

essity of the study of agricultural science; second, to reduce agriculture to business principles.

THE FEEDING VALUE OF STOCK FOODS.

Prof. Thos. F. Hunt, Professor of Agriculture in the University at Columbus, Ohio, delivered an address on the feeding value of stock foods. He commenced by saying that the old proverb, "Know thyself," expresses a great truth, but in addition we should know the things with which we deal. In the feeding of animals we should know, first, the animal with which we have to deal; second, the feed with which we are feeding the animal; and third, the relation existing between the two. In this knowledge lies the secret of successful stock raising. He then described the composition of the animal, and the quality and relationship of the different parts of the animal which gives the animal its value as butcher's meat. "We seek," he said, "to produce an animal with as small a quantity of bone as is consistent with health and strength, and as large an amount of fat and muscle as possible." Professor Hunt then described the chemical composition of the animal's body and the food consumed, and showed why one kind of grain might not be a complete food. He pointed out that a well-balanced ratio must be maintained between the digestible nitrogenous and carbonaceous nutrients of the food, and also why this ratio would vary with the age of the animal or the purpose for which it was being fed. He gave advice as to what it was necessary to feed and what to avoid, describing the chemical composition of the various foods, and tracing the results of their consumption, showing what part of the animal's body was improved by the different kinds of food. He showed that the value of a food depended not only on its composition, but also on its digestibility and palatability; indeed, this last requisite was a very important one, for if we wished to fatten an animal quickly we must tickle its palate, and thus induce it to eat sufficient food to both keep up the animal's vigor and to add to its weight. This was one reason why it was advisable to vary the food, and so nurse the appetite of the animal. He pointed out that a well-balanced ratio must be maintained between the constituents contained in the different foods supplied, so that no one element would preponderate unduly, as by this the cost of food per pound of increase would be increased. In closing, Prof. Hunt said: "Success in feeding is dependent upon many factors, only a few of which I have been able to touch upon. When we know all about life, and not till then, will we arrive at perfection in the art of cattle feeding. But when we see the great results from the little that we do know, we see hope for great gains in the future."

The subject was handled in an exceedingly able manner, and was listened to with close attention. At the close of the address many questions were propounded concerning statements brought out in the address, to which he gave satisfactory answers. A lively discussion arose, particularly on the advisability of feeding roots to cattle and sheep, in the course of which Professor Hunt said that the proportions of water to dry matter in the feed of sheep should not exceed two to one, and that for cattle it might be increased to four to one.

THE SOCIAL CONDITION OF THE FARMER.

Prof. C. C. James, Deputy Minister of Agriculture, spoke on the "Farmer as a Member of Society." No member of society had so been held up to ridicule as the farmer. But this was chiefly due to an erroneous idea of the true meaning of the word "society," and an utter lack of the appreciation of social standing. The lack of social surroundings incidental to farm life was blamed by many as the cause of the continual influx into the cities of farm-bred young men and women. Even if this was the case the remedy was to a great extent in the hands of the farmers themselves, and farm life should be made more attractive to the young in order to counteract this tendency.

He dealt with this subject under the heads of moral progress, social progress and material progress. The encouragement of the tendency towards smaller farms and more intense farming would bring the farmers closer together, and in many ways would have an influence for good on the farmer's condition. The improvement of the roads means social progress, for they bring farmers closer together, closer to markets, schools, churches and public halls. He next described the farmer's home. A model farm house should be healthful, comfortable, cheerful and attractive.

Professor James next touched on the farmer's table, which, he said, should be supplied regularly with food wholesome and fresh, varied in character and well cooked, fresh, plain and wholesome, with plenty of fresh vegetables and fruits from the farmer's garden and orchard. He then urged all farmers to be very careful in regard to the character of the farm help employed, for the farmers' sons often received their first lessons in vice from the men employed on the farm. The farmer's library should contain the best agricultural journals, as well as a city paper and local newspaper. He closed an able paper by saying that while the farm, the roads, the home, the table, the reading and the meetings all play a very important part in the social life of the farmer, after all, much depends upon the sentiment, feeling and inclination of the farmer himself. His ideal should not be to make money alone, but should be to do something to add to the general wealth and happiness of the community as a whole.

