heard from again and there is a temptation sometimes yielded to to take a small slice while he can. The passage of the resolution would not only give us information as to whom we may trust, but would put us on something of the same footing as large shippers, since unfair dealing toward one member might result in the loss of shipments from all.

After some discussion as to the practices of commission houses, and some ways which were dark, and also as to the various conditions in which wool is put up, the resolution was unanimously adopted.

W. M. McFadden, of West Liberty, secretary of the Poland China Record Association, but who has for many years been a prominent breeder of several varieties of sheep, and an exhibitor of sheep at fairs in Iowa and other States, read the following paper, entitled,

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MERINO SHEEP IN IOWA.

A few days since I received a letter from your secretary requesting me to prepare a short paper on some subject, relating to sheep. This was something of a surprise to me and I am still unable to guess the reason for the request, unless it be that I don't at present own a single sheep and am not in any way connected with or interested in any.

I hope, however, that what I may say in favor of the Merino will not be regarded as influenced by personal motives or as having an ax to grind.

The experience of the past three years in the sheep business has certainly disproved one of the greatest objections formerly urged against it here in Iowa, which was that we could not afford to raise sheep on land as valuable as our Hawkeye soil. No class of live stock has been as profitable as sheep during the past few years, and farmers have become convinced that if an acre or 100 acres stocked with sheep will make a better return than a like amount devoted to other stock that the value of the land is not to be considered so long as we intend to make stock raising a part of our farming.

Another of the popular ideas regarding sheep raising that I think will be changed during the next few years is that the Merino is unfit for mutton, and that if we are to raise the Merino, we must expect our income almost entirely from the wool. This is a mistaken notion. I do not contend that a car load of thoroughbred Merinos would sell extra well, but not a hundredth part of the sheep that go to market are pure bred sheep of any breed, and a

comparison of strictly thoroughbreds is not a fair test. But give me a load of three-quarters or seven-eighth blood Merinos and I will top the Chicago market with them an average of four days out of the week the year around. And very few of the sheep marketed are graded up even to three-fourths of any of the breeds.

What I contend is, that the judicious introduction of Merino blood into a great many of the flocks of our State would not lessen their mutton value in the least and the increase in the wool product would be beyond the belief of most of those who have not tried it. The size of the carcass might be reduced to some extent, but I am firmly of the opinion that the mutton in two sheep weighing 150 pounds each cost more to produce than that in three sheep weighing 100 pounds each, particularly if kept in a flock of any size.

A flock of sheep with which I was somewhat acquainted sheared an average of about 5 pounds per head. The owner crossed the flock with Merino rams. The result of the first cross was an average of over 10 pounds of wool of equal value and without any loss in the mutton value of the sheep.

I do not contend that every one ought to keep Merinos. It seems to me that when sheep are made a kind of side issue on the farm, that is, kept in a flock of fifty or less, that other breeds will prove more profitable. But where a farm is stocked to its full capacity or nearly so, with sheep, no breed will pay as well as the Merino, except the principal object be in selling lambs under one year old.

Merino lambs are not the best for fall or early winter marketing. Some attribute this to the mothers being poor sucklers, but I do not agree with this idea. In several cases where I have put coarse lambs on Merino ewes the lambs proved to be the fattest and the best ones in the bunch, when running with coarse ewes that were certainly good sucklers.

I want to add one word too in regard to the per cent of lambs raised by the Merino. I raised one season 54 lambs from 44 thoroughbred Merino ewes. Had thirteen pair of twins and lost only 3 lambs, although they all came in February and March. Have often seen two very nice lambs raised by Merino ewes, and after grass has come they are excellent mothers, but require more care than other breeds if suckling on dry feed.

No fair minded person, it seems to me, will deny that it is impossible to keep up the standard of any of the English breeds of sheep without the constant introduction of new imparted blood. None of these breeds (particularly the Downs) can be handled by the common farmer without great loss in the weight of fleece and some loss in the mutton quality, unless kept in very small flocks. I challenge any one to show where the crossing of any of the Down breeds on the common flocks of the country for two or three years in succession has not resulted in a great loss in the weight of fleece and without a corresponding gain in the mutton quality where this has been tried on a flock of over one hundred head.

Nowhere in the world has the Merino reached the degree of perfection attained in America, and much of the blood of this grand breed will yet be needed to grade the sheep of Iowa to that point which will make them the most profitable.

Much fault is found with the wrinkles, and a typical sheep might have no use for them, but for the purpose of grading up the wrinkle is not to be despised, for it assists greatly in putting thickness and weight onto the com-

mon sheep of the country. I repeat that the thoroughbred, wrinkly Merino might not and likely would not be the best sheep for the average farmer, but it is not to be expected that the thoroughbred of any of the breeds will be kept to any great extent. On the ordinary Iowa farm, then, the question comes what is the grade for us to keep? It seems to me that if we want to have a few sheep around, a flock of forty or less, we should grade toward the Cotswold.

If the principal object is the raising of lambs for the market and the flock is not too large then use some of the Down breeds. But if we are going to *keep sheep*, and wish to be known as sheep men grade up with good, large Merinos and don't be afraid of a few wrinkles the first cross or two, especially if the flock is not a heavy shearing one.

In the discusson following the paper S. H. Tompson, of Iowa City, a Merino breeder, said twins in his flock had increased late years, due largely he thought to increased size of the sheep, but he preferred single lambs.

The secretary said that at the suggestion of Mr. Hartley, Mr. Thomas and others, he presented the following resolutions:

1st. *Resolved*. That we demand of the next legislature a more stringent and efficient law relative to the depredations of dogs with a view to lessening their number and diminishing said depredations and enabling the owners of live stock suffering losses from dogs to be more fully reimbursed.

2d. That we demand a liberal state bounty for wolf scalps with a view to the speedy extermination of wolves in Iowa, and we appoint a committee to press these our demands upon the legislature.

3d. That we ask the Iowa Improved Stock Breeders' Association to appoint a committee to co-operate with us in urging these claims upon the legislature.

The resolutions passed and Messrs. Franklin, Hartley and Thomas were appointed. Mr. C. E. Hartley was appointed to raise funds to defray necessary expenses of the association.

In the election of officers G. W. Franklin was nominated for re-election as president, but declined, pleading pressure of other duties. C. L. Gabrilson was elected president for the ensuing year.

The following gentlemen were elected vice president: C. E. Hartley, of Monroe; Joseph Edgerton, of Nassau; Robert Thomas of New Sharon.

A. J. Blakely was nominated for re-election as secretary and treasurer, but declined, saying he had acted in that capacity since the organization of the association, had been willing to do the work without pay, but thought it best to have a division of the labor. Prof. C. E. Curtis, of Ames, was then elected secretary and treasurer.

Association adjourned to meet at office of superintendent of sheep, on state fair grounds on Wednesday evening the week of next state fair.

IOWA DRAFT AND COACH HORSE ASSOCIATION.

SAVERY HOUSE, DES MOINES, IOWA, January 12, 1892.

Fifth Annual Meeting of the Iowa Draft and Coach Horse Association. Meeting called to order by President W. H. Jordan.

Gentlemen—The hour has come when we should call to order, and we shall be glad to see all so disposed come into our meeting. I beg to say that I have been having a tussle with the "Grippe" for the last two weeks, and did not expect to be here, and so wrote your secretary, but feeling better I am glad to be with you, though I have made no preparations for anything like a set speech at the opening of this meeting. I would like, however, to say a few things in the line of encouraging the production, and bringing to the front the grade draft horse. It may not be known to you that I represent one of the oldest importing firms in the State. I think my honored friend, William Singmaster, and myself representing our firms, commenced about the same time importing from France, Scotland and England, some twelve or fourteen years ago. When I first went to Europe to look over the horses, I saw every thing was new in that line. There was no stud book in all Europe of any kind except of the Thoroughbred or running horses. If we importers were a little inclined to be tricky, which of course, we were not, we could import most anything that had the requisite size, formation and style, and represent him as a properly bred animal for the purposes we proposed, and you, nor we, really did not know to the contrary. There were no thoroughbred horses at that time existing in Europe except the "blood" or running horses. When you come down to the technical and correct meaning of "thoroughbred" there is no such animal in existence now. Now, I shall be quite likely misunderstood on that point. I speak of thoroughbred in its fullest meaning, and if I am correct in that, there should be a race that would reproduce itself perfectly, and you know that we have no domestic animals that will do it. We have some wild animals that do, and they are thoroughbreds, but I will not discuss that point.

The days of importing are comparatively past and we have settled down to solid business in breeding draft horses. I am not speaking disparagingly of any race of horses, and I do not so intend when I call a Clydesdale a Shire, or a Shire a Clydesdale, or a French Draft a Percheron, or a Suffolk an English horse. They are all grand horses, and except for the heavy haired leg or the clean haired leg no man can tell one from the other. I have taken this same position ever since I have been importing, both in public and in private, and while we importers, for the purpose of pushing our business, often contend for the superiority of a certain name of horses and

while we are right in the sense that they were a very superior horse, we were not right in the sense that one was very superior over others. I hope I may not be misunderstood. I claim that all these breeds of draft horses are most valuable, but they all come from one source. They have been changed to what you see them simply by their environment; by climatic influences, feed, etc. If they should be relegated to the country from whence they originated several hundred years ago, and be turned out upon the rich, moist meadows of Flanders together as they once existed, the Percheron, French draft, Belgian, Suffolk, Clydesdale and Shires, in a few generations would become alike in all their features and characteristics, except that, the no haired legs would be filled with long heavy hair. These horses have been brought to this country for the last ten or fifteen years in great numbers. Their breeding has proved a success, and of great value. I think there is no sensible man that would be willing to say that for intrinsic value there is any great difference between the product of any of these horses as now bred in this country. I think few men now buying horses will ask you whether he is a Norman, Percheron, Belgian, Shire, Clydesdale or Suffolk, but will only seek a large, nice, good horse, reasonably sound with free action, and will pay you good money and be glad to get him. Now, this is a class of grade horses we have among us and should cultivate. As I have said, the days of importing draft horses are about over. What I want is to see the breeding of these grade draft horses encouraged and brought to the highest possible value. I ask you individually and as an association to take into careful consideration this most valuable work, of utilizing this draft stock.

Fifty odd years ago there was a fine race of draft horses in southern Pennsylvania just as good as any we have ever brought from Europe. Horses that would weigh from fourteen to seventeen hundred pounds. How they came there I do not know. What became of them I do not know. They were run out, disseminated and lost in the breeding of lighter horses and for years we had nothing to take their place and so commenced importing at twenty times their cost from Europe. Let us guard well our present draft blood. There is danger to-day that the draft blood we have now, at such high prices, will be completely run out and lost in the breeding of the light horse. There is no horse to-day that will sell on the market more readily or at a better averaged profit than the large sixteen and seventeen hundred pound horse properly made and put together.

I find on the program the appointment of committees which we will postpone just for the present.

We have with us Mr. Butterworth, editor of the Western Agriculturist, at Quincy, Illinois, who will now address you on the American Draft Horse.

THE AMERICAN DRAFT HORSE.

BY T. BUTTERWORTH, QUINCY, ILLINOIS.

Mr. President and Members of the Iowa Draft and Coach Horse Association:

GENTLEMEN—It affords me great pleasure to meet so large a number of practical breeders of the horses of utility.

As you have but one day meeting and a very attractive programme, we will not take up your time with a lengthy paper.

Every country has some national types of horses adapted to the requirements of agriculture, commerce, manufacturing and pleasure. The European countries formerly raised horses for war, then for agriculture, and as the manufacturing and commercial interests were established, the agricultural and Draft horse was developed that now occupies the front rank of horse breeding throughout all Europe, and the breeders of each country think their own particular horse the best in all the world, we have collected the best from each country and, Yankee-like, made an improvement in our American Draft horse.

In the pioneer days of this country we were content with small, scrub horses and mules, but after the introduction of the English thoroughbred and the development of the American trotter as the horse of luxury the requirements of our rapidly growing commercial and manufacturing interest demanded the heavy Draft horse, and the early importations from France about thirty to forty years ago, were so successfully received that the importations of Clydesdales from Scotland soon followed, then came the Shires and Suffolks from England, and the Belgians from Belgium. No country ever imported so many fine horses as has the United States within the past thirty years. When we began to import them by the dozen the cry went up that the Draft horse would soon be overdone, still our importations increased to hundreds and thousands annually, but the demand increased faster than the supply and the Draft horse has won his way to public favor upon his honest merits in city and country.

A new interest.—The American Draft horse is creating a new interest among our farmers as the agricultural horse—as indeed the Draft horse has been in Europe for centuries—and our farmers grading up get big draft mares, which we find do excellent work at the plow or planter, and raise fine colts as well, and when we drive a team of fine Draft mares to town we can haul a large load and take pride in such a team.

In our city streets we see single horses drawing immense loads with ease, that formerly required two horses and the four-horse teams replaced in the

crowded streets by the team of two heavy horses; but the 1,400 or 1,500-lb. horse is not considered a good Draft horse in the cities, they want 1,600 to 2,000 pounds to draw their great, heavy wagons with five to ten ton loads.

