The convention met at 1:30 p. m., Thursday, February 2, 1905.

President McKerrow in the chair.

THE HORSE’S FOOT.

By Dr. A. S. Alexander, Madison.

Mr. President and Gentlemen: I hold in my hand a model of a horse’s foot, made in sections so that it can be taken apart and studied, and this is a portion of a model of a whole horse that cost about $1,000. You can take any part of this horse’s body and dissect it, just as we can this foot here. We can use this kind of a specimen to illustrate our work at the college here, and it is much more easily understood, and each man in his particular department has things of this sort to work with. There is nothing too good for the teachers or the students of the Wisconsin University, so far as I have found.

Now, I want to interest you in the foot of a horse. Did it ever strike you that a horse has got to go to bed with his boots on? There is his shoe, a fixture on the end of the leg. You get a new shoe that pinches, and if you think it is going to bother you, or cause a corn to grow, you simply unlace it, take it off and throw it in a corner, but if there is anything hurting about the horse’s foot, he has to grin and bear it—if a horse can grin. He can suffer, we know that, and we know that he does. We also know that the foot that the Lord put on a horse always fits him and doesn’t hurt at all, because it is naturally developed, gives plenty of room for the free-action and comfort of the structures that are inside this horny box. But the foot that man mutilates grows to be something that is too tight, that causes pain and the horse can not get rid of it.

I want you to bear in mind that this foot is something else besides a mere piece of horn that can be whittled and cut and burned and nailed and hammered at the will of man without injury. Yet this seems to be the ordinary idea, that this is just like a piece of white pine that the politician whittles, sitting on a soap box when he is discussing things at the country store. As we look at that hoof, I want you to see what is in-
side of the wall. There is the hoof wall. Now, what is inside of it? You notice that that is red. The red color is due to the blood and that means that there are thousands of little blood vessels here accompanied also by nerves, and yet there is all the distance that there is, a quarter of an inch from the outside of that horny hoof until you come to this sensitive foot below; just a quarter of an inch through the wall just a quarter to a half of an inch through the sole. The inner portion of this horny wall is formed of a large number of little horny leaves, called horny laminae. There is no feeling in those leaves, they are part and parcel of the outer horn, but between each of these layers of horny leaves are fleshy leaves that are full of blood and nerves and there is just a quarter of an inch from the outside of these fleshy leaves between these horny leaves. The fleshy leaves give rise to these horny leaves, they produce them, throw them out, give birth to them, and in a normal condition, those leaves do not press down upon these fleshy leaves and hurt them, they fit into them comfortably without any difficulty.

From those leaves then grow this inside portion of the hoof. From the bottom of the inner sole, which you see is full of blood vessels, little fingerlike fleshy bodies project into the horn sole. The velvety tissue and the fleshy bodies referred to produce and throw out horn, which goes to form the sole. The outer portion of this foot throws down from that little band, just below the hair—the band which becomes white when you put water around the hoof—a substance the purpose of which is to act as a varnish to protect the hoof. The next portion of the hoof or the middle portion of the wall is circled by another band, which is deeper and lies in this groove inside the foot. The coronary band passes down into the hoof tissues little fleshy fingers, which carry hoof, and their receiving tubes are held together in bundles by a gluelike material. Thus we have four ways in which this hoof is produced, from the periopley comes the varnish matter, from the coronary band these masses of little tubes, from the fleshy leaves, the horny leaves and from this fleshy velvety tissue the sole of the foot.

That is Nature's way of growing the foot. Suppose the horn is left alone, it grows, as regards a colt on the pasture, the foot
is kept moist, it is not touched by the rasp or the knife or the nail, it grows naturally, it is kept moist and soft.

Did you ever notice what a tremendous change takes place in the condition of the horse's foot after her has been kept in the barn, say, for three or four years? Just compare that with the foot of the colt, and what do you notice? First of all, that the heels have become contracted and the sole has either become very concave or very complex; that this frog has wilted or wasted, atrophied and shrunk in this portion up in to the center of the hoof—it has become wrinkled, looks dry, different in shape here and there, not uniform and symmetrical. Now, suppose those things have happened; what do you think is the condition of these sensitive parts of this foot below? Contract that wall and those fleshy leaves are pinched down upon by these horny leaves, necessarily, because they become less in size. At the same time, that shrinking means that each of these little tubes shuts down upon the little fleshy finger that enters into each tube. Each of those little horn tubes contracts upon these fingerlike fleshy little tubes and the horse gets sore and becomes stiff. He is in exactly the same condition that you are when you put on tight shoes, that is, the sensitive tissues of the foot are being squeezed and pinched and pressed upon.