APPLE CULTURE IN ONTARIO.

Mr. W. W. Hilborn read a paper on apple culture in Ontario, pointing out the mistakes generally made both in choosing varieties and in the handling of young trees in a very practical manner. Among the mistakes commonly made he enumerated the following: Too many varieties; sowing grain in the orchard; allowing cows and horses in the orchard; the professional pruner. The farmer should stimulate growth early in the season, cultivate soil often and shallow. He very strongly urged the claims of the fruit garden.

Both in attendance and the interest manifested in the proceedings, as well as in the amount of valuable information contained in the papers, the annual meeting of 1893 was in every respect the most successful that has been held by the Union, and will have a good effect upon the work to be accomplished during the coming year.

Entry Fees.

At this season, when breeders are so generally completing and forwarding for registration the applications for colts, calves, lambs and pigs of 1893, the question may be suggested, Can I afford to spend money for recording my young stock? Will the hard times and slow sales of well-bred stock at current low prices justify the expenditure for entry fees?

There is no question as to the importance and necessity for registration of sires and dams whose get or produce will be sold for breeding purposes.

The breeder who has no higher ambition than that of raising cattle, sheep and hogs for the butcher, or horses for work on the farm or street, may question the wisdom of paying out money for entry fees. Such breeders seldom raise good enough stock to exhibit at the fairs, and there would be but little encouragement for making profitable sales of the same if otherwise advertised.

The progressive breeder, however, endeavors to improve the quality of his stock from year to year, and adopts the well-known and successful methods of advertising the same through the leading live stock and agricultural papers and by some exhibits at the fairs. Never question the great benefit resulting from registration. A breeder may occasionally fail to receive better than butchers' or shippers' prices for recorded stock, but such cases are the rare exception, and in nine out of ten cases the fault is with the breeder and not the market. The best prices have in the past and will continue in the future to be paid for recorded animals of good breeding and individual excellence, and a failure to record will result in a failure to make a profitable sale to an intelligent breeder.

A bull, stallion, boar or ram worthy of recognition as a sire on a farm devoted to the breeding of improved stock has an increased value, as the result of registration, of from five to one hundred times the amount of entry fee necessary to register the same.

There is no question but that the patrons of the various herd, stud and flock registers have a right to demand economy on the part of the officers of the pedigreed record associations, and to expect that the surplus funds should be intelligently used in creating a better market for the breed represented. Some of the lines of work, that in the opinion of the writer are deserving of the attention of the officers of the Herd and Stud Book Associations, will be represented in another article in the near future.

Illinois Sheep Breeders' Association.

The annual meeting of the Illinois Sheep Breeders' Association, held in Springfield, January 3rd, was not largely attended, the meeting of the State Board of Agriculture in an adjacent hall, for the purpose of opening bids for the permanent location of the Illinois State Fair, proving a greater attraction to many. The following officers were elected: President C. I. Pulliam, Chatham; Vice-President, W. T. Potts, Jacksonville; Secretary-Treasurer, Jno. G. Springer, Springfield. Executive Committee—Hon. David Gore, Carlingville; S. E. Prather, Springfield; R. J. Stone, Stonington; Harry Cass, Buffalo, Hart.

After a general discussion, the following points seemed to be conceded:—Rams under one year should not be used, because their offspring are nearly always weak. Yearlings will get as many and as strong lambs as older ones, if not required to serve too many ewes.

The best time to have lambs come is in January and February, if prepared to take care of them, otherwise at a later period when the weather is milder.

Lambs should be sent to market in June and July, weighing about seventy pounds, and should bring about \$6.00 each, though at present this price is not realized.