The progress of steam and electricity has thrown out thousands of small, cheap horses in the cities, the street cars alone have within the past year reduced the number of horses from 116,795 to 88,114, that is 28,681 street car horses thrown out in one year, at that rate the whole of this class of cheap horses will soon be emancipated, notwithstanding the rapid extension of the street car lines; electricity is the popular motor. Thus it is the small, cheaper class of horses and mules are being thrown out by the thousands.

With all this introduction of electricity and steam, the Draft horse goes hand in hand, he is a necessity of the age and it behooves American breeders to prepare to supply the increasing demand for thousands more of our active American Draft horses of good, heavy weights.

It is useless for us to try to argue the matter of our own preferences for this or that kind of a horse. Our commercial interests demand heavy Draft horses, and so long as good prices are paid, breeders should endeavor to supply this legitimate demand, it is useless for us to raise a 1,500 pound horse and say to the markets that that horse is big enough; or as our fast horse friends say, the great American trotter is the horse for all work, that he can haul the city dray, the heavy freight wagons, fire engines, etc. Better than these great mastodons, our city teamsters must have the size, then they are willing to pay for all the action, beauty and style they can get. From the experience of French and English breeders and of our own breeders, we are led to believe the regular farm work is essential to successsul and regular breeding with Draft mares and stallions, and that we must look to the farm for the American Draft horse. The ranch and the large breeder who attempts to raise Draft horses in idleness will find failure, unknown to the farmer who must make his mares earn their own living.

Individual merit should be an important factor in developing the American Draft horse. Breed as good pedigrees as we may, we should require individual merit of good Draft horse qualities in the American Draft horse. Our breed stud books record all alike good, bad and indifferent. No breeder of any breed of live stock can breed all good animals, and we hold that only good animals up to the standard should be recorded and given a pure bred certificate. Then with veterinary inspection of our breeding stallions to keep unsound horses from propagating their defects to succeeding generation; with our natural advantages of good soil and climate, the intelligence and skill to produce good horses, aided by the experience of the European countries and the liberal importations we have made of the best horses of all the Draft breeds, we are now in position to raise the best Draft horses in the world, and the model American Draft horse is destined to be as popular in all the markets of the world as he is superior in action, vigor, bone and foot; and with the beauty of the American model type and size to suit the demands of the markets, a brilliant destiny awaits him as the business horse of the future. As we improve the action and vigor, we may reduce the size somewhat, but we must have weight in the collar to suit the city markets. This proud stepping, powerful, vigorous Draft horse with beautiful form so eagerly demanded by our commercial interests, can not be readily produced except by the aid and direction of scientific breeding, and the use of high class mares, as well as the best Draft sires to be found at home of our own breeding, or in the old Draft horse countries of Europe. We have had so many stallions imported and have bred so many good, bad and indifferent mares and have produced so many thousands of good grades, the wonder is that we have done so well in developing a native breed of horses already recognized as the American Draft horse.

Organization.— It is by the aid and direction of such practical organization as this Draft Horse Association that the proper foundation will be laid. Organization will do much to popularize the Draft horse among the farmers. The council of our most successful breeders will develop the higher appreciation of the Draft horse on the farm. He has already gained the front rank in his sphere of usefulness in the modern business world that is constantly increasing with the growth of our cities and factories. Local Draft Horse Associations should be organized to carry the good work of breeding useful, profitable horses into every community. Already the Draft horse has been quite generally introduced, but the cheap scrub stallions and the wild enthusiasm of the trotting horse breeders are attracting the farmers from the Draft horse to the detriment of his financial interests.

With our Local, State and National Draft Horse Associations the American Draft horse will be accorded the dignity of a breed. With pure bred sires of ancient lineage on the one side we must look well to the mares to breed up to the standard that will reproduce their type. We must see that the American type is maintained. Then with State and Local Draft Horse Associations all should be united into harmonious working in a general and National Association of which no breed of live stock is more worthy of such complete and thorough organization to properly develop this great and important industry—the American Draft horse. Wallace first tabulated the pedigrees of the American trotter into a group of performers and thus the trotting families were defined. The American Draft horse is being developed more rapidly from the thousands of imported Draft Stallions of all the Draft breeds, many of which are famous and impressive sires. We cannot begin too soon to record and tabulate these grade Draft pedigrees that will establish the family line of the best types, and if it is found that any one breed of sires produces the best type of American Draft horses that is what we all want to determine as the majority of breeders adhere to line breeding of sires in the same stud book, yet there are some who think one breed as good as another if not a little better, and have bred to the most convenient stallion regardless of breed and by this indiscriminate crossing are gratifying their taste for experimenting with the breeds. Local and district Draft Horse Associations in England and Scotland have within the past ten years greatly improved the horses and increased the number of horses bred in these countries as in France too, their Local Draft Horse Associations in the horse breeding districts have done much to advance the interests and in Belgium and Germany the horse breeders are organizing under goverument patronage, all to improve the quality and to increase the number of horses.

As the Draft horse is the work horse of the world, he must be the great money producer on the farm. Other horses have their sphere, but the Draft horse now comes first in this industrial age. On the farm, in the city streets, and in our large factories the Draft horse is a necessity, and all the large city

dealers have more orders for the best heavy Draft horses than they can find the horses to fill. We have progressed far enough in Draft horse breeding to have good, heavy Draft horses, if we had bred to good, heavy Draft stallions and kept our grade Draft mares to breed from. Too many people raise a small chunk of a Draft horse, and when they fail to get heavy Draft horse prices they pronouce the Draft horse business overdone and go breed to a scrub or a jack.

All improved stock breeders have to contend with many unreasonable whims, but none are more impractical than the color craze in some localities; farmers will not breed to the best stallions in the State unless the color suits them, the color must be right, let the horse be what he may, while the buyer never asks what color your horse is, but how good is he or how big is he; a good horse cannot be a bad color. The cheap service craze has driven many good horses out of some countries. The superior merit and individual excellence of any stallion will not induce some farmers to breed unless the service fee is cheap. The good stallions are generally high priced and can not be kept at a cheap service fee; $18 to $25 should be readily paid for the service of good imported and full blood stallions, and when farmers learn to breed for superior merit and high quality they will make horse breeding more profitable, they will look for the best stallions regardless of the fees, they will be willing to pay what a good horse is honestly worth. Breeders must get nearer to the city markets to realize anything like the market prices for horses. The dealers' profit is often the biggest half.

When we raise good horses let us fully mature them and then put them in the best market condition. We can do this cheaper than the dealer who buys up the two and three-year-old geldings and matures them in Ohio, or as some buy thin four-year-olds and have them fattened in Pennsylvania or New York for the city markets at a big advance in price. Horses are high in the European countries because they do not raise enough good horses to supply their requirements. England has increased her importations from 12,000 in 1889 to 18,000 in 1890 and to 20,000 in 1891. The American Draft horse would find appreciative purchasers in all the European cities if we had a surplus of the heavy weights. The foreigners accuse the Americans of valuing a horse according to his bulk, but we have been so eager to rapidly increase the size of our native horses that the extra heavy sires seemed to promise the best results and have been in such great demand. Some French and Scotch breeders contend that degeneracy is attributed to this breeding for too great size to please the American trade. In France the Draft horse is the native horse of the country known as cheval de gros trait (heavy draft) or cheval de trait (draft). In England and Scotland the Draft horse is called a cart horse or agricultural horse and the extra heavy horse over a ton is called the lorry horse. The French and English farmers have for generations made the Draft or cart horse their agricultural horse and in this they are far in advance of American farmers and they teach us a practical lesson in true economy. We never see these farmers working an unproductive mule or gelding except the young horses not yet matured. The farm work is done by Draft mares that work hard all the year and raise a colt besides that is an important revenue to the annual receipts of the farm and the regular work makes regular breeders. The French farmers recognize their Draft horse as the horse of all work. The horses are used in the

city streets, that is the males which are generally kept entire, while the mares are kept for breeding and for the farm work and for the weekly trip to the village market at a sweeping trot on their ever beautiful roads, or if on a trip to a distant town or province the same horse is driven to a lighter cart and the impulsive Frenchman drives away in a hurry. The sturdy English farmer, while he uses the Draft mares to do the farm work and raise a colt much as the French farmers do, they seldom drive them faster than a walk and generally have a cheap cob pony or hack to hack about. The American Draft horse should have superior action as well as weight in the collar to draw the heavy load at an active gait. We have so many cheap, light horses we do not need to make the Draft horse do all our work, but if we can have but one team on the farm let that team be good, heavy grade, Draft mares.

CAPT. JORDAN: This question was to be further discussed by Henry C. Wallace of Orient, and Mr. Peverly of Spring Hill, but neither being present it will be open for general discussion.

MR. KLINEFELTER, MASON CITY. It is perhaps a little presumptive for me to rise to address the horse breeders of Iowa and start in with the confession that I do not know anything about horses, but I want to make a little contribution to this very question here. I know this is on general principles and human nature that when a man talks to another one, the man who is being talked to knows he is peculiarly interested in advocating a certain thing, he is going to make allowance for a certain amount of the statements made to him. I think that is the experience of almost every draft horseman when he talks with farmers in the State. The farmer looks at him and says "That is all right; you have a draft horse to sell; you talk that way of course" The contribution I want to make is on this line. Sometime ago I took it into my head that I would ask men who had no draft horses to sell what they thought of draft horses for the purpose of enlightening the farmers from a stand-point which they could not challenge on the ground of self-interest. I wanted to secure the opinion from disinterested sources. I therefore addressed a circular to a number of men who buy these draft horses for the purpose of using them up and wearing them out in their business. I sent the circular to every department, to lumber men, and to transfer and draymen in the cities. I did not send to expressmen or wholesale houses. I got only those three lines. And coming as it does from that source it is testimony which the farmers should certainly take stock in because it comes from men that are not addressing them from an interested stand-point. I will read you the questions that I submitted and while they are perhaps not the most practical, still they brought out some important ideas.

1. About how many horses do you buy a year?
2. In what line of work are they used?
3. About what weight do you prefer?
4. About what price do you pay for a horse that suits you?
5. Do you find them plenty at that price?
6. At what price can you get sound horses that weigh 200 pounds less
7. Do you want them at that price?
8. In your judgment, if the market in five years from now calls for a different weight, will it be heavier or lighter?
9. Does color cut much of a figure with you? If so, what color do you prefer?
10. What is your choice of draft breeds if you have any?

Those were the questions submitted, and the answers I publish exactly as received. I will only read a recapitulation. I have twenty-two sets of answers from twenty-two buyers, and have made a recapitulation of these answers as follows:

A summing up of the foregoing replies shows that it represents the practical results found by twenty-two horse buyers in Baltimore, Md., Duluth, Minn., Minneapolis, Minn., Lowell, Mass., Racine, Wis., Cleveland, Ohio, Boston, Mass., Washington, D. C., Philadelphia, Penn., Pittsburg, Penn., St. Louis, Mo., Milwaukee, Wis., La Crosse, Wis., Waukesha, Wis., Chicago, Ill., Omaha, Neb., covering nine States and giving an aggregate of 750 horses bought per year, representing at the average price of $230 each, a total of nearly $200,000 annually paid out for horses.

There are three branches of business represented, viz., thirteen fire departments, five lumber, four dray and transfer.

The fire departments buy 206 horses a year, for which they pay $262 aver age. The average weight, taking maximum figures, is 1,450. Seven find them plenty, six do not. The average price at which they can buy good horses 200 pounds less as reported by ten, is $187. Three do not handle them at all, and not one of the thirteen wants them. Five say the market in five years will call for heavier horses, and eight say there will be no change. None say it will be lighter. Two prefer gray, two bay, one dark brown, and eight do not care for color of the breeds. Four prefer the Percheron, one the French Coach Grade, and one the Morgan. Seven have no preference.

The five lumber firms buy 96 horses a year, which weigh an average of 1,620 pounds and cost an average of $212. Three say they are plenty, two say they are not. The average price at which these men can buy horses weighing 200 pounds less, is $150. Without exception, nobody wants them at that price. Two say the market will call for a heavier horse and three say it will stay about the same as now; no one says it will call for a lighter horse. In colors two prefer dark, three express no preference. Of breeds, four express a preference for Clydes and Shires, and one has no choice.

Four dray and transfer firms represented buy 330 horses a year, which average 1,525 pounds each and cost $187 average. Two report them plenty and two say they are scarce. The price at which they can buy a horse weighing 200 pounds less is $141. One wants them, three do not. Two say the demand in five years will be for a heavier horse and two say there will be no particular change. Three prefer the bays and one has no choice. The Norman is preferred by two, the Clyde by one and the trotter cross by one.

The last 200 pounds are worth, to the fire department people $75.00; to the lumbermen $62.00 and to the dray and transfer men $46.00.

