as Mr. Tormey has in his father's work, and follows right along the line, associating himself in that work.

Now, we have another. You have been familiar with the work that Superintendent McKerrow and his son have been doing along the lines of sheep husbandry. They have not only become noted importers and breeders, who have done a great deal toward developing this industry, but have been in close touch with the industry throughout the State and farther, and I am happy at this time to introduce to you Mr. W. A. McKerrow, the younger member of the firm, who will talk to you upon the sheep industry in Wisconsin.

THE SHEEP INDUSTRY IN WISCONSIN.

W. A. McKerrow, Pewaukee, Wis.

The historical or evolutionary method has been applied to all classes of industries, institutions, plants, animals and man. By this method we may understand the factors entering into present accomplishments and conditions. Industries have come into existence contemporaneous with the development of new wants and greater ingenuity in man, demand for giving use to production principally, but being partially created and assisted by production. Plants have taken on a wonderful capacity for variability under changes of environment and modification in treatment, and animals have been changed in character and differentiated in accordance with utility, or the purpose for which man has cultured them. Man has developed a wonderful social nature and a vast capacity for organization under modern conditions of dense population, and along with this has developed the intellectual and spiritual side of his nature above the physical. The study of this is highly interesting, but it is more than interesting; it is profitable. The continuity or indestructibility of evolutionary tendencies and processes or rather the appreciation and recognition of them is a light to the future in respect to which these industries and processes are studied. For example if modern conditions show a tendency for the development of mind, rather than muscle, the perfection of the mental ideal, spells success, for it is the type which assimilates most
closely to the world ideal. This doctrine has its limitations. A sound mind requires a sound body and the idea otherwise expressed would be that the factor of mind organization or management is a bigger factor in general world activity or production than physical strength is. So much for example.

Modern sheep breeding is as much an evolution as any other industry is, and the study of its tendencies and changes should be just as profitable and necessary as the tendencies of any other industry.

It is plain in the first place that sheep breeding lends itself readily to this sort of examination. Our knowledge of the sheep business runs parallel with authentic history, for sheep breeding was the earliest of the arts. Abraham, according to scripture, viewed his flocks from his tent door. Jacob used the wool to make a coat of many colors for Joseph. We cannot alone glean general knowledge of the system of sheep husbandry followed and this is peculiarly easy as the pastoral system has remained practically unchanged even up to the present time. Our sheep in the mountain districts in their original state are practically the same as in early ages.

A study of the general features of the sheep business now and of old teaches us one important economic fact. In the pastoral age, sheep was almost the sole wealth—at least sheep or cattle. The business then was sole and general, so to speak. Agriculture, mining, and industrial arts, and the professions, were of no importance, dignity or extent, though we must concede them a beginning some place. The important thing to notice then, is, that sheep-keeping was the big industrial feature. Its use as meat is not its earliest one. It was then the instrument of wealth. This introduction may seem strange to you, under the topic, "Sheep breeding in Wisconsin," however. The realization of early conditions fixes by contrast, the condition of sheep husbandry, in national economy at present.

In modern times, sheep breeding is a much more limited affair, naturally speaking, than it formerly was. Sheep at one time answered most of the wants of sheep-keepers and of the total of pastoral population. Now the producer of sheep, as the producer of any other product is engaged in furnishing to the world of consumers products that go with an innumerable list of other products to satisfy complex rather than simple needs. His business is measured up on purely a commercial basis.
There is no special honor in having large flocks apart from the business prudence their owner displays in putting himself ahead. If there is anything to be said in favor of one industry as against another for honor, we should have to frame our conclusions in this way. This is a commercial and speculative age and our big men are the commercial and speculative men. Wealth used to be counted in sheep, but there are faster ways for the acquisition of wealth than by sheep keeping, so that sheep-keeping is not the road to the highest distinction.

This is an age of currency and finance and the financier has the call at present. Then we must find our place and fill it well.