That is not all, that is merely a matter of causing pain, but if you press upon the blood vessel, you reduce the size and the calibre of the blood vessels. Squeeze upon these blood vessels and you remove part of the nourishment of the foot and the foot ceases to grow, necessarily.

Now, we will see what the ordinary blacksmith thinks about this. His grandfather told his father how a horse should be shod, and what a horse's foot was made of, and how it should be treated. He learned those lessons from a mighty good source, he took them as Bible truth, just as much as he took his Bible lessons at his mother's knee, but he is right on one side and dead wrong on the other. I want each of you men that has a horse to remember that he not only owns the horse, but his foot, and when you take him into a shoeing shop, you have a right and privilege to say something regarding what the blacksmith shall do with those four pieces of property of yours. He will get angry, he is a difficult man to approach, because he knows more about it than anybody else,—he thinks so,—but still if you are
very polite and gentle and persuasive and pay him enough, he will probably do what he is told.

Now, what does he ordinarily do? I want just to talk on the most practical parts of this subject. From long experience, he has decided that that sole should be whittled away until it is so thin that you can press it in with the thumbs. It doesn’t look clean and tidy and nice otherwise. It doesn’t seem as if he is earning his money unless he has done that much cutting. But now what happens when he cuts it? He simply takes away two thirds of this sole and the more he cuts the closer he comes to this sensitive tissue. Suppose you had to go out and walk on the gravel, or the rough land in your stocking soles, wouldn’t it hurt? A horse with a sole that is soft and thin feels everything he steps upon.

Having removed this dry sole on the outside, you reach this new growing sole that is only half formed. The new sole grows from this sensitive part, and it is only half made, and Nature, to protect it, keeps on the same old sole. But the blacksmith cuts that all away and exposes the newly made sole that is soft. That is adding insult to injury. Then he takes a hot iron and slaps it onto this denuded sole and the heat dries up the new horn that is forming, at once causes evaporation and as it dries, it pinches down upon every one of those little fleshy papillae that give birth to this new sole.

Further, he has been taught that the frog in a horse’s foot is too large and it doesn’t look well when it is left the size that the Creator made it. So he takes his knife and cuts a great big slice out of each side of this frog, takes off all the old tissue so that the nice new frog may show. That is another evidence that he is earning his money, but the Creator has provided that if any part of the frog is excessive, not required by the horse, she will get rid of it herself, and twice a year, left alone, a horse will shed off the outer part of this frog, only shedding it when the underlying part of the frog is ready to be used. Cut away this frog with a knife and you expose half made frog tissue that is not ready to come into contact with the ground, but, half made, it proceeds at once to contract and dry up. The tendency then is to shrink. But that is not all. The Creator turned the corners of these walls around here and brought them in toward the point of the frog. Those are called the “bars,”
and the office of those bars is to act just like the side timbers of
the king post in a roof, to keep the roof sides apart. What
would happen if you should go up with a saw and cut those
away? The next snow that comes the roof caves in. But the
blacksmith says that doesn’t look well, and he cuts that out of
there and he does that to open this foot, to spring the heels and
give it width. What absurdity to cut those parts away! The
parts commence to contract necessarily.

Is that all? No. To further help the mechanical improve-
ment of this foot he next takes his knife and cuts a great big
V-shaped piece out at each side of this frog. You have all
seen it. He has taken away those two bars; there was but one
brace left, and he cuts that away as a last resort. He will tell
you that he does it to open the heels. It just causes and makes
absolutely certain the shrinking of these heels together, and he
is not finished yet.

Now, this poor fellow is not doing this intentionally, he
doesn’t mean to be mean to this horse, don’t think that I have
no sympathy with him or that I am roasting him to hard; it is
a mere matter of ignorance.