The idea in collecting this information was to get it not from the men who have something to sell, but to get it from the men who want to buy. The idea was of enlightening the farmer on that one question. My judgment is that the day of trotting horses in Iowa is pretty well gone by. There has been a great craze in favor of the trotting horse, but it was a temporary and short lived craze and we will see it go down, but the draft horse is permanent and the commercial interests of the country will call for the constant, steady breeding of the large, well made draft horse. There is one question I wanted to incorporate, but could not think of any way to get at it. I thought of asking, how much will you pay for horses of so much nerve, and how much for horses with so much less nerve. I should have been very glad to have done so if I could have made myself understood. I recognized the fact that simply weight is not all that is wanted, but I think the testimony of these users of the draft horses is sufficiently unanimous on one point and that is that the market will not call for a lighter horse in five years from now, which of course is the time that the men breeding mares this spring will have to look for the horse he has to sell.

MR. FAGEN: I would like to ask if the smaller horses mentioned did not bring more money than the heavier weights?

MR. KLINEFELTER: The reports show that the fire departments pay more money for their horses and they call for the lighter weight. There is an element I spoke of in saying I would like to have incorporated in my questions the question of courage, but I did not know how.

MR. FAGEN: They claim that they can buy lighter horses for less money, while your report shows that they pay more money for the lighter horses.

MR. KLINEFELTER: I wish I could of thought of some way to incorporate nerve into the question, but the matter of weight is a matter which is get-at-able.

MR. BRUSH: I desire to say to the Breeders of Iowa that about two weeks ago I visited the yards at Kansas City, St. Louis and Chicago. I went to six of the principal horse dealers there at Chicago, keeping the oldest barns fronting the yard, who had handled this year about 100,000 horses. I interviewed them in detail and I made my full report and the conclusion is this: I have a table giving the average sales for twelve months in 1891. The general average for the draft horse is $163. General purpose horse $126.66; drivers, $122.70. Carriage teams $185.31; sadlers, $139.50; streeters $106.16.

Now in that classification, carriage horses includes the toppy horses—such as you would find perhaps one or two of in a car load. Those that average 1,600 pounds will bring $250 to $400. All six of these firms say to the farmers that they should select the best toppy flat boned mares they can possibly get and breed them to heavy boned, active, well rounded horses and do not be satisfied with a cross, but continue for two or three generations and the average farmer will have just what the market requires. They say too many farmers will breed little scrubby mares to heavy horses, expecting to get good results. They say it can be done, and because occasionally some one gets a high price for trotting horses everybody expects to breed trotters. There has never been but one Williams. Old man Coeling, an intimate friend of mine claimed that he spent twenty-five years of his life and over $120,000 and never succeeded in getting but one or two horses in the 2:20 class. He said if he had bred draft horses and mules he could have left $120,000 legacy to his children instead of a foreclosure. (Applause.)

CAPT. JORDAN: We will now go to the next subject. As Mr. Wallace is not present we will take up the subject of draft horse-shoeing. Mr. Shaw's paper read by Mr. Wadsworth of Algona.

DRAFT HORSE SHOEING.

BY FRANK R. SHAW, AURORA, ILLINOIS.

In order that the most satisfactory results may be attained, either by the scholar, artist, or artisan, it becomes necessary that he or she be supplied with the best possible material that can be provided, and that every opportunity that presents itself, which even promises to be an aid toward attaining perfection (or as nearly so as possible), in the end, should be taken advantage of. This is quite as applicable to the smith in his workshop as to the professor in his study; and as it is the blacksmith and his work that I have more particularly to deal with to-day, I will try, as briefly and thoroughly as possible, to cover the different points as they present themselves, regarding the proper and most approved method of heavy horse-shoeing, and while I do not expect those present to agree with me on all points, yet I will feel amply repaid if what I say here to-day may prove the indirect means of causing but one horse to be comfortably and properly shod. It is the horse, rather than the man, that I hope to benefit.

We might as reasonably expect the builder to erect a perfect edifice out of imperfect and damaged material as to expect a blacksmith or horse-shoer to do a perfect job of shoeing on an imperfect foot. If this is an admitted fact, it then becomes necessary that the breeder or owner of the horse should at least try to have his horse's feet in as good shape as possible before they are taken to the smith to be shod (perhaps for the first time). By so doing you are furnishing your workmen with the best available material to work upon, and should expect a satisfactory job of work in return.

I say breeder, because I know that they (whether they will willingly admit it or not) are largely responsible for the imperfect feet and the many blemishes arising from the same, that we see daily among the horses throughout the country. The breeder should commence at an early age to shape the foot of the foal. In some instances this does not appear necessary, but they should nevertheless be subject to at least a monthly examination, and if the hoof be found larger than it should be, it becomes a duty that should never be neglected to pare or cut away the unnecessary growth. By so doing, the hoof is trained to grow into a perfect shape, and many deformities of both foot, ankle and limb are avoided. Many young colts become permanently blemished by wearing away the inner side of the hoof and allowing the outer to attain an unnatural growth and length, causing the lower joints,

which at an early age are easily influenced, to take an outward turn, and by the time this colt is old enough to be shod for the first time, we find him in a condition that renders it impossible to shoe him in such a way that he will ever stand squarely on his feet, as his creator intended he should.

Wearing away of the outer edge of the hoof causes a deformity, and by wearing the heels low and allowing the toe to grow undisturbed we cause our horses fore legs and pasterns to become weak and crooked. All of these deformities I have applied to the front legs, but if possible the careless habit of neglecting the feet of the colt is more injurious to the hind than to the front legs. The twisted pastern and crooked foot causes weak hocks, and this we all know leads to the different spavins, and curbs, which in time, render the horse, practically speaking, useless.

If the horse breeders generally throughout the country could realize the great importance of this caring for the colt's feet, then invest from one to two dollars in a pair of pinchers and a shoeing knife, and use them, they would not only be performing a humane duty, but would at the same time be putting the feet in such shape as to make it possible for them to be properly shod, and if they are so shod the first time it is then not difficult to keep them sound and in proper shape.

The foregoing must in itself prove only preliminary, to the actual work of making and putting on of the shoes, the former is the work of the breeder or owner but is a necessary auxiliary to the latter. The shoeing of heavy horses differs materially from that of shoeing the lighter ones, not alone in the weight of shoe, but in the shape and bearings, but there are general and common sense rules that apply to the one, that are equally as applicable to the other; to properly make the shoe is undoubtedly the first step toward being able to perfectly shoe the horse, taking it for granted that the smith can make a shoe (something we are compelled to do anyway), it is first necessary to properly prepare the foot. This should be done by first cutting away all extra growth or length of hoof with a pair of sharp, short handled pinchers; my reason for saying short handled pinchers is this, I have often seen a smith using a pair of dull, long handled pinchers in such a way as to cause positive injury; with the horses foot held as if in a vice, between the muscular legs of the smith, and then the long handled pinchers, giving extra purchase to the user, in what appears to be the cutting away of hoof, but what proves at the same time a violent and unnecessary wrenching of parts and joints as sensitive as those of our own, this in time cannot prove other than injurious to the horse, and should be avoided, after rounding and shaping the foot to nearly its proper form and size the smith should then by means of his knife remove any hard growth that may have accumulated on the sole of the foot, avoiding the excessive paring so often indulged in, particularly where a soft easily cut sole is found, and above all things do not cut away or interfere in anyway with the heel brace, by cutting away or weakening by cutting at all, this brace, one of the greatest supports to the whole structure of the horse's foot, becomes either wholly destroyed or partially impaired. I would like to deal more fully with this particularly important part of the horse-shoer's work, for I know that it is one of the ordinary smith's greatest faults and that it is positively alarming how few of them seem to have any regard whatever for nature's laws in this particular work, their only object seemingly is to whittle out a cup shaped sole, nail on the iron,

and lastly, but most important part of all to them, collect their charges for the work.

The frog of the foot, natures bumper or spring, should not be interfered with at all, only so far as it becomes necessary to remove any ragged projections that may be found, and to make a V shaped cut between the heel of the foot and the frog, so that proper room may be had for the expansion of the frog, allowing it room to spread without binding or coming in contact with the non-yielding hoof or wall of the foot. The use of a rasp then becomes necessary to smooth the rim and leave the foot in proper shape to receive the shoe, the horse should stand on a perfectly level floor, and after the foot has been prepared as before described, the horse should be allowed to stand with his foot naturally and firmly on the floor. The smith should then carefully examine his work to ascertain whether or not the foot has been dressed in such a way that it rests evenly and squarely on its bearings; after satisfying himself fully in regard to this, the work of making and fitting the shoe then becomes necessary. The size of the shoe should always be determined by the size of the foot. This to many of you may seem like very unnecessary advice, but if you will examine the shoeing that is daily turned out from your different home shops, you will soon become convinced that there are those who should be instructed in this very simple particular. The experience gained by many years of actual test, and careful experimenting on the pavements of the streets of the different cities in Europe and Canada, have led the teamsters and draymen to adopt a style and make of shoe similar to these I have here before me. This kind of shoe has been in general use for many years almost everywhere, that heavy horsemen and blacksmiths have given the matter of improvement in shoeing any careful thought or study; but I regret to say has not been generally adopted throughout the country, this I believe is not caused so much by the ignorance of the smith regarding its merit, as it is by the extra work necessary to its production. I might also say that too many of our horse owners would perhaps object to paying the slight additional charge that would have to be made to justify the smith in making this shoe, and using it in preference to the cheaper and more inferior factory made shoes.

The points of difference in favor of the improved heavy horseshoe over that of the factory made shoe, or the shoe usually made and used throughout the country, are many, and must be readily seen by any one who will take the time and trouble to examine the two. I will, as briefly as possible, enumerate the points of merit in the shoe before me. In the first place we have the toe-clip which, if properly fitted, not only acts as a protection to the toe and saves the hoof from many a jar from stones, or other obstacles that he must encounter in every day work, but it is a great aid in holding the shoe firmly in place, making it not entirely necessary to depend on the nails as a means of support. It also, in the same connection, helps break the force of a sudden jar on the nails which, without the clip, would have a tendency to make the shoe become loosened in the outward turn of the heel; it acts as a brace and gives additional support to the horse as well as a rider, and better bearing. The wedge-shaped calks are but a carrying out of this same idea and proves of great benefit in preventing a sideways slipping of the foot, and often prevents a strained tendon, and the evil

results so often following. In the slot or crease made in every shoe, to protect the nail heads, will be found in this shoe of ample width to permit of the nail being driven at the desired angle. The nail holes also will be found punched, or made large and clean, allowing the nail to be straightly and properly driven. The nail hole in itself may seem like a very insignificant part of horseshoeing, but it is in reality a very important one; an imperfect nail hole often causes the nail, when being driven, to become bent and causes an unnatural bearing against a sensitive part, with the resulting lameness so often found immediately after a horse has been newly shod. A good indication of an imperfect nail hole is when a smith is found to have difficulty in getting the nail to come out at the desired point, and drives, and redrives, until at last he gets the point to show through sufficiently to to permit of clinching.

The flange standing out on the shoe, sloping downward with the same angle as the hoof, not only gives a larger and better bearing, but acts as the projecting sole of your own shoe, as a guard or protection to the upper. The toe calk is dispensed with from the fact that it only proves a stumbling block, where it becomes necessary to use a sharpened toe calk, in icy or slippery work, it should be set as far back from the toe as the width of the shoe will permit if this becomes necessary from the fact that the foot when being placed naturally on the ground by the horse while in motion, touches the ground first at the toe, and the toe is also the last part of the foot to leave the ground when being again taken up. The toe calk necessarily offers resistance, and the farther back from the toe, the calk is set, just so much resistance is done away with. As proof of this one need only to look at an old or worn shoe and note the condition of the toe. I have taken you through quite a long preamble and yet we have only gotten so far as to have the horses foot prepared to receive the shoe, it however only remains to be fitted and nailed on. This we must entrust to the smith but he should in all cases fit the shoe carefully, and precisely to the size of the foot, giving the shoe the exact curve of the foot, and never under any circumstances put a hot shoe to the sole of the foot. The shoe should be cold every time it is applied to the foot. When the shoe has been properly fitted it should only be necessary to nail it in place, tap the clip down firmly to the hoof and smooth off any rough edges around top of shoe that may be found. The rasp should never be used on the outside of the hoof only as stated, with the possible exception of making a slight crease in which to clinch the nails.

The habit so often indulged in by smiths of rasping the entire face of the hoof so as to give it a smooth and finished appearance is a pernicious one, and should never be allowed. In removing an old shoe, great care should be taken to have all the clinched nails carefully cut, so that it will not require the entire strength of the smith at the end of a pair of long-handled pinchers to wrench the shoe from the foot. To the danger of a strained ankle or coffin joint is added the possibility of breaking off a portion of shell. This is more liable to occur in the case of a thin shell or poor foot, and consequently is capable of doing the greater injury.

A summing up of the foregoing may be briefly made as follows: Let the owner of the horse try to have his horse's feet in as good condition as possible before taking him to be shod; secondly, see that the smith works with

care, rather than brute force, in the removal of the old shoe, and in the preparing of the foot to receive the new, see that the foot is dressed so as to bear evenly and squarely on the ground when so dressed; thirdly, see that the foot is so prepared that when the shoe is in place that it does not become necessary to remove a portion of the hoof around the entire shoe to make the foot fit the shoe, or, in other words, insist on the shoe fitting the foot; fourthly, satisfy yourself that your shoe is properly made; fifthly, never, under any circumstances, allow your smith to put a shoe hot enough to burn to the soul of a horse's foot; and lastly, after you have fully satisfied yourself that the foot has been properly prepared, the shoe correctly made and fitted, see that it is carefully nailed in place. The driving of nails is a very important part of the work, but must be entrusted to your smith. All, perhaps, that you can do in regard to this is to see that they are not driven too high in the hoof and are properly clinched.