General industrial and world evolution has differentiated and specialized men's uses and functions. We cannot longer be the whole thing but only a part of a complex whole, just the same as the organs of the body form one function of a complex organism, of the whole body. The whole organism and its well being, however, is involved sensitively in the perfection of each organ, as each organ becomes the subject of special care and study.

The general lesson to be learned from the contemplation of the specialization of world duties simply teaches us the need of specialization to secure perfection with respect to single industries. Sheep breeding is not only a single branch of specialization but each special purpose for which the product must reach is an individual branch. And we shall treat mutton production from the view point of the producer on high-priced lands. The rancher is a pastoralist and to some extent may be compared with the shepherds of Bible history, but the day of the old time ranch methods are numbers. There are greater possibilities in the cultivation of kind rather than numbers. This side of breeding is becoming more and more important as the art is developed.

Neither can the care and management be discounted for the making of special meat products is as great a factor as it is of blood. The need of intensifying is the most obvious of all aims with the producer of stock and this has always the two sides of selection and care, of which we will speak later.

We must therefore look for greater improvement in our flocks in the middle west. We have said time and again, the production of mutton is and will rest upon the farmers of the smaller farms of the middle west, our great grazing districts are being transformed from their dry and unthrifty state into veritable
gardens through irrigation and cultivation, thus reducing the area populated with the shepherds and the golden hoofs. May we look with the mind's eye into Great Britain's fertile fields, hills and valleys, and ask ourselves, why these people, in all parts of that great country, are making the greatest success in sheep farming? Because of that specialization necessary for the highest development of mutton production necessary in intensely farmed districts.

Wisconsin is adapted to sheep husbandry in climate, soil, and nearness to markets. She stands without an equal in the quality of her pure-bred flocks. Sheep from this state have won more prizes at the greatest American shows in the past fifteen years than any other state in the Union. The University of Wisconsin has been more successful in the show ring with fat stuff than any other institution. The one great reason we do not have more high class flocks, is the lack of intelligent care, breeding and study, successful breeders must give to attain the greatest success. This does not mean, every sheepman should aim to produce pure-bred sheep for the show-ring but rather aim to produce a mutton carcass, fit for the highest class trade.

We find in the production of live stock of all classes, great stress is being laid upon the use of pure bred, registered sires. Wisconsin is waging war against the mongrel stallion because our best and most observing men see the effects on horse production. Could you imagine the great six horse teams of Morris, Swift and Armour being sired by mongrel stallions? Let us review the winning earloads of mutton lambs at the Chicago International and grand Champions, ever since the beginning of that show, and we find in every instance they were sired by pure-bred recorded rams of the down breeds. It is conceded that pure breeds will give that uniformity in the lamb crop, with those feeding qualities not obtainable by the use of mongrel sires.

There is a difference in pure-bred sires. There are scrubs in pure-breds as well as mongrels. This the breeder should guard against, no matter how good the breeding without individuality we are working against odds. However a great many times, a well bred animal of poor individuality will reproduce much better than many mongrels. Let us follow the flock throughout the year, noting a few essentials in the care and feeding.

The beginning of the sheep industry is the lambing time.
Here is needed the wise skill and happy instinct of the shepherd, to know what to do and when. The ewe flock on entering winter quarters, needs the vigilant shepherd’s eye. Exercise for the pregnant ewe is an important factor in producing strong offspring. The long walk, the exercising yard, old pasture fields or stalk fields, should be used every day before lambing, retaining strength and vigor in the growth of the young.

The ewe to be at the best, should be in good condition at time of lambing, some grain ration is necessary. We have found in our experience a mixture of oats, corn, bran and oil meal makes a good ration for the ewe, the amount depending entirely on the condition of the flock, and the coarse feeds being fed.

Our coarse feeds consist of clover and alfalfa hay and corn fodders. The alfalfa crop is our favorite for sheep feeding. We are growing it to a certain degree of success and believe in the future we shall be more successful by inoculating our soil, by sowing alfalfa with all our clover seeding from year to year.