He has not finished yet with his work, he wants to earn his
money, so, after the shoe is nailed on and it doesn’t fit very
well, is a little too small for the foot, he takes a rasp and rasps
the foot all around and makes the shoe fit just as nice as can be,
and the Lord put on this cuticle here for the special purpose of
protecting the underlying tissue in this horn, but the blacksmith
cuts it all off. That varnish keeps the foot from drying out;
remove it, and evaporation takes place, every one of these little
tubes begins to dry out, and so you have the same process going
on in every part of this foot, causing contraction—and what
does that contract upon? It contracts upon this red part that is
full of blood vessels and nerves; the blacksmith calls it the
“quick.” Take and rip down your fingernail only a little bit
and it hurts like the dickens when you get to the quick. Well,
it is the same way with the horse. You have lessened the size
of this hoof he is wearing on his foot and you are going to hurt
his foot. Your way is to take it off, the horse can’t do that.
The shoer’s way is to take a piece out of the shoe the same as you
cut your shoe to keep it off a bunion.
Now, then, you have several parts of this foot contracting. Not only is the quick interfered with, but all these parts of the foot require room to work in. Under this horny frog is this fatty frog, which is sensitive. Under that is other tissue; this red part is simply a stocking, pulled up over the more sensitive tissues. Inside of this stocking we have got the coffin-bone, the coronary-bone and the navicular-bone. There are some synovial bursae—oil vesicles—up here and some down here. Those joints have to have room to work, haven’t they? The Creator gave them lots of room. The horse that has been shod for several years, as many of them are, will go as if he has got “katzenjammer” in the morning, simply because his foot is contracted and he cannot move freely.

The next point to remember in connection with these feet is that there are other sensitive tissues inside the foot, right under this wall. We call them the lateral cartilages, each is a piece of rubber-like, elastic tissue, called a cartilage. It is at each side of the heel in there, sticking up a little above the foot. The purpose of that in nature is to help expand and contract the walls. When the horse steps upon his frog, it causes a partial expansion of the heel, and this cartilage brings it back after it is expanded. Can it expand in this contracted foot? No, there is no room for it; it is pressed and pinched down upon and the result is that Nature turns it to bone, it becomes sore, it hurts,—Nature says if we prevent all motion there, the pain will cease, and so it does. First, the pain gives rise to inflammation; then the inflammation causes swelling; then a bony deposit forms and this turns the cartilage to bone, prevents motion and that stops the pain.

The lesson from this simply is, that in shoeing a horse you will request the blacksmith, first, to leave the soles alone, or only lightly remove those portions that are coming away anyway; that he shall absolutely not touch the frog, or cut those parts; that he shall absolutely not cut those notches on each side of the foot and then, that he shall put on a shoe that fits and not take his rasp and fit the foot to the shoe.

Furthermore, let him leave this varnish alone, and not use the rasp anywhere, except just under the nails where they clinch, and then only sufficiently to make a notch into which the nail
can find a resting place. Then the foot of a horse that has been
shod year after year will look like that of a colt.

Go home and look at your horse’s feet and see if they look
like those of your three year old colt, and unless they do, you
may be sure the horses are not comfortable, they suffer pain,
they say nothing about it, but they feel it just the same, because
the foot is not growing naturally, and the horse’s usefulness is
partially destroyed.

Gentlemen, the average life of a draft horse on the streets of
Chicago or Milwaukee under the best and most satisfactory and
hygienic care and stabling, with the best shoeing we can get, is
about seven years. With bad shoeing, we can shorten this term
to about two years. The simple improvement in shoeing, pro-
ceeding from an intelligent, modern idea of the foot and the
proper way of treating the foot, would increase the utility and
life of the horse several years, and that would mean millions
of dollars throughout the country in working animals. That
foot can be grown as a farm product just as much as are your
turnips or any other crop. Did you ever think of it in that
light? No.

That foot is the product of a certain constituent of the ration.
Keratin is a product of the protein ingredients of the food and
it forms the albumenoid portion of the foot; in the horse’s ra-
tion there must always be that ingredient that goes to form the
keratin which is the matter from which the horn is formed. In
oats and bran and the other cereals apart from corn, we get
plenty of those things which go to form a good hoof.