In this article I have not touched at all on the causes that produce interfering, over-reaching or stumbling. This in itself would occupy much time, and as cases of this kind are rare among heavy horses, I do not feel it necessary to say more than the following: In an experience covering fifteen years of active work as a breeder, fitter and dealer in heavy horses, I have failed to find one horse that could not be permanently cured of any of the habits named by liberal feeding and careful driving, when shod only with ordinary shoes. I mean by this, shod with a shoe carrying no uneven weight or uneven thickness. Liberal feeding naturally produces flesh, and with the increase of flesh we, as a natural consequence, get greater width. This is not confined to any one particular part of the horse's body, but will be distributed on the inner side of the thigh, in the flank and over the different parts generally. This will soon place the feet so far apart that interfering becomes an impossibility. Feed will also produce additional life and action.

This in connection with a driver that takes interest enough in his work to hold his lines properly in his hands and keep the horse also interested in his work, will do away with stumbling and put the front feet out of the way of the hind ones removing at the same time all possibility of forging or overreaching. We thus have this matter disposed of without additional trouble to the smith, or expense to the owner, and while you are curing your horse of a disagreeable habit you are at the same time putting him in the condition that will benefit him either to keep or sell.

In conclusion let me say to those present, that if you will encourage merit when you find it in a smith by speaking well of his work, and by paying him his price freely, if it be a reasonable charge, and rather than ask him to take less than is asked, give him a small amount more than his charge, you will usually find that it is all returned to you in more careful and painstaking work, the next time you visit the shop.

Trusting that the foregoing may at least prove of some trifling benefit both to the owners and shoers of heavy horses, I will now leave the matter with you.

Since writing the foreging it has occurred to me that among many other important things, I have neglected to say anything regarding the shoeing of a foot that has been driven so full of nails that it becomes almost impossible to find a sound particle of hoof that will hold a nail. In a case of this kind I have used a shoe made with a strap of steel or iron, to fit exactly the circle

of the hoof, then welded to the shoe, and the whole properly fitted. After two or three nails have been driven and clinched the straps should be fastened together and held in place by a short bolt. This shoe should only be used in the case of an emergency, and never be worn longer than is strictly necessary to permit the hoof to grow out long enough to allow natural fitting and nailing. The strap, or clamp, on this shoe must necessarily bind on the growing hoof and must, in the end, prove injurious if permitted to remain on the foot too long.

CAPT. JORDAN: Our next will be "Horse Raising on the Other Side," by Hon. Henry Wallace.

MR. WALLACE: *Mr. President and Gentlemen:* Owing to the work at this season of the year and sickness in my family, I have not prepared any set address and therefore shall take but a few minutes of your time. When I went to the other side last summer it was mostly for the purpose of recuperating my health and visiting some of my friends whom I had never seen, and therefore I had no time to give to a careful study of this important question of breeding horses, and all I can say is simply to give you some of my impressions.

In fact, I found when I went over there that three months or six months would be too short a time to study thoroughly and to the bottom the number of questions in which I was greatly interested. I visited the Royal at Doncaster, although I was not able to study the matter as I should have done in order to get a correct impression of the horse stock that year. The first impression was the wonderful wealth of horses every year in Yorkshire and that section of England around Doncaster, evidently more or less of the desert horses in make up. I mean, of course, a horse that is the result of the environment of the desert—handsome carriage horses—in fact, the thoroughbred horse. They have the ponies that evidently have a large amount of that blood in them in this country, the Cobs, Hackneys, and Coach horses, and one that seems to me one of the best horses there is, the Hunter; a horse with strength to carry a rider eight or ten miles, leaping ditches, fences, hedges, and keeping up with the game. In looking over the ground I aimed to find out what class of horses brought the most money and then to form some estimate as to whether the environment of America would produce that class of horses. I did this in Belgium, Scotland, England and Ireland. I visited Hyde Park, not so much to see the nobility as I did to see the horses. I spent a day —and I am ashamed to say that it was the Sabbath—looking out of the window watching the horses of Brussels as they promenaded on that grand boulevard that surrounds the city. I must say I was surprised over there; I thought we had now struck the place to get the coach horses and saddle horses and roadsters. I went early the next morning to the Secretary of Agriculture, and I said, "Where do you get those horses? In what part of Belgium do you raise them?" "Why," says he, "we do not raise them at at all; we buy them." From where? He replied, "From France and Germany, but most of them come from Yorkshire in England."

Another thing that surprised me was to see how much superior those horses were apparently to the horses at Hyde Park. I can only account for it in this way, that when the nobility take their airing in Hyde Park they go very slowly, comparatively. I believe they are not allowed to drive fast, and

then the coachmen appear to be young fellows whose ambition seems to be to retire in a few years and keep a club or saloon, and do not seem to be as well up as those that manage the horses in the capital of Belgium. They have over there a kind of horse that would make us all rich, and I have not the least doubt but in time, and that not a great time, we shall have just as good. Well, I stood for hours in Glasgow and in London watching the dray horses. The impression is very common over there that America must go to that country for the purpose of securing blood to keep up their stock. Now gentlemen, I am free to say that, after spending hours in Pittsburg, before I went there, watching the draft horses in that city, and watching them on the other side, I do not believe that they have anything there that we can not reproduce here. If not, why not? It has been a favorite doctrine of my own that the size of the horse, or any other animal, is determined primarily by the grass he eats, and that is determined by the soil from which the grass grows. In feeding a steer for instance, he is three months on corn, or six months, as the case may be, but he has been from one to three years on grass. A horse you have on corn while he is at work, but the making of that horse is in the grass that he eats. If we have the grass, and I am quite sure that we have it, why cannot we produce as fine, or finer, horses in this country than those of any of the other countries? There is one thing greatly in our favor that I think has not been understood. It somewhat surprised me that in any portion of that country, or countries, they do not pretend to grow clover more than once in eight or ten years, and then in rotation just as we grow wheat. Our abundant capacity for growing clover in this country furnishes us with albuminous, or fleshy formation and, with our soil containing the necessary elements to form bone, and with the grass and clover to form muscles, there is no reason why England, on the other side, cannot be duplicated.

I do not need to say anything further. Some amusing incidents occurred, however. I spent a day with a lady near Glasgow, a farmer's wife who had sent me an invitation when I was in London. Being greatly interested in agriculture, she proceeded to send her coachman around with me to show me all the fine Clydesdale horses in the neighborhood. I struck one man who was not in a very good humor with Billy Singmaster. Says he, "I sold that man a stallion for $400—£80—and he sold him three weeks after he got him for £400. I felt in some way I did not get the value of that animal."

They have some of the best horses in that part of the country I have ever seen. I visited the Draft horse show in Belgium. I think I cut rather a ridiculous figure. I was dressed just as I am now; was invited by the secretary of agriculture to go and see King Leopold distribute prizes that had been awarded before. This was for producers alone. I was interested, and I speak of it now simply to show the encouragement that is given by the royalty to the production of horses in Belgium. Of course they were brought out, trotted around the ring, and the king and queen came out in state and first looked at the butts and then at the heads, and when the prizes were announced they were brought up and his majesty would make inquiry into them and they told him, I suppose, how to raise fine horses. I will say the display was an excellent one, and I was gratified with the quality of the horses. [Applause.]

PRESIDENT JORDAN: Will you discuss this question, or do you wish to ask Brother Wallace any quesiions? He can tell you about horse raising in England.

QUESTION: He speaks of those hunting horses in England. I would like to know how they raise them and where they get them?

MR. WALLACE: It is my understanding that they have the thoroughbred blood on the sire's side, and then have, perhaps, a draft—well, the horses that are the product of the environment of that country. Probably more or less cart-horse blood in them, as they call it. I do not believe that there are two or three or a half dozen of them that have the same complement of parts. They have been grown up to meet the demand of the country for perhaps hundreds of years. I did not have time to go thoroughly into that question.

QUESTION: Would that class of horses be of any use to the people of Iowa?

MR. WALLACE: They would not be of any use to chase foxes. I think if they could jump barbed wire fences they would be good to chase wolves with.

MR. JORDAN: I asked Brother Wallace this question to bring out this thought, and if he will allow me to brace him up a little on the production of hunting horses, I will say there is no breed of hunting horses. They never breed a hunting mare and a hunting stallion together to produce a hunter. They take, for instance, a draft mare and breed her to a thoroughbred horse. They get a filly that may, perhaps, have something of the blood type and a good deal of the draft type, and breeding again to a thoroughbred, the second cross of the blood gives sufficient fire and sufficient qualities to produce a good hunting animal—a hunter that will bear the tremendous strain that is spoken of—the part we call draft-horse giving the substance to the animal and the blood giving the fire and staying qualities. That is the way their hunters are produced. I believe we can produce the same horses in this country, just as grand, just as valuable, if we will only take the pains and properly apply the means. There is, perhaps, no horse in the world so beautiful in his majestic stand-up as the horse that is produced by what is called the blooded horse. Our finest coach horses have come from that same source. I believe now if we had followed out that course of breeding we could produce a coach horse sixteen to sixteen and one-half hands high, with carriage action that would be most valuable for our use as coachers.

CAPT. JORDAN: The next will be the appointment of committees, which was deferred.

Our first committee is the committee on resolutions: D. P. Stubbs, Henry Wallace, and L. L. Klinefelter.

Committee on officers and date and place for holding our next meeting: J. E. Fagan, Hon. Jas. Wilson, and John Cownie.

Committee on publication of proceedings: Prof. Curtiss, Mr. Wadsworth, and Robert Pilmer.

Here an adjournment was had until 8:00 o'clock P. M.

EVENING SESSION.

Meeting called to order by President Jordan.

D. P. STUBBS: Before entering upon the programme this evening I believe a report is due from me, and perhaps others of the committee appointed two years ago for a certain purpose. Whether there has been any report of that committee I do not know. Perhaps you can inform the Association as to the resolutions that were passed at that meeting. I want to state to the Association that I discharged my duties by drafting two bills, one providing for penalties for malicious destruction, maiming or injuring of a horse, and another for the stallioner to have a lien on the foal for services of the stallion. I will report that I drew these two bills to the best of my ability and sent them to the Senators representing Jefferson and Van Buren counties, and received acknowledgment of the same from them. Those bills did not become law, and what became of them "deponent sayeth not." I do not know. I make this as the report.

PRESIDENT JORDAN: This report is in response to the appointment of that committee. We have not had the minutes of the last meeting read because we do not stand much on formality, and we had so much business that we went right down to that first. I do not know, however, but we had better stop now for the reading of that report. The secretary has the report, and this committee, I know, was appointed in response to an original request, and the bills that were drawn by Judge Stubbs have been very favorably commented upon. I remember we had some legislation on this subject four years ago, but it proved to be very weak and feeble. Then, at our meeting two years ago, Judge Stubbs was appointed a committee to draft bills. I would like to ask Judge Stubbs what further he would advise in regard to the matter?

JUDGE STUBBS: I believe in that bill governing the keeping of stallions that I provided; that any one advertising and publishing to the world a registered horse, when in truth he was not, a penalty for that; and in the same bill providing that the stallionier should have a lien on the foal. I do not know what can be done. The battle is not always to the strong nor the race to the swift. It is to those that keep going. It may be that this legislature might do something before their one hundred days are up. I presume these bills have gone in the waste basket like all other rejected bills, and I suppose the files are burned up, and could not be hunted up now. I might say that it cost me considerable time to draft them, and I thought they were legal and proper and something that would stand the test before the court. I do not know that I have anything to say about it further. We have worked at them two sessions and we have not got anything yet, but it surely is not our fault. I simply want to report that to the Association and let some other gentleman have something to say about it.

PRESIDENT JORDAN: Wouldn't it be a good thing to continue Judge Stubbs as a committee to look after the matter?

MR. STUBBS: It might not be so favorable to the Judge. I think somebody else ought to take it up now.

PRESIDENT JORDAN: I think a motion would be in order that the Judge be continued to look after the matter.

MR. KLINEFELTER: I make a motion that Judge Stubbs be continued as a committee to look after that matter.

MR. STUBBS: There are many here who do not understand this matter as well as they should. The fact of the business is this: that if a man should poison one of your horses to-night or any other time, and you thereby lose one thousand dollars, what could you do with him under the laws of the State of Iowa? You could not do anything more than fine him one hundred dollars or send him to jail for thirty days, whereas, if he steals a horse worth over twenty dollars they will send him to the penitentiary; but if he poisons a horse worth ten hundred or two thousand dollars, nothing can be done with him only the little penalty I referred to. There are men who would go and lay in jail for thirty days to get to poison a good horse, and think they were getting off cheap.