For succulent feed, there is nothing can take the place of roots and some feed of this nature is profitable for the proper assimilation of other feeds in their dried state. The natural food for the animal is grass, and the nearer we can reproduce these food conditions, the better our flocks will thrive. In Great Britain, we find the average flockmaster feeding from five to twenty pounds of roots per head per day. This we cannot do, but a few roots are a profitable crop for the production of high class mutton, both for the breeding ewe and growing stock. However, we have in Wisconsin a feed which will act as a fairly good succulence, and the cost of production is much less. This is corn silage. This can be fed to the breeding flock, from 2 to 3 pounds per day with excellent results. Matured silage gives much the best results, with less danger of set back to the flock of overfeeding sour silage. The pregnant ewe, then, in order to obtain the best results, should have first of all, plenty of exercise, together with foods conducive to the growth of the young and proper succulence, later having a heavier grain ration at least two or three weeks before lambing time.

Other influences affecting milk production favorably or that may be made so as to affect it are heredity, form, and selection.

On the principle that like produces like, the ewe lamb, produced by a free milking mother descended from two or more ancestors in the material line that are also free milkers, is more
certain to be a free milk producer than a ewe lamb chosen for retention in the flock simply on the ground of her individuality. Likewise the ewe lamb, the offspring of a sire, the progeny of a free milking ewe, and the immediate descendent of even a limited succession of free milking ewes, is more likely to be a free milker than if chosen without any regard to such descent, consequently when due regard is given to the milking qualities of the ancestry on the side of both sire and dam, in the ewe lambs, chosen for the perpetuation of the qualities, the results cannot but prove favorable.

The form of the individual would seem to be but little less powerful to influence free milk production than heredity. The matter of form has a great deal to do with these tendencies. I like to see a large capacious barrel, a head at least inclining to fineness, a fine neck, and small where it joins the head. Selection of the ewe then should lie along the lines mentioned, coupled with good care to give the best results.

Now let us suppose that the ewe has been selected and treated rightly, that she has been properly fed and exercised. She is strong and active at lambing time. She gets uneasy with the rest of the flock, goes off by herself, lies down and gets up. Then we must place her in a pen by herself, preferably away from the others in a quiet place, until the young lamb is born. Another time perhaps you will find the ewe has dropped the lamb in a cold place and it has become so chilled that it cannot suck. The thing to do is to take it at once to the house and plunge it all over in a tub of hot water, as hot as you yourself can endure. This will revive it quicker than anything else, wipe it thoroughly dry and when its blood is circulating well, give it some of its mother's milk. Care at this stage has saved the careful shepherd hundreds of dollars in currency with the satisfaction of having a greater percentage of production.

When the lamb attains the age of ten days to two weeks, we see it around the feeding troughs trying to nibble grain and hay. Have your lamb creep ready for it, namely, a small pen in a bright sunny corner of the barn, or if space does not permit, a high dry spot in the yard may be chosen. In this creep, we place a trough, about six inches high with a bar parallel with the trough about four inches above, to prevent the youngster from climbing into it, as lambs will do. It is fed whole oats, each day. A small rack should have a place in the creep for
the best hay harvested. Fresh clean food each day will profit the feeder. The results derived are apparent, not only at the time of feeding, but after weaning they will readily feed on the fattening rations.

One of the great difficulties in the sheep business in the intensely farmed districts has been the infection with internal parasites. In this, the farmer is largely at fault. In driving through our dairy districts the observer will note, sheep grazing on the old woodlot pasture, dried and burnt with the summer sun, and yet on the same farm, we find the dairy herd in a luxuriant growth of clover and timothy. Sheepmen or shepherds, if we can conscientiously so title them, are running their flock on these old pastures, the home and breeding ground of intestinal and lung worms.

We find it profitable in mutton production to keep our sheep on new seeding, especially the growing lamb. We find it an excellent plan to seed rape, in our fields of corn to be harvested for the silo, at last cultivation for fall feeding our market or breeding lambs after weaning.