Mr. McKerrow could tell you that in his sheep, if he had one
that had been sick and lacking appetite for three or four weeks,
that from the fleece of that sheep he could take the wool and
run his finger down the pile and find a place that was weak, a
poor place, which would correspond to the period during which
that sheep was sick. Now, that is only to show you the in-
fluence of food upon the fleece, and food also has a similar in-
fluence upon the growth of the horn in this hoof. Knowing
that the foot comes from certain ingredients in the food, can
we in the breeding of horses expect, by an excessive use of corn,
to produce ideal feet? No. But we try to, a good many of us.
You can grow a great big foot that is short in the proper tissue
that we must have in a good hoof.
The first thing that is looked to in the market in Chicago or elsewhere is the horse's feet. You watch those "sharpers" on the street, those fellows down at the Stock Yards; you trot out a horse, are their eyes looking at his nice ears or neck or body? No. They are looking right down on the ground at that horse's feet, and if they find they are little, contracted feet, or great big, soft, loose tissued feet that won't stand wear and tear, you will soon hear from it, and find out that the price of that horse depends on the class of foot he has got as much as upon the bone, and the rest of him above the hoof, and one of the worst faults of all our farm colts that go into the city of Chicago or that are being bought by the Ohio and Pennsylvania men, is poor feet. Not poor to look at, but poor in structure, poor in tissue.

Remember, that in our breeding of horses, it is just as important to breed good feet onto them as to get weight and blood into them. It is even more important, because a horse that has a tremendous body and good legs and a set of poor feet is not good for much. We must put good feet on him.

First of all, the ration must be right. Then, just as each of these boys has to be brought up by his mother so that he will have a stout, well-formed frame, so that foot has got to be trained from weaning time till the horse goes to market. You have got to take time at least once in every few months to remove the growth of the foot so that at all times a horse may stand level and true upon the ground, dependent upon the levelness of the hoof, and the shape of the bones that are superimposed above the foot. To illustrate, take a clock and put it on a place which is not level, does it run true? Take any of these great horizontal engines and if the bed be not level, the engine very shortly will go to pieces or go wrong somewhere; it must be level and have each part of the engine so it may work truly.

So, with this leg above this foot; cant it to one side or the other from the natural position of these bones above, and as that foot grows, from weaning time, so depends the structure of the leg above and upon the structure of those legs depends the action of the horse, and upon the action of the horse depends his price when he goes to market.

If in the foot of the colt one wall gets a little too high, it cants these bones above so that they get out of position, and as he
grows on, a little further, the leg twists more and more and after a while that abnormal condition of the leg becomes permanent and cannot be removed. That can absolutely be prevented by simply trimming this foot level.

See what Nature does as to trimming that foot! There is a plaster-cast of a horse's foot in Racine county, Wisconsin. The colt ran away, threw the man's wife out and hurt her. He got mad at the colt and put it into a shed, never cleaned it out, left him alone, and in three years there is the kind of set of feet that horse grew. That man was prosecuted by the Humane society of Wisconsin and was punished, as he deserved to be. Of course that is an exaggerated form, but it shows you what can happen if a man does nothing to assist Nature in keeping the foot in shape. Yet, we take it for granted many of us that our colts if bred right and with all our skill in feeding, are fed properly, will grow up with good feet and legs in good condition even without giving them the necessary care.

Gentlemen, it is absolutely necessary to train up this foot in the way it should go just as we fathers attempt to train up our children in the way they should go, and the Bible says they won't depart from it afterward—we hope that is so.

So I say, this foot is not simply a piece of wood: it is something far more important than most men think. Not only in the selection of sires and dams that have ideally perfect or at least good sound feet must we be careful, but we must make it our chief end in the production of the horse for labor that he shall have excellent feet, not only because he will bring a bigger price, but because that horse is going to suffer less in life, and that is quite a little item, to save an animal pain. They are our servants, they are dumb, they cannot say, "Oh my, that foot hurts!" We can at least do our part to keep it from hurting, and incidentally if we do so, it will pay us best. Then having grown that kind of a foot, let us try to educate our blacksmith friend, handle him gently, try to show him some of these things I have shown you and he will look upon this foot, not as a mere piece of pine that can be whittled, without thought, but as a box in which is contained a number of the most sensitive tissues that cannot be handled without injury to the animal. I thank you.
DISCUSSION.

Mr. Brigham: You said not to make much of a cut where the nails are clinched. How much can I insist upon the blacksmith’s making?

Dr. Alexander: It is quite legitimate for him to rasp a groove sufficiently deep to give the clinch a proper seat that it may hold, but do not allow him to finish up the work by rasping the hoof all around and especially no rasping up to the hair.

The hoof is much thicker up toward the hair than down below, so special rasping at this upper two-thirds of the foot is very injurious.

Mr. Brigham: A blacksmith makes a shoe fit as nearly as he can, then he always takes the rasp and just rasps off the very lower edge of the foot, so it will make the shoe a pretty good fit. That is all right, isn’t it?