The law spoken of by our President about standing stallions and reporting them registered and imported stallions when they are not, has no penalty that can be enforced against it. It is so lame, and I forget the wording of it—it is in such peculiar shape that nobody could remember it anyhow, and it don't amount to anything. We know that it is not right for a community to be imposed upon by parties saying that they have an imported Percheron or Clyde or Shire or anything else, when it is not so, and they are imposing upon the community. They should not be permitted to do so, and should be fined under the law.

The other branch of the law is, when you let the services of a stallion go you have no security at all. A man may run the mare out of the state and you have not any lien or security, and I do not see why a stallioner should not have a lien on the foal with proper recovery, providing his horse is standard bred and registered. Motion carried.

CHAIRMAN: Next we will have "Iowa Horses at the Columbian Exposition." Mr. Chase of the Iowa Commission, is present, and has consented to give us some instructions or indicate what he wants us to do, and what we should do.

MR. CHASE: I think the President put it pretty strong when he said I wanted to give some instructions, but in conversation with your Secretary I made some inquiry in regard to the committee that was appointed a year ago when you met in the Club room, in regard to co-operating with us or taking some means to represent the Live Stock Association. There was some such committee appointed, but I did not expect to be here to-night and therefore the report which I have, and some other valuable papers that I have, are not with me, because I did not expect to come here. What I want to find out is, whether the committee appointed then was a standing committee, or whether this committee expired with this meeting. I would also

like to know whether that committee has taken any steps as a committee to see that the Draft and Coach Horse Association of Iowa was to be represented at the Exposition. A few weeks ago at the meeting of the Improved Stock Breeders' Association at Waterloo, each one of the organizations present representing the live stock industry appointed one member of their organization as a committee on legislation, in regard to an appropriation this winter for the purpose of properly representing the live stock industries of the State of Iowa. The Draft Horse Association was not put upon the list, and I would like to have this Association appoint some person as committee on legislation to follow out that branch of the legislation of the live stock industry. The Short Horn, Swine Breeders' and Sheep Breeders' organizations all appointed committees to co-operate with the Iowa Columbian Commission in regard to this appropriation. I suppose you know they passed resolutions at the Improved Stock Breeders' Association asking the legislature to appropriate for the entire live stock association $50,000, or at least one-sixth of the entire appropriation that was made for the State, and when the executive committee of the Iowa Columbian Exposition was appointed to find out what was necessary they incorporated that in their question. In giving it careful consideration they realized, as you all know, that it was a most expensive subject. You have to be on expenses all the time, besides taking the chances of disease, and the expenses in transportation and the chance of taking the prize or not taking the prize. Of course, I am full of this matter and could say a great many things in regard to the work being done there, in regard to consultations with the various bureaus, and also in regard to the agricultural department, and they feel anxious that Iowa should make a creditable showing of the Iowa live stock industry. It is said that Iowa could represent some horses that would be equal to those of any other state. I believe Iowa has always come away with Iowa's share of prizes—not the second, but the first—and I believe she could do it again. And there seemed to be this feeling among the people at Waterloo in all the different organizations, and there should be aid extended to them while they have the herd animals. The stock men of Iowa are not millionaires like they are in some of the Eastern states, and for that reason they feel that they cannot continue to take care of these animals and be at the expense of taking them to exhibitions. Hence if there are no cash prizes to help out in this matter the live stock industry might not be very well represented. I shall be glad to answer any questions I can.

CHAIRMAN: You have heard the suggestion of Mr. Chase that a committee, as I understand it, of one should be appointed by this Association to co-operate with each of the other Associations of Iowa live stock industry in regard to stock exhibited at the World's Fair. If you wish this to be done a motion will be in order.

MR. COWNIE: I move that Judge Stubbs be appointed a committee of one to attend to this matter.

JUDGE STUBBS: I wish to be heard before we pass on that. It seems to me we can do far better than that. Our president lives here and I live 120 miles from here. Our president lives right here in your city, and I move to amend by making our president a committee of one to co-operate with live committees of their stock industries.

Motion seconded and carried.

CAPT. JORDAN: Our time is passing. The next question on the programme is, "Preventing Unsoundness and Disease," by Prof. Stalker.

CHAIRMAN: Dr. Stalker will address us on the subject announced.

PROF. STALKER: *Mr. Chairman*—I am here in the condition of the individual who was without a wedding garment and was speechless. It occurred to me that under such a state of circumstances I would have the right to plead the privileges of the Democratic Senator, and when my name was called, to say, "I pass;" however, even if I had taken the time and made some deliberate and careful preparation, I doubt I should have said anything that is not already known to you. The facts in regard to these important matters are quite as well known to you as to me. In fact, there is no royal road known by any veterinarian to prevent disease that is not known to almost any careful farmer or breeder of horses. It is hardly necessary for me to say that such things are not prevented to any great degree by the administration of drugs and by the application of external remedies. It consists in the careful and intelligent exercise of judgment both in breeding, handling, rearing and caring for these animals; and, I think, that the average educated and well-trained farmer is quite as competent to judge of these matters as the average veterinarian. However, totally unprepared as I am by any deliberation upon this subject, I will say one or two things. One or two things have been suggested by some resolutions that have been presented.

We may not expect to breed any type of animal free from blemish or otherwise, of which we do not have a fair type of the ideal to begin with. Slow changes may take place from generation to generation in the type of an animal. This may be in the direction of improvement, or it may be in the opposite direction; but in a word I may say that it is highly important that we select animals that are as far as possible free from disease and blemish for our breeding stock. These qualities are as certainly transmissable from sire to off-spring as the handsome Grecian nose is on the human physiognomy. There are many of these defects which come from accidental causes, and of course cannot be transmitted. There are two ways to look into this matter. If the animal were as compact in its make-up; if he were as well fitted to resist the strains and wear and tear of hard service as he should be, he would not present as many blemishes as we find in the ordinary course of hard work. Horses that have sprains, curb, spavin or ring-bone, or any of those forms of blemish, in the ordinary course of work, have something wrong in their make-up. I will admit that there may be extraordinary conditions under which these difficulties may be brought about, from ordinary circumstances; but the fact that the horse is sprained or has ring-bone, or curb or spavin is a bill of indictment against his physical make-up. We cannot think of such a thing as a spavin, a curb or a ring-bone being transmitted. I think I may say truthfully and with some degree of authority, that these defects and blemishes, these evidences of unsoundness, are not of themselves transferred from sire to offspring, but there is a physiological conformation which is liable to crop out in the offspring. So that no matter what the blemish is it is an argument against such an animal being used for breeding purposes. I want to say that the resolutions touching on this point are entirely in the line of my belief. There are, I think, perhaps more individual instances of accidental injury

to animals born sound and with good constitution resulting from bad fences than from any other one cause, especially if we take it in that part of the State where the barbed wire fences are the rule, and where the well put up and well cared for barbed wire fence is the exception rather than the rule. In many localities in the State a very high percentage of horses have suffered injury from those causes, and many of them are carrying blemishes which not only interfere with the selling value, but with their soundness. These are matters that many of you can think of, reason about and act upon as well as I, but it is a matter of observation, and I have seen sufficient injury of this kind alone to replace every barbed wire fence on the farm. In fencing for the care of horses no more than one or two wires should be attached. the lower part of the fence should be of boards or some material that will not injure, or endanger the life of the animal. It would certainly remove a very large part of the lucrative practice of the veterinarian. Any one that has ever had any experience in conductinng a veterinary hospital knows that the main trouble comes from this source. The great loss by injuries from this source alone would be enormous, if we could give it. I know three farms near the college, lying side by side, and one summer each of those farmers lost valuable horses by death from this source, aside from a number of smaller injuries, enough to have paid for the fences on all three farms, and to have put them up in good sound condition.

Another cause of injury and disease is the careless manner in which they are broken, as we say, or in the manner in which they are brought from the condition of colts to horses. I object to "breaking" horses. I never would break a horse. I have owned some horses nearly all my life. I am not a horse breeder, but I own some, and I object to breaking them. We do not break boys at the college. We try to educate them. I believe in applying the same rule to the horse. I believe in educating and training horses. I thoroughly disapprove of the plan of breaking them. We seek sometimes to take all his coltish fire and life out of him and make him an old horse before he knows what the collar and harness means. You know how that is. I know how it was on the farm I was brought up on. Here is a colt that is to be broken. He is a big, strong, fat fellow, and ought to be able to do his work; we will put him at it. He is gotten up and often the collar that has been used for the older horse is too large for him. The hames are drawn up regardless of the pressure, and the colt is put in alongside the strong horse, and sent out to the fields with the instruction that the spring is going by and we must get this field done; he is a big, strong colt, and he must go along. By the time the first day's work is over that colt has lost all the interest he ever had in himself. He was awkward and green, and did not know what the pressure on his neck meant, nor how to handle himself, and when he walked he would weave from one side to the other, throwing his head, and it is a great chance if that colt does not come into the stable in the evening lame. The number of instances that I have seen of this kind that have come into my hands for treatment would run up—I do not know where in the hundreds, but I should think a great many. It will be a chance if that colt is not lame the following morning, or with a large puff on his shoulders with a visicating water blister under the skin, which will be followed by a hard tumor and a callous, and the colt is to be laid off for several weeks. It is not necessary to say you have often to take

him to the veterinary, who sometimes has to take out a tumor, and so takes away your hard-earned money. This is about the course of a great many of such cases. Now, if that colt had simply been brought gradually and carefully to work he would have been able to do his work without inconvenience to himself and with profit to his owner. If the harness had been placed upon his back in the stall so that he would get used to it and stood in the stall until he knows it is not going to hurt him, and becomes accustomed to the collar, and you can then hitch him up to a light load and he will go it as nicely as he can and he will take personal pride in his own appearance. He really thinks that he is something of a horse. But if you drive the spirit out of him with the usual process of breaking, you have ruined him for all time. It takes a good deal of time to get a horse back into a comfortable firm mind. This is one of the sources of injury that is in the aggregate very large.

It is fortunate that there are comparatively few epizootic diseases that affect the horse in large numbers like the hogs and sheep. The horse escapes much better than the hog or sheep from the destruction and ravages of disease. Perhaps influenza is the only disease that affects the horse in large numbers, whereas there are large numbers of cattle, swine and sheep affected by various diseases. So we have not the necessity for legislation on the subject of contagious diseases in horses that we have in other animals. I am quite a believer in wholesome legislation. I would not like to burden the session laws of the State, but it is my judgment that good, wholesome legislation contributes in a very large degree to the end we have in view. I have had an opportunity to take a hand in some legislation we have had in this State, imperfect as it is. A few years ago it was not an uncommon thing to see some farmers practically ruined in a summer in cattle breeding, from the Texas fever. I presume I will not be hetrodoxical if I should talk a little while about the pigs and cattle, then, by way of illustration. From the fact that we had not any legislation covering the class of cattle which extended the disease over the State, the legislature saw fit to place upon our statute books a law that all parties, corporations, railroads and other individuals and corporations that had anything to do with the introduction of cattle into this State communicating disease, should be held responsible in damages resulting therefrom. It has practically put a stop to that source of trouble. We do not have a police force at the borders of the State to prevent these people from coming in here. We say that the parties who bring in cattle and contaminate our cattle shall be held responsible in damages, and that has had the view of practically doing away with veterinary work that we used to have during the summer. It has had something to do with driving the loathsome disease known as glanders out of the State. There was a time when it was really a menace to horse breeding in this State, but to-day it is practically out of the State. It would be impossible to accomplish this without something in the line of wholesome legislation.

I think the largest and most important branches of our work is yet to be done. If you will allow me, I will say that a wholesome, well digested, well arranged, well considered law for governing and controlling the disease known as swine plague will put that disease out of the State and keep it out, with five per cent of the loss we sustain every year. There was pleura

pneumonia in the cattle sheds at Chicago, where animals by tens of thousands were exposed to this loathsome disease, and hundreds of thousands were infected. A riddance of that was simply affected by wholesome legislation. But we must get over the notion that such laws are a menace to the farmers. They are not. There is no one thing we could have done that would enhance the interest of the farmers more than to place in the hands of the township trustees all over the State the power to take possession of every farm where the swine plague makes its appearance. It can be driven out and kept out without any laws, and without loss of a single cog to the machinery with which it is done. Some one may ask, is this a miracle, or is this something new? No, sir; it is not. It has been tried in regard to other diseases. We have tried it in regard to glanders, and practically driven that out. Pleura pneumonia can be driven from Missouri, Dakota or any other of our States, and finally practically driven out into the sea. There are to-day only a few communities where pleura pneumonia exists at all, but if it had not been for the legislation upon the subject there would have been one mass of putrification from the presence of pleura pneumonia from one sea to the other. Let me say that I do not believe there is any one direction in which a live stock association can push their efforts with greater advantage than to enlighten the people on the subject of wholesome legislation governing these matters.

As I told you before, I had nothing prepared on the subject. I have probably said all you care to listen to. If I were going to suggest there are three things you should observe in order to protect your business interests in live stock matters. First, I would say to buy good breeding stock. To that end it might be necessary to get the Central Importing Company, a company in which I am interested, to buy good stock for you. Then have the animals insured in the Northwestern Live Stock Insurance Company, in which I am also interested. Then send your boys to Ames to receive their education at the State Agricultural College, in which I am also interested, and I think you will not be very much out of the way. (Laughter and applause.)