Lambs should be weaned when from four to four and one-half months old, at this time the pasture as a rule is drying up. By weaning our lambs and putting them into the best, we can advantageously turn the ewes on the dry pastures for two or three weeks, until they have released the milk supply. The udders should be watched by the flock-master to relieve ewes with full udders.

The ewe flock, before the mating season, should be put on good feed. We find the flushing of the ewe flock an important factor, both in prolificacy and getting ewes with lamb.

The lamb flock is now on the best clover or rape pasture. A change is what they should have, when one is ready to feed for the market, the aim should be to feed lambs rather than mature sheep as the food part of the investment is used for growth and fat producing. Lambs will make better gains for food consumed than older animals. We here in Wisconsin should aim to reach the market when the western lamb is not over running the market. I earnestly believe the breeder and feeder makes a great mistake in marketing his lamb in a warmed up state. A finished product will always bring a much better price than one only started on feed.

In summing up the essentials for better mutton production,
we note the selection of the sire and dam, here enters the question of prepotency, and its effect. It is an illustration of the law that like produced like. It is that law illustrating itself in what may be looked upon in the concrete form. Possessed in considerable degree by all pure bred animals, following a lineage of vigorous, prepotent ancestors.

Prepotency in dams is not so important as prepotency in sires. Nevertheless, it is true, that a dam, which transmits her own peculiar excellencies, is very valuable. When prepotency in both sire and dam are marked and in the same directions, then it is that animals of highest excellence are secured.

The care of the ewe flock and the young lamb with the object of making the greatest gains, in the least time at a nominal cost, should be our chief aim, together with quality. The production of early lambs, or easter lambs, has not entered into a factor in Wisconsin to any considerable extent.

As a man must shape his product primarily by demand, these must shape his actions by his circumstances and fitness to produce the commodity required, reconcile these factors with his tastes and finally put all his care and energy into the enterprise.

Though the sheep business is only a part of the vast whole of production, the cow produces milk and beef, and cotton competes with wool, and hams and bacon and poultry have been added to beef as his competitors in meat supply, this means the addition rather than reduction of incivilities to energy and ingenuity in sheep husbandry. Compared with the ancient shepherd, the modern one should be a walking encyclopedia.

DISCUSSION.

A Member: We would like to have Mr. McKerrow tell us if he considers mangels and beets good feed for rams and wethers?

Mr. McKerrow: Yes, we consider mangels and beets very good feed. Of course we consider the best root feed is the rutabaga, but mangels and beets are profitable feeds. We produce a considerable portion of the rutabagas, because they can be produced at much less cost than the Swedes.

A Member: Are they safe feed for rams and wethers?

Mr. McKerrow: No, not to a considerable extent. We have fed mangels to rams in very small amounts, but to feed in large amounts you will get bad results.
Pres. McKerrow: Does it make any difference when the mangels are carried over to warm weather of the succeeding spring after being grown, after they are woody in the center?

Mr. McKerrow: Yes, you could feed some more at that time, although I would want to be on the look out and not feed very much at any time.

A Member: How about corn silage for rams?

Mr. McKerrow: Yes, we can feed corn silage to rams, and if the corn is in the proper state of maturity when put in the silo, we can feed from two to three pounds, and a great many times a larger amount of that succulent feed to rams.

A Member: Does it have any effect on the prepotency?

Mr. McKerrow: No, it does not. We have not found any bad results and I haven't heard of any.

Mr. Hill: You say if the corn is put in at the proper stage. What is the proper stage?

Mr. McKerrow: We like to have our corn almost ready for the husking stage for sheep, and we also like to have our corn ensilage cut down and let the corn wilt a little bit before putting it into the silo unless you have a dry year and the leaves are dry to some extent.

A Member: Will the ewe take the lamb after it has been dipped in hot water?

Mr. McKerrow: Yes, as a rule. Sometimes we have a little trouble and sometimes we can help that by putting a little peppermint on the lamb and also on the mother's nose.