Dr. Alexander: It is far better to make the shoe a right good fit. I would rather pay him a quarter more for a set of shoes and have him fit them well, than have him cut the foot to make the shoe fit.

Mr. Brigham: He ought not to cut the foot a quarter of an inch or an eighth of an inch to get the outside edge of the foot down to the shoe?

Dr. Alexander: You can cut this outside wall, or bear an iron on there, but the Creator put this material here as a special varnish and to prevent evaporation does harm.

Mr. Cunningham: In this matter of feet, does it make a difference the kind of field that the horse or colt is on?

Dr. Alexander: Very materially so. You take the Fen counties of England where the land is an alluvial deposit, that is, a sediment from water and where the grass grows very long and watery, deficient in nutrition, you get a corresponding growth of foot, a large, loose tissued foot. On that kind of soil a turnip, instead of growing a solid, nice tissue, a juicy root, becomes a large splendid looking root, but very small in feeding qualities. It grows a coarse foot.

Prof. Henry: Is Wisconsin with its soil, its grasses and its grains, a good region for raising a fine quality of horses?
Dr. Alexander: I know of no better. We have a soil that is rich in the mineral matter that goes to form bone, phosphate, lime, carbonate of lime and other mineral salts, we have our great rivers; we have soil in Wisconsin that produces heavy oats, soil that produces legumes, rich in protein. This foot is the product, as I told you, of keratin, we can produce keratin for the production of feet as well in Wisconsin as any place I know. The early progenitors of the English shire horse are identically the same as those which give rise to the Clydesdale horse. It was merely the difference of the different district that developed one horse that was individually different from the others. In the Fen districts it was a moral impossibility to grow horses with flinty bone and close textured hoofs. The same class of horse they put up in the Clydesdale district where there is a clay soil, rich in minerals, where oats grow forty-five bushels to the acre. The class of food and soil change as a matter of environment, as an influence of district. For a like reason, a horse long raised on the Missouri flats along the Mississippi and brought up to Wisconsin shows invariably a vast improvement in quality of bone, in the quality of the hair and in the quality of the hoof. We have the opportunity, if we are only wise enough to take advantage of it, and we are going to try if we can all get together and approach it in a sensible manner.

It is just as true of sheep. I spoke of Mr. McKerrow's wool showing weak places corresponding to the time when the sheep was sick. That illustrates that wool can be influenced by accidents just the same as that foot. The same class of soil gives us a good strong quality of fleece as gives us the same kind of foot.

Mr. Bissell: Do I understand that side-bone arises from an improper trimming of the foot?

Dr. Alexander: Not necessarily at all. It comes, first of all, largely from concussion; that means a strong blow that causes irritation, then inflammation, then we have an excessive supply of blood to the part. It would seem then that if this part is inflamed through concussion that nature seeks to change it from an elastic tissue to a bony one, for the reason that movement creates pain. When this structure is changed to bone, the pain ceases, the animal does not suffer, but he is stiff. Side-bone is largely due, first of all, to the shape of the foot.
Mr. Bissell: You would not consider side-bone much of a blemish?

Dr. Alexander: It is decidedly a blemish. It is a shape of the feet we do not want.

Prof. Henry: What is the advantage of using bran as a feed for a horse so far as it can be reasonably used?

Dr. Alexander: In order to keep a horse healthy, we have to have a fairly laxative food that the bowels may be kept regular, that is one reason. The second reason is that bran is very rich in earthy matters, mineral matters that go to form bone, it is a protein food rich in nutrients, such nutrients as are necessary to the production of strong bone and which will put the proper amount of horn on the hoof which always goes together with that class of bone. Bran plus oats along with our grain feed and the excellent hay we have in this state are admirable feeds for the raising of the kind of horse I spoke of, and the country begins to recognize that our draught colts are not developed largely in Wisconsin until they are five years old, and we begin to find a market in Pennsylvania and Ohio. You will be surprised to know how many Wisconsin colts that go to Chicago, go beyond there to Ohio and those eastern states. And why? Because we can raise the foundation, the structure, upon which can be built the ideal frames of draught horses.

ADVERTISING LIVE STOCK BY ATTENDING FAIRS, ETC.

By J. W. Martin, Richland City, Wis.

Mr. President, Gentlemen: I don’t know much about this subject—I wish I did. I think as Mr. White said, this morning, that it is one of the most serious things that we have to deal with, this advertising.

To begin with, I say do not advertise what you haven’t got; do not overdo what you have got; rather keep a little bit under.