MR. PARVIN: I would like to ask the Doctor if he considers blemishes on the mare liable to be transmitted, or as liable as if they were in the sire?

PROF. STALKER: I think one parent is about as liable to transmit defects as the other. Certainly the mother plays at least an equal part in the transmission of peculiarities; that would be my judgment and I think it is borne out by teachings of those who have given it a great deal of study. It is claimed that certain peculiarities are more likely to be transmitted from the sire than from the dam, but I doubt whether there is any rule of this kind that would have any very close application.

CAPT. JORDAN: I would like to ask whether we are liable to get disease from a mare diseased in bone for instance when we use a very pure thoroughbred sound stallion as when we use a well bred stallion.

DR. STALKER: I might say yes, that there is nothing much better established in the laws of breeding than the well fixed qualities which only exist in breeds of long standing. There is nothing surer than that transmission comes along that line.

CHAIRMAN—I would like to ask anyone in the association how to build barb wire fences most safely for horses.

MR. FAGAN. My observation has been that there has been more horses injured by poor fences than good ones. If you have a six wire fence made it is not as liable to injure a horse as a poor one.

MR. COWNIE: I believe the best way is not to have barb wire fences at all, but that two boards and a rail on top I consider to be absolutely safe for a horse pasture. If there are three boards it will also make it hog tight.

MR. WALLACE: I do not think there is much more trouble with barb wire fences put up right than with rail fences. I have had barb wire for twenty years and never had but two colts injured. In a great deal of the state they cannot have anything else except barb wire. The main difficulty is from badly constructed fences.

Chas. R. Kirk, of Chariton, here read paper on "The French Coach Horse."

THE FRENCH COACH HORSE.

In casting about for material that would be instructive and at the same time not rehashed, we found some statements that savored of porcine pertinence. Some writers have made assertions which should be taken with a grain of allowance.

However, after meditating over four or five of the following statements from such writers, you may conclude that it is unnecessary to further pursue the flitting ghost of final information, since there is nothing left to learn.

One writer, in a vain attempt to advertise the virtues of another breed of horses, says: "In France, the French Coach horse is called the *demi sang*, and *demi sang* means half-blood." After which effusion, like the owl, he keeps eternal silence as to French Coachers and looks wisely askance, leaving the uninitiated to believe what they may, but wishing them to infer that *demi sangs* should be known as half-bloods, therefore half-breeds, and conclusively, grades. Following with a flowing eulogy on the virtues of a breed of horses whose blood is not impoverished with surperfluous richness, another gentleman asserts that the French Coach horse is from a running horse and a Draft mare. And another holds up to the stern gaze of public criticism a French Coach which *he* says was from an American trotting sire and a Percheron dam; but fortunately for future posterity, he continues his own argument long enough to prove one of two things—either that he is an ignoramus or else a willful prevaricator. Last, but not least, comes one of those very precise and careful creatures of nature's framing who wants nothing to do with French Coach horses because they are not subscribed in the Herd Book. Here again the world is left in darkness, since he fails to state which Herd Book—the Short-Horn or Jersey.

Fellow Horsemen, we are an association of men bound together by a common tie—a common interest—that of improving the breeds of horses in America and at the same time engaging our time and capital in legitimate

enterprise. Let us laud to the skies the virtues of good breeding and good individuality in any and all breeds that will bear investigation and inspection. Such a horse is the French Coach; we will first speak of his breeding. Long before the immortal Napoleon led to victories the brave French cavalry, the pride of France was in its government stallions. None then equaled; none have ever equaled the French cavalry in quality and evenness of horses. The government has had the entire supervision of the breeding of their cavalry horse the *demi sang* or French Coach for over two hundred years, and in that time it received new corner stones and new impetus from the magic hand and fertile brain of the sunny king, Louis XIV. No private nor corporate enterprise stimulated by mercenary motive, has had aught to do with the *demi sang*. We say *demi sang*, and proudly too; call them *quadri sang* if you choose, "a rose by any other name were just as sweet."

The present system of breeding the *demi sang* has been in vogue with with but slight change for nearly a century. A government record being kept of all its *demi sang* stallions, similiar to the abstract of title to your land and quite as accurate. The government stables are confined to three or four departments in western France, a very small territory, not larger than a half dozen counties of this state, with three large breeding establishments, well known and well equipped. In any and all new additions to their stables, cost is not a question, they want and get the best, regardless of price or convenience. Looking first to blood that has speed combined with ability to stay to the end of the road, and second, to size with smoothness in general contour, beauty and style—not forgetting disposition.

The foundation is wholly Arabian. Occasionally a specially famous English thoroughbred was purchased by them. But the fame of the said thoroughbred came, if you please, from the sands of Arabia. The average English thoroughbred of to-day—of twenty and fifty years back—is, and was, invariably a small horse, whereas the French government, with a view to staying qualities and carrying of weight, looked well to size as a prominent feature in all selections.

Tremble not at this, my French Coach friends. No Percheron blood was called in in order to increase the size.

The fact that Benjamin Harrison cannot wear his grandpa's hat is no evidence that he is not a genuine Harrison, registered pedigreed, and numbered.

Systematic imbreeding to the progeny of Darley's Arabian and Godolphin's Arabian, produced the *Demi Sang*—or French Coach, a distinct breed—equalled nowhere on earth in characteristic sameness and individuality.

Accidental imbreeding to these same two famous sires produced the Messengers and Mambrinos. Accidental impreeding to Messenger and Mambrino produced Hambletonian 10.

While again systematic imbreeding to the Hambletonian family produced Allerton, the myriads of lesser lights in trotting history are but chips from the old block of true imbreeding, and while they have been scattered like a ten bore breech loader of number ten shot, the *Demi Sang* has muzzle loaded in the pure old style and system of a full charge and a comical ball that goes on and on to the end of the route, never faltering by the wayside for a cooling out and an hour between heats.

Neither does it scatter and bring in the high behinds and low in fronts, nor the curby legs and over on the knees. Do not overlook the fact that the French government grafted largely from the tree of Byerly's, Turk and Partner, from whence came the Morgan family. Where is the grey haired grandfather whose heart has not been made glad by the good, old Morgan?

True, these Messengers and Morgans bred so like the *Demi Sang* are two and three hundred pounds lighter. Why, because in being passed to us through English hands the Arabian simplicity became contaminated with a sprinkling of Irish hunter—a little free trade, if you please, which not only reduces values, but size also.

And now as to individuality. To see one stable of French Coach horses is to have seen all, for there is that characteristic sameness not elsewhere approached as a breed.

They are in color, bay, brown or black; in height, sixteen hands or a slight fraction over that figure; in weight, average 1,350 pounds; in disposition, the limit of perfection, and yet in play so like a kitten—they leap into the air and the only reason your hat is not sometimes kicked off is that it is too near the ground; in style, upheaded and handsome, with full, kindly eye, alert ear—no Roman noses and no dish faces; in contour, smooth and finished; closely coupled full loin, four good quarters, four clean flat legs, four of nature's hoofs; one hoof is the hoof of all; tractable and teachable to a degree most pleasing.

And now to our friends, the enemy. You who say *Demi Sang* with a wink, and fail to further elucidate, we suspect you of knowing more of the virtues of the *Demi Sang* than you wish to tell. You seem to be intoxicated with the exhuberance of your own verbosity. To the crank who speaks or dreams of Percheron blood, we must point out the fact that grey is the prevailing Percheron color, and as no grey appears in the French Coach you must weaken in your advocacy of the breeding on qualities of the Percheron, so far as color goes, and search for a new fault. Finally, as to general worth and merit in the French Coach Horse.

We very properly base the value, in part at least, on the cost and scarcity of the article, like that of a diamond. The French Coach horse is the highest priced utility horse in the world. And be it stallion, mare or gelding they are, to-day and will be ten years later, the highest priced horse in any market.

A very comical thing occurred recently; an Iowa Farm and Stock journal, published by an old time friend of ours, sent this question to the New York fire department: What is your choice of draft breeds? The answer was: We prefer those bred French Coach.

The same question given Paxton's Omnibus and Baggage line, of Omaha, brought this response: "We want no Draft breed, they are not in it, 1,300 pounds is the weight for us.

The superintendent of horses of the Chicago Fire Department answers thus: We prefer Morgans. This good editor tosses manna to the Draft horse breeders by his list of queries, but the response proves to be pie for the French Coach breeders.

Many wealthy citizens of St. Louis are fitting their private stables with French Coach teams, and top prices are such as would fairly startle the ordinary breeder.

Ignatius Donnelly's Cryptogram fails to convince a thoughtful world that Bacon was the true Shakespeare, but by a similar system of cipher—only ten times more intricate—by multiplying 523 times the 523d word of each 523d line, minus 505 plus 99, we have found proof conclusive and paramount that when Richard III so frantically offered his kingdom for a horse, it was a French Coach he desired.

RAISING COLTS.

BY JOHN COWNIE, SOUTH AMANA, IOWA.

With the whole world contributing its best and purest bred stallions to Iowa for the last twenty-five years, why is it that there are so many inferior horses in the State?

To properly answer this question would require more space than can be accorded in this brief paper. I will only refer to one or two of the most apparent causes. One reason is the inferior quality of the mares bred, for notwithstanding the fact that by this time there ought to have been a marked improvement in this respect, it is undeniable that our farmers have not given this matter that careful attention which its importance demands. The great majority trust entirely too much to the sire to increase the value of the offspring, forgetting that the dam has a still more important part to perform.

Looking at a lot of horses about to be shipped east a short time ago I noticed that over half of them were young mares, all apparently high grades. The conclusion was irresistable, that farmers were selling these animals because they would bring more money on the market, than their dams, and instead of keeping them and again improving their stock by another judicious cross they were content to keep at the business with no better material than they had a dozen years ago.

Another reason is the haphazard manner of breeding. Very few farmers have the slightest idea of what they are breeding for. No definite line laid out, no thought taken that their mare may be narrow in the forehead, low in the crest, round boned and flat ribbed, sunken eyes and flabby ears, light built and weak boned. No attempt is made to select a stallion that excels in the points wherein the mare is deficient, no object in view but to get a colt. A stallion comes into the neighborhood, he has been pampered and fed till he weighs 1,600 to 2,000 pounds, when to be in suitable condition for breeding he ought to weigh 200 to 300 pounds less, but if he is only cheap enough he is just the horse wanted. What else but disappointment could be expected from such a system? It is not by such methods that the great improvement, made of late years by successful breeders, has been accomplished. The fact is, the average farmer is as much in need of grading up as the stock he owns. In every neighborhood there are now to be found stallions with entirely different characteristics, in size, style and symmetry. To breed a mare to one might be to intensify the faults and defects of the dam on the offspring, while to breed to the other would, in a great measure, remove them. Too little attention has been given to this subject, and while the owner of the stallion may, or may not be, any better informed than the farmer in regard to the principles underlying successful breeding, he is anxious to secure a patron to think of recommending a stallion of a competitor, although assured, in his own mind, that the offspring would be far superior. By such methods of breeding, no matter how high the standard of the horse or his individual excellence, his offspring will be of that uniform quality which would be the case, had good judgment been used in the selection.

If there is any one dish I invariably decline at a hotel, that dish is hash, and for indiscriminate breeding I have the same contempt. To secure a diploma from a college, to graduate in law, medicine or science, requires but a few years of painstaking study. To be a journey mechanic requires from three to five years' appenticeship; but to be a successful breeder, is the work of a life-time, requiring intelligent study, strong observing powers and calm, mature judgment. There is no haphazard way to success in this calling, nature's laws are unchangeable. The lawyer, through his ignorance of the law, or lack of tact in presenting his case to the jury, may lose his suit, but he holds the retainer and presents his bill for professional services all the same; did he make his fee conditional on his success he would be a shyster. The physician may be entirely wrong in the diagnosis of his patient, and thus cause his death. But a reasonable time after the funeral his bill is duly presented, and he expects to be paid; had he given his services on the principle of "no cure no pay," he would be a quack, and the profession would not recognize him. The banker who purchases a note obtained by fraud, pleads the third party, innocent purchaser clause, and proceeds to collect. Not so with the ignorant, thoughtless breeder, he must pay for his own blunders; his mistakes are all charged up against him with compound interest, and violated nature accepts no excuses. That not only horses, but also other stock in this State has not shown more improvement of late years, is undoubtedly due to the ignorance of those engaged in the business. These men have mistaken their calling, instead of choosing farming and stock raising as their vocation, they ought to have selected some profession where brains are not so essential to success. As lawyers, physicians, teachers or professors in colleges they would doubtless have been highly successful, especially in presenting their bills and drawing their salaries; but in breeding stock, where the compensation depends entirely upon success, the case is different, and failure is the result.

The mares we have with us and must accept them as they are; the question is the selection of the stallion. In the first place, we must have size; no matter what some writers say, the fact is undeniable that heavy Draft horses are the best for the farmer to raise, always commanding a good price. I was led to this conclusion many years ago, when in Chicago I watched for hours the horse sale, noting the different classes of buyers, the grocers, butchers and others requiring a horse for a delivery wagon.