Mr. Roberts: Feeding lambs, those that you wish to carry over for breeders, you wouldn't feed them very heavily on corn?

Mr. McKerrow: We feed but very little corn if any. In turning young lambs out, we don't feed any grain until the pasture gets very short.

Mr. Nordman: There is one beautiful thing about the sheep industry Mr. McKerrow brought out very nicely, and that is that it is going to be carried on in the future by the small farmer. In the northern part of the State it has been tried by great aggregations of capital, and they have brought sheep in there by the ten thousand and they have proven a failure in almost every instance. The sheep industry of the future is going to be carried on by the small farmer, the man that has a small flock.

Now, there is one other point: that is in regard to summer
pasture. It seems to me that where a man has a certain amount of land to devote to sheep pasture, the better policy for him is to divide that into two parts and keep changing about. We notice that sheep will graze on a particular part of a field while there may be plenty of grass in other portions. They will let that part go by, let it grow up and get hard and woody. If you compel them to eat down each part of it and then change off and put them on another part, the danger from worms is lessened and the sheep get much better feed.

A Member: Are carrots good feed for sheep?

Mr. Mc Kerrow: Yes, they are a good feed, but the cost of production is really too high at the price of labor in this country to raise a profitable crop.

The Chairman: What is the cheapest succulent feed?

Mr. Mc Kerrow: The cheapest succulent feed is corn ensilage; that is, the comparative cost, although I believe that the most succulent feed is the root crop for sheep.

Mr. Nordman: Then it is the cheapest.

Mr. Mc Kerrow: Yes, it is the cheapest in the long run.

Mr. Nordman: At what age will lambs begin to eat?

Mr. Mc Kerrow: We find they commence to nibble at ten days to two weeks old. We like to have our lamb creeps ready at that time so they will enter the lamb creeps and nibble the oats.

A Member: How would you treat a sheep that was infected with intestinal worms?

Mr. Mc Kerrow: That is a pretty hard question to answer. We find a great many remedies on the market, but not many that are effective. We find a great many people use gasoline as a drench and some with success. I believe that taking your lambs in the spring of the year and keeping before them wood ashes and salt or sulphur and salt and continuously keeping your lambs on new pasture, is the best way to regulate the disease if you have it in your flock, but if you find in the late summer that you have the disease, I believe that a gasoline drench is the best remedy.

Mr. Nordman: Do you dip, and how often?

Mr. Mc Kerrow: We dip on the farm once a year. A great many farmers find good results by dipping the lambs only about a week after shearing, but of course where you are getting new sheep on the farm, you have to dip regularly.
A Member: What season of the year do you practice shearing?

Mr. McKerrow: We shear in April, but of course it depends entirely on the man's conditions when he shall shear his sheep. I believe that the farmer, that is, the shepherd, the man that is taking good care of his sheep, should shear before his sheep go on grass, and if he is a shepherd, he will see to it and get these sheep in out of the cold spring rains off the pasture, but if he can't do this, I would advise that he do not shear until the cold spring rains are over.

Mr. Brigham: Will not the wool be lighter at that time, less grease in it, and won't the work of shearing be harder?

Mr. McKerrow: I don't think you will find very much difference in the weight of fleece; may be a very little but not much. If it is a flock that has been properly cared for, there won't be much difference. Of course, when they get on grass and they get to doing better, the fleece will be a little heavier.

Prest. McKerrow: Do you believe that you gain in the health of your lamb what you might lose in the weight of the wool?

Mr. McKerrow: It is best for the health of the lamb to shear early; that is, the ewe will do much better, and give a better flow of milk for the young lamb, if properly care for.

Mr. Roberts: You still have twelve months to grow wool.

Mr. McKerrow: Yes, as far as time is concerned, you don't lose anything.

A Member: Is there any danger of getting breeding stock too fat?

Mr. McKerrow: Yes, there is danger of getting your ewes too fat. You just want them in a good thrifty condition.