Men of small means were willing to pay from $75 to $100. While the representatives of such firms as Armour & Co., Swift Bros., Marshall Field, Carson, Piere, Scott & Co., John B. Farwell and many others of the wealthy merchants who look upon the horses that travel along the streets as their best advertisement, large powerful and sure-footed, intended to represent the solidity of the firm with which they are connected—such firms, I noticed, were always willing to pay good prices for horses that suited them, and to supply them ought to be the aim of the successful breeder. There will always be enough to supply the wants of the huckster and delivery wagon, but in horse breeding, as in everything else, while it is crowded below there is plenty of room at the top. It is beyond the scope of this paper to discuss the quality of the different breeds of heavy horses, and I only remark that they are all good, and that the only real care necessary is the selection of a stallion who combines in himself those characteristics, both individual and by heridity, which are most deficient in the mare. For this class of horse we must have bone. Buyers will tell you that no matter how fine the body, no matter how square the hips and shoulders, there must be a good hoof and large, flat leg, with broad knee. These are invariably the parts that first fail in the Draft horse in the city. Heavy loads on stone-paved streets are what test the limbs of a horse. Stallions as usually kept are too fat for service. More grass and less grain, more exercise and fewer mares, would be beneficial to both parties. It is absurd to think of breeding a horse to 100 or 130 mares, a great majority two or three times in the short season allotted. Is it any wonder that so many mares fail to bring forth, and even if they do the foal is puny and weak? Any man who is a father knows it is wrong to exact so much from a dumb animal. A month before breeding the mare should also be deprived of corn entirely and fed oats lightly with some bran, and grass if possible. Heavy feeding of fat producing food is positively injurious to any breeding animal, and ought to be strictly guarded against. While the mare after breeding can be worked if necessary, great care ought to be taken of her. Sudden changes of feed ought never be allowed, watering also carefully looked after, remembering always that the embryo foal is in direct communication with the nerve centers of the mare, and any shock received by her is carried with lightning rapidity to the foetus.

There is no question but that the great majority of cases of abortion, if thoroughly investigated, would be found to result from the meanness, ignorance, or stupidity of the owner or person in charge of the mare. How much better when an accident of this kind happens, instead of trying to find reason to excuse oneself the farmer would arraign himself something like this: John Smith, you are responsible for the loss of that foal; why did you allow that mare on that bluegrass or clover aftermath when she has had nothing of late but dry feed? Why did you allow that mare to drink that ice-water when for the last six months you watered her from the well? Why did you work that mare when the roads were so muddy or slippery? Why did you drive that mare through the snow drift? If the farmer will hold himself to a strict accountability to this manner, saying to himself: John Smith, this loss is owing to your negligence or ignorance, and I will have none of your excuses; you must be a closer observer and do far more

thinking than you have been doing lately, if you are to succeed in this business. This is no luck affair, as you try to make me believe, but the effect of a cause; and if you cannot find that cause you at once leave the farm and embark in some profession where the laws of cause and effect are unknown. Such self-accusation should tend to prevent such mishaps in the future. If the mare has been working during the summer, while the weather is still pleasant she ought to be given her liberty, allowed the run of a pasture day and night, with access to a comfortable shed, large enough to give plenty of room if there are a number running together. Sheaf oats and wild hay, with the run of a stalk pasture, plenty of pure well water, will all be conducive to a healthy condition of the mare, which ought to be the object aimed at. Experience has proved to my satisfaction that brood mares will do better in this manner than by being tied in a warm stable, even although allowed their liberty during the day.

At foaling time the mare ought to have the run of a box stall, without projecting nail or peg; no crack or opening where the hoof or head of the foal could find a lodging place. Watch the foal for some time after its arrival, and if the bowels do not move within a few hours, give an injection of warm soap suds. This is all important; see that nature's avenues are all open. Allowing the mare the sun of a pasture is preferable to working the mare, but sometimes her labor is actually necessary; if so, do not allow the foal to follow the mother to the field, there to trudge the round after plow or harrow. Worse still is the pernicious habit of allowing colts to follow their dams to town. The place for the foal is at home in a safe box stall; if the mare is working, it will not require much time to bring her home and let the foal suck in the middle of each half day. Care should be taken never to allow the colt to suck while the mare is heated or sweating. Allow no sudden change in any habits of the mare either in labor, feed, or water, for the foal will show the effects even more than the mother. It is hardly necessary to say that a gentle, affectionate manner of handling the mother and her offspring is of the most importance, and no coarse grained surley fellow ought to be allowed near any mare or colt, or indeed, any domestic animal.

As soon as the foal begins to feed with its dam, provide it with a box within easy reach, and give it a handful or two of oats, free from dirt and foul seeds, three times a day. When five months old, it will be able to support itself on hay and oats; grass would also be beneficial, and the weaning ought not to make any perceptible difference. Where they have been in pasture, a somewhat different method is required; for at least six weeks before weaning, feed the mare oats at least once a day, not that it is absolutely necessary for her, for it is not, if the pasture is what it ought to be, but that the foal may learn to eat; after this has been accomplished, provide a place where the foal can feed beyond reach of its dam and give it plenty. I believe I am within limits when I say that nearly one-half of the colts annually raised in Iowa, are permanently injured at weaning time. No matter how well bred, no matter what previous or subsequent care may be taken, a foal allowed to lose flesh at weaning, is irretrievably injured. The same rule applies to calves, pigs and lambs. An old Scottish farmer once told me never to lose the flesh put on by the mother's milk, "for if you do," he added, "the bones will lose their strength, the skin never again have that mellow touch essential to a thrifty animal." This is largely true, for much of the after value of

the colt depends on the first winter; liberal feeding of good oats, good hay, pure water and plenty of exercise are absolutely necessary.

At this time it ought to be accustomed to the halter and taught to follow without resistance, but I do not approve of tying colts under any circumstances; give them good shelter and a field to run in and there will scarcely be an hour but that they will be taking that exercise so necessary to the proper development of the bone and muscle; fastened in the stable they are denied this pleasure. During the summer all that is necessary is good timothy and clover pasture with plenty of pure water. Care should always be taken in making the change from dry feed to grass, and oats and hay ought to be fed in connection with pasture for some time. A word in regard to pasture: I know that I am within bounds when I say that nine-tenths of the farmers of Iowa have altogether too much stock for their grass. There is not in this great State a single pasture field that can properly feed, during the average summer, more than one head of stock for every two acres, counting yearlings and two-year-olds, as found on the farm. Instead of that we find, perhaps, an animal for every acre. Neither colts or any other stock will do well on such pasture. During July every pasture ought to be a temptation for the farmer to cut a load or two of hay from every acre, but if he is a wise man he will allow it to remain and his stock will rise up in the fall and call him blessed. On such a pasture colts will grow rapidly and be in fine condition for the second winter; this ought to be a repetition of the first. Sheaf oats may be substituted in part for the grain, and wild hay is preferable to tame, but it must be good. If tame hay is fed, limit the quantity; the cause of heaves in horses is not so much the tame hay as the inordinate quantity consumed, overtaxing the digestive apparatus. Kindness, shelter and liberal feeding will bring its sure reward when bestowed upon a well-bred colt, and at three years old you will have no longer a colt, but a horse ready for the harness. A month or six weeks' light work and careful handling, followed by a summer's grass, will add greatly to its development. I attach great importance to working a colt a short time on the farm in the spring at three years old, followed by a summer's pasture. A word in regard to selling: Here again the average farmer is lamentably ignorant of what is really wanted by an eastern purchaser. Before offering a horse for sale he ought to know just what his horse is best suited for. If he has a well matched team, heavy and stylish in appearance, New York City or Philadelphia will pay the highest price; if they are blocky, good style and action, then Boston is the market; heavy horses that, unfortunately, have scars or other blemishes, will command better prices in the pineries than anywhere else. Never allow horses in a field with a barbed wire fence separating them from other horses.

Remember that the owner of a first-class stallion cannot afford service for the same price as a scrub or grade, and that $10 or $15 extra for the service of a good stallion, means $50 or $100, or more, to the value of the colt at four years of age. Keep your eyes wide open, do a great deal of hard thinking, and don't be afraid of work and you will find raising colts a remunerative occupation and a source of genuine pleasure.

THE FARMERS' HORSE.

BY PROF. D. A. KENT, OF AMES.

Almost every tribe or nation of people has domesticated some animal to assist in performing the labor of earning a living. The Esquimaux has a dog peculiarly fitted to aid him in hunting and fishing. The Laplander has chosen the reindeer because of its fitness to plunge through the snows and live on the moss of the Arctic regions. The Peruvian keeps the llama to carry his burdens over the Andes. The Arab has the camel because, by the peculiar conformation of its stomach it can take, at one time, sufficient water to last it several days in traveling over the hot sandy desert. Whatever may be the necessities of the different people on the face of the earth, the farmers of the western prairies must have a horse that can walk in the furrow or trot in the carriage, and endure the extremes of climate. This horse should weigh from 1,300 to 1,400 pounds. More weight than this, tends to induce sluggishness, while with much less weight, the horse will be unable to perform the required service.

I note the following points of a good farmer's horse. The nostrils should be large, cheeks broad and flat, muzzle fine, eyes medium in size and fullness, face broad bearing docile expression, ears fine and of graceful contour, throat thin, flat and narrow; neck arched and well set back on shoulders, back short, hips gently turned, breast full, chest broad and deep, lines bounding the plates gently inclined from flank to fore legs, fore legs wide apart, flat, straight, gently tapering from large bicep muscles to gently inclined pastern of medium length, terminating in a firm oblong dark colored hoof; hind legs also flat, hock well set, gambrel muscle tapering heavily into the buttock. The abdominal capacity compact and free from roundness or fullness, contour line should present no abrupt curves, so that the exterior shall be fine and symmetrical. Whatever the color, it should be deep and bright, the tail firm and possessed of full brush. Such a horse, if of proper size, will stand the fatigue of the furrow and the heat of the summer sun. He will have sufficient muscle to draw the heavy loads of the farm, sufficient respiratory force to speed the street, and sufficient potential energy to walk, trot, or gallop as occasion may require in the plow, under the saddle or on the road. We want to see a horse come from the stable with high head and tripping step, able to spring instantly at the crack of the whip "off all fours" and dart over the road to town or out to the field to work, and when Sunday comes still possessed of strength sufficient to trot to church or carry our boys in Napoleonic majesty to see their best girls.

We do not want a horse that comes drolling out of the stable stumbling over everything in his way, as tedious in turning around as a locomotive, as slow in going to work as an ox, apparently loathing his day's labor, and then at night come home drooping with fatigue by reason of the performance of an ordinary day's work.

I doubt not but that some, in contemplating the high spirited horse, will see visions of broken wagons and carriages, and farm implements and funeral processions by reason of runaway accidents, but such apprehensions are nonsensical. The superior nerve force required in the development of the spirited horse also induces superior intelligence and therefore a highly teachable and tractable nature. All the danger of unmanageable horses is obviated by good training. In fact the horse will be just what the driver makes him. If you have an ignorant, ill tempered, careless driver your horse will be nervous and probably balky, vicious and dangerous.

Many of the American horses have been so well trained as to be driven in the street without lines, or worked in the plow with the lines tied up.

When the old system of driving with a single line was in vogue, I have seen drivers spring into the saddle of the *near* wheeler, grasp the line governing the *near* leader, crack his black snake whip over the horses' heads and start in full gallop, in a hotly contested race with another four-horse team, driven in like manner; both drivers hallooing at the top of their voices and the big Pennsylvania wagons rattling like a train of cars in motion, and, yet, midst the din of all such uproar, as soon as the driver threw up his whip and called out *whoa*, every horse stopped almost instantly.

Moreover, the broad faced, symmetrical, majestic, high spirited horse is a civilizing factor in the evolution of society. If I wanted to depress the civilization of a race I would compel them all to drive mules, and if I wanted to depress it more I would compel them to work oxen, and if I wanted to sink it still lower in the depths of degradation I would compel every man to carry his burden upon his back. The high spirited horse is also man's greatest assistant in the animal kingdom. He has more courage and more fortitude than any other domestic animal. The horse can be urged in the face of danger, where even the faithful dog would crouch and tremble with fear. The horse marches proudly to the battlefield, and has won many a victory; he carries his rider courageously over flooded streams, and on long journeys many times perishing in the attempt without showing any signs of protest. Therefore this noble, spirited animal should be developed with a view of strengthening the higher qualities of his nature, rather than to depress them and reduce him to the enervated condition of the ass, or the camel or the dromedary. Experience teaches that whatever may be our ideas of heredity the form and nature of an animal may be modified in an ascending or descending scale.