Prest. McKerrow: As you see the average Wisconsin flock, do you see them any too fat?

Mr. McKerrow: I should say not.

Mr. Scribner: Don't you think people very often confuse the words "flesh" and "fat?"

Mr. McKerrow: That is quite true.

A Member: What do you advise for a dip?

Mr. McKerrow: We have several good dips, and for the common sheep, take any of our coal tar dips or Cooper's, any of those dips are good.

A Member: In preparing a certain bunch for the show ring,
do you allow them to run with the rest of the flock or do you keep them in a separate pasture?

Mr. Nordman: Mr. McKerrow isn’t supposed to tell all that he knows about that.

Prest. McKerrow: I was just going to tell him not to tell everything.

Mr. McKerrow: I am quite willing to tell. You, of course, will have to take them from the rest of the flock. If you are feeding a bunch of six or eight, take them from the rest of the flock, possibly, the first feed, and start to feed them better and fit them on from that time, not confining them to close housing until later in the season. Finally, probably about the first or the middle of July, take them in and start to fit them.

Mr. Everett: I came in in time to hear most of Mr. McKerrow’s paper, and I want to compliment him; it is one of the most exhaustive papers on the subject to which I have ever listened, and it shows how thoroughly he understands the subject and how experienced he is as a shepherd.

It also explains to me some other things that I have never before thoroughly understood. For many years, I was associated with Mr. McKerrow, Senior, in Farm Institute work, and I have often listened to the good points Mac made on the subject of sheep husbandry, but never before thoroughly understood where he got those points. Now I know. I remember being with Mr. McKerrow, Senior, one time at a Farmers’ Institute, at Algoma, in this State, at which Mr. McKerrow gave one of his exhaustive addresses on the subject of Sheep Husbandry. After he had finished, an old German farmer rose in the audience and asked permission to ask a question. It was granted readily by Mr. McKerrow; the old fellow says, “Can you tell me what it is that makes black sheep?” Mr. McKerrow, Senior, thought a long time upon the subject and finally confessed that he did not know. The old German says, “Would you like for me to tell you?” “Yess,” said Mr. McKerrow. The old German says, “It is the black wool.”

Prest. McKerrow: At another Farmers’ Institute at Manawa, Mr. Everett gave a very exhaustive talk on rearing a calf to produce a good dairy cow, when a gentleman in the audience arose and said, “What kind of a calf would you raise to make a good dairy cow?” which stumped Everett, and he stopped and thought a while, and while he was thinking, a witty Irish-
man back in the audience answered, and he said, "Why, a heifer calf, of course."

The Chairman: We have had in this State few politicians who have had the good sense to squander a portion of their energies in farming. I am happy at this time to introduce to you not the politician, but the farmer, W. L. Houser of Mondovi, who will present the subject of the Farmer's Horse.

THE FARMER'S HORSE.

HON. W. L.HOUSE, Mondovi.

Mr. Houser: Mr. Chairman, the Chairman stated at the conclusion of the address of Mr. Tormey that there was a sixty-year proposition involved in his address; that Mr. Tormey stated that "we" had been farming sixty years.

We have been farming about six hundred years this morning. In these very learned papers, in this very intelligent discussion;—the experiences, the successes and the failures of men since almost the foundation of the earth, have been reviewed, and we are able to profit as farmers by these experiences; they constitute a practical experience for all of us of the whole length of time. And what a system of education it is that brings to the mind, to the opportunity of the young farmer the chance to begin where all of the previous experience has left off and to make this a part of his own experience.

Now, my friends, I have learned something this morning, and I have formed a definite, positive resolution, and it is not to attempt to exhaust the subject that is given me, nor to exhaust the audience.

There are many problems surrounding the breeding and developing of horses. And these problems seem to multiply instead of diminish.

The most recent problem, or influence affecting the business, is the automobile. It will not do for the practical man to accept at par the oft repeated assertion of writers in the agricultural press that the automobile does not affect the prices of horses. This is not even horse sense. The automobile does af-