Whether we adopt Darwin's theory of gemmation, or Lamark's ideas of conscious protoplasm, use of parts and environment; or Weisman's segmentation of the neucleus of the ovum; or Brooks' hypothesis of influence of the male cells; or Romanese's theory of physiological selection; or Mivart's doctrine of extraordinary births; as the clew to the laws of heredity, it is certain that by patient and persistent effort in the selection and judicious feeding of sire and dam, the ideal horse can be produced. On the matter of feeding, it may be proper to suggest the following: Feed sparingly carbonaceous diets, and liberally of a nitrogenous dietary. Carbonaceous food enervates the system and renders sluggish muscular action; distends the stomach, burdens digestion, and reduces respiration. These facts are illustrated by observing carnivorous or insectivorous animals, whose food is largely nitrogenous, and whose strength and activity are marvelous as compared with that of animals feeding largely on farinaceous or starchy diet. The comparative strength of some of the smaller insects, the agility of members of the cat family, are induced in the horse to a large extent, by feeding for muscle and tendon instead of for fat. If we observe the habits and characteristics of the various wild animals we must concede the influence of food upon animal tissue. Feed the young horse on grass, buttermilk, skim milk, oil meal and bran in the summer time, and on choice timothy and clover hay, together with oil meal, bran and oats in the winter time, and you will highten digestion, strengthen the nervous system, increase respiration, balance the circulation, and secure grace and beauty, symmetry of form, and elasticity of movement.

Were I to commence the work of developing an ideal farmers' horse, I would start with selections from the Morgan family or most muscular specimens of the standard bred horses and develop them to a weight of about 1,400 pounds, when I would have an all purpose horse, of which the American would be as proud as the Mohammedan or Arab, was over the once famous Kochlain or Barb.

I would select the standard bred horse, because he possesses in the highest degree, that has been possible for man to develop, the qualities of nerve and lung power, and strength of muscular tissue desired in our model horse. Ever since Mahomet slew the infidels of his faith, by virtue of the superior forces of his horses and horsemanship, man has been trying to promote the speed and supple quality of the Arabian horse, as representative in the thoroughbred or standard bred. And wherever we find the blood of these horses coursing through the veins of any family of horses, we find the greatest power of endurance. The only difficulty lies in the fact that size has been lost sight of on the race track. But laying the foundation for the new horse, we find the point most valuable and most difficult to obtain; namely, vitality largely acquired in the race horse. Acquisition of size without deteriorating vitality is the principal point to be gained. The draft horse gives size at once, but we cannot wait for the development of the other more difficult point. I do not want to under value the draft horse. He has served a good purpose, has given us weight and in many instances has added much to the value of our farm horses, both for the labor of the farm and for sale in the general market, and will continue to do so for many years to come. But there is a promising field for the development of a new horse. I met a prominent horse dealer from Chicago a year ago, who said he had three orders for driving horses that he had been trying to fill for the past three months, and had not then been able to find a single specimen. He said that he was limited to $500 for one, to $700 for one, and to $1,200 for the other, each horse to be not less than 16 hands high and possess splendid knee action. The price being of little consideration if the animal suited. In the present state of breeding there is not one horse in a hundred that will grade as a good carriage horse. I mention this, not beeause we want for a farmer's horse what is comprehended in the common iden of a carriage horse, but to call attention to the

fact that people who love to enjoy the luxury of driving a fine horse are only satisfied with a large, strong, high stepping, spirited, majestic horse.

THE MORGAN HORSE.

BY DELOS DUNTON, OF THE MORGAN HORSE COMPANY, DUNDEE, ILL.

Justin Morgan, the founder of the Morgan family of horses, was foaled at Springfield, Massachusetts, in 1793, and taken to Vermont when two years old. He was sired by True Briton, or Beautiful Bay, and True Briton was sired by imported Traveler. The dam of Justin Morgan was sired by Diamond; Diamond was sired by Church's Wild-air out of an imported mare of the Wild-air breed. Church's Wild-air was sired by Imported Wild-air. Both Traveler and Wild-air were English blood horses.

The following description of Justin Morgan is taken from Linsley's book on Morgan Horses: "He was about fourteen hands high, weighed about 950 pounds. His color was dark bay, with black legs, mane and tail. His mane was coarse and heavy. His head was lean and bony, the face straight, forehead broad, ears small and very fine, set rather wide apart. His eyes were medium size, very dark and prominent, with a spirited but pleasant expression. His nostrils were very large, muzzle small, and lips close and firm. His back was very short, shoulder blades and hip-bones very long and oblique, and loins exceedingly broad and muscular. His body was rather long, round and deep, close ribbed up; chest deep and wide, with the breast bone projecting a good deal in front.

His legs were short, close jointed, thin, but very wide, hard and free from meat, with muscles that were remarkably large for a horse of his size, and this superabundance of muscle exhibited itself at every step. His feet were small but well shaped, and he was in every respect perfectly sound and free from any sort of blemish. He was a very fast walker. In trotting his gait was low and smooth and his step short and nervous. His proud, bold and fearless style of movement, and his vigorous, untiring acting have, perhaps, never been surpassed.

He was perfectly trained to all the paces and evolutions of a parade horse, and when ridden at military reviews, his bold imposing style, and spirited nervous action, attracted universal attention and admiration. He was perfectly gentle and kind to handle. When taken out with halter, or bridle, he was in constant motion, and very playful."

He had many pulling matches, often with horses weighing two or three hundred pounds more than himself, and he always beat them.

Comparing Justin Morgan with his ancestors, the English thoroughbreds of a hundred years ago, as nearly as can be done by description and pictures

it would be seen that the Morgan horse was of a more thick set, stocky built, with shorter body, shorter neck and shorter legs, with heavy, strong muscles, but with all the fire and ambition of the blooded horse. In short, he was eminently fitted for a life of hard toil as well as a superb carriage horse.

It is probable that no horse ever lived that possessed the propotency of Justin Morgan. His sons and daughters, though produced from mares of every breed, form and character, were, nevertheless, almost exact duplicates of himself in all important particulars. Even now, after a hundred years, during which his blood has been crossed, and bred out until in most localities it is entirely lost to sight; any person familiar with the Morgan characistics can pick out a Morgan horse although he possesses no more than one sixty-fourth part of Morgan blood.

Justin Morgan left three sons that became noted, not only because of their own valuable qualities, but because of the stock they got. These were Sherman, Bulrush and Woodbury. Nothing is known of the pedigree of the dam of either of these horses, but the three horses resemble each other very much, as they all did their sire. From each of these horses has sprung two or more families of trotters. From Sherman came the Blackhawks, Eathan Allens and Lamberts. From Bulrush came the Morrills and Fearnaughts, and from Woodbury came the Golddusts and Magna Chartas. But we consider the trotting element in the Morgans as far less valuable to the country, as a whole, than their many other sterling qualities, which do not bring them so prominently before the public. Among these qualities may be mentioned their symmetry and beauty of form; their kindness and docility; their spirit and energy; their endurance and longevity, their willingness and ability to do anything that is asked of them.

The immediate descendants of Justin Morgan that attained the most celebrity for these valuable qualities were Gifford, by Woodbury, his second dam by True Briton, sire of Justin Morgan; Hale's Green Mountain, by Gifford, by Woodbury dam by Woodbury; Billy Root by Sherman, dam by Justin Morgan, and Royal Morgan by Sherman, dam by Justin Morgan. It will be seen that all four of these horses were inbred on both sides, two of them being double grandsons, one a grandson and great grandson, and the other a grandson, and a grandson of a half sister of Justin Morgan.

Mr. F. A. Wier, who owned Gifford the latter part of his life, told the writer that he had owned many horses, but he had owned in his long life but one HORSE, and that was Gifford.

Mr. Benj. Hibbard, now of the Morgan Horse Company, drove and handled Billy Root, when he was a boy, he never tires of telling of his many fine qualities. Hale's Green Mountain undoubtedly excited more popular enthusiasm when he was shown at the various State fairs, than any other horse that was ever exhibited. Royal Morgan, though less known to the great public, than the other three, was nevertheless quite as good a horse, and died at the age of thirty-seven years, having left behind him a large amount of very fine stock. Nearly all the Morgan horses now living that possess any considerable amount of the Morgan blood, trace to one or more of these four horses.

It is commonly believed that the Morgan blood has been so crossed and thinned out that there is now no appreciable amount of it left. This is undoubtedly true to a very large extent. Forty or fifty years ago, not only in the east but in the south, and in the then settled portion of the west, were

many highly bred and fine, stylish Morgan horses, but they are all gone now. their blood is still coursing in the veins of our common horses to a limited extent, but the owners do not know it. Thus has the blood of the best horse ever known on the globe, for every day use, been allowed to die out and become unknown, and almost forgotten, and this through the insane craze of the common people for the sporting horse of the millionaire, on the one hand; and for the huge mammoth, called a draft horse on the other. As though speed, the ability to go a half mile in a minute without a load; and avordupois, the largest weight of bone and muscle that can be massed together, were the only valuable considerations in a horse.

While the Morgan horse has thus been allowed to die out in all parts of the country, even in New England, his original home, yet there have been a few men here and there, (bless their souls) who could not and would not give up this, the grandest family of horses, and have kept on breeding them through all kinds of opposition and opprobrium, so that it is now possible to obtain a few well bred Morgan horses of the old typical style, and the Morgan Horse Co., of Dundee, Ill., have set before themselves the task of rescuing this remnant of the family, and by breeding them in and in, and judiciously crossing the various strains, they hope to reproduce all the better qualities of the Morgan horse as he was in his prime.

If this effort is sufficiently sustained by the public we see no reason why in the not far distant future, the country may not possess a class of American bred horses superior to anything we have ever had, for all general purposes; better for the farmer, better for the business man, better for the family horse, better for the gentleman's driver, better for the teamster, better for every purpose where a horse is wanted, except the sporting horse of the millionaire, and the heavy truck horse of the cities, that is not expected to go faster than a walk.

So far as we are aware, the only objection worth considering, that was ever made against the Morgan horse, was his small size. This objection can undoubtedly be overcome, partly at least, by proper and systematic breeding. Still the objection itself is not very well founded. It is an old saying that precious goods are always done up in small parcels. Size alone is not a very accurate measurement of value, or usefulness. This is true in all departments of value. The families of trees, that grow to the largest size, do not furnish the strongest or most valuable timber. Even among those families noted for their strength and toughness, the largest specimens are not selected when extreme strength and toughness is wanted. Our finest vehicles, you know, are made from small, second growth hickory, a tree that never grows to a very large size.

Among all the animals of the earth, probably none show so much strength in proportion to size as the insects and birds. Consider what power of muscle, nerve and bone are required for any animal to sustain its own weight and travel rapidly through such a thin, light medium as air; and even here, it is not the largest bird that travels the swiftest, or the most miles without resting.

When men object to the size of the Morgan horse, they simply ignore the question of quality altogether, and yet quality is vastly more important than quantity in determining value. Quality first and quantity afterwards is the true order of consideration. When the people of this country get ready to judge horses by this standard, the Morgan will be on top.

REPORTS OF COMMITTEES.

Committee on nomination of officers, and date and place of holding next meeting, reported as follows:

OFFICERS.

President—Hon. D. P. Stubbs, Fairfield.

Secretary and Treasurer—C. F. Curtiss, Ames.

Vice-Presidents—Hon. S. B. Packard, Marshalltown; Hon. H. C. Wheeler, Odebolt; C. E. Stubbs, Fairfield; T. S. Wright, Avon.

Directors—Peter Hopley, Lewis; Daniel McCarthy, Ames; John Cownie, South Amana; Capt. W. H. Jordan, Des Moines; D. P. Stubbs, Fairfield; C. F. Curtiss, Ames.

The next annual meeting will be held in Des Moines on the second Tuesday and Wednesday in January, 1893.

The following report of the Committee on Resolutions was adopted:

WHEREAS, It is of the utmost importance to the farmers of Iowa that the horses of every breed or class grown on her soil, should be free from inherited defects or blemishes; therefore,

Resolved, That the directors of the State Agricultural Society be requested to require that all breeding horses, competing for premiums, be examined by a competent veterinary surgeon, and be pronounced, before passed on by the judges, free from all blemishes that are capable of transmission by the law of inheritance.

2. That for the purpose of educating the farmers of the State, as well as for furnishing a proper basis for the rewards of merit, the State Agricultural Society be requested to inaugurate contests that will develop and exhibit the draft qualities, endurance and spirit of the various draft breeds.

3. That this Association remains of the same opinion entertained at its session two years ago, and again demands of our Legislature that laws be passed making the penalties heavier for *malicious trespass* in the destructive maiming and injuring horses and other valuable stock. And also a law giving the stallion owner a lien on the mare and foal for service of the stallion.

4. That it is the deliberate judgment of this Association, based upon the observation and experience of its members, that the owner of the mare is a heavier loser by the use of low priced service, than the owner of the stallion, for the plain reason that the owner of the stallion can and very probably will buy a cheaper horse, while the owner of the mare finds himself owning a colt that is of little value.

5 That it is the sense of this Association that congenital and other transmissible defects in either stallions or mares ought to debar them from being used as breeders.

6. That the horse breeders of Iowa should look forward to the World's Exposition of 1893 with a determination to make an exhibit commensurate with the proud position that she has reached in rearing and training of horses.

Henry Wallace was appointed to go before the board of directors of the State Agricultural Society and present the first and second resolutions for their action.

The Committee on Publication of Proceedings, made a verbal report, recommending the incorporation of the proceedings in the report of the Improved Stock Breeder's Association, and the publication of five hundred additional copies in pamphlet form.

On motion of Judge Stubbs, the report was referred to the Executive Committee.

On motion meeting adjourned.

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