Feed hay, second growth clover preferred, oil meal and bran, or hay, oats and ground corn will be found excellent.

Unequal feeding will cause spots of good and bad wool; impure quarters, and feeding too much corn, will cause loss of wool; regular and plenty of feed is required to make wool.

"Free wool" advocates were largely in the minority.

STOCK.

The Diagnosis of Tuberculosis in Cattle.

We take the following interesting extract from the North British Agriculturist:—

"Tuberculosis appears to increase in prevalence amongst cattle, and especially among dairy stock, undoubtedly depending upon their being closely housed, one infected animal thus spreading the disease to those in near proximity with it. Statistics in this and other European countries indicate that 10 or 20 per cent. of the bovine race suffer from this serious disorder. Of the cows killed in Edinburgh in 1891 under the Pleuro-Pneumonia Slaughter Order, 20 per cent. were found on *post-mortem* to be affected. Bulls, steers, and young cattle of both sexes, being attacked in much less proportion than housed adult cows, confirms the conclusion that contagion is the prime cause of the complaint, or, in other words, demonstrates that the tubercle bacillus is transferred from the infected to the sound. Some authorities still adhere to the view formerly entertained that the disease is hereditary and transmissible from the male parent, or from the female during pregnancy. However produced, in view of limiting its prevalence and preventing its being communicated from cattle to man, as it is apt to be with infected milk, it is very important that bovine tuberculosis should be discovered in its earlier stages. But during its earlier progress, and especially when it attacks the deeper-seated glands or organs, its presence is determined with difficulty. The most careful auscultation and percussion may detect no definite evidence in the lungs of cattle, which are the site of about 80 per cent. of the attacks, and yet in such unsuspected cases *post-mortem* examination frequently discovers disease which may have been slowly developing for weeks or even months.

"In the current number of the Journal of Comparative Pathology and Therapeutics, Professor M'Fadyean has a very valuable paper on the 'Diagnosis of Tuberculosis in Cattle.' He premises that the essential condition of the disease is the presence of the bacilli. These bacilli occur in the local lesions; but although in certain stages they are transmitted in the blood stream from the primary lesion to other parts, it is scarcely possible to find them in the blood. The Professor has made a series of experiments which demonstrate that, even in cases of general and serious tuberculosis, bacilli are not present either in the blood or in the milk. They are not discoverable when such blood or milk is examined under the microscope, or by the still more effective test of inoculation into the peritoneum of guinea pigs or rabbits, in which tuberculosis of the abdominal organs is thus set up in five or six weeks. But although the milk of cows, even when suffering from advanced general tuberculosis, does not exhibit bacilli, they are found tolerably abundantly when the udder itself is the seat of disease. These investigations and conclusions confirm the recent observations of Bang, Nocard, and other continental authorities.

"Microscopic examination of the expectorated sputum of human consumptive patients usually discovers bacilli; but in the great majority of cases of tuberculosis in cattle, even when the lungs are extensively diseased, Professor M'Fadyean and other careful investigators fail to find bacilli in the mucus mopped from the walls of the pharynx by a small sponge on the end of a probang. This absence of the micro-organisms in the throat secretion of infected cattle is explained by the Professor to result from the bovine disease 'very seldom assuming the destructive form exemplified in pulmonary phthisis of the human subject. It is very rare to find extensive softening of lung tissue with the formation of actual cavities in tuberculosis of cattle, and except in that form of the disease, it is probable that the expectorate never contains tubercle bacilli in large numbers.'

"Where the diseased structures can be reached, as in tuberculosis of the udder or of the pharyngeal or pre-scapular glands, puncture with a hollow exploring needle, as advised by Principal Walley, will bring out diseased matter which, microscopically examined, will afford safe diagnosis. But owners are apt to object to this little operation, and it is, of course, valueless where the disease affects deep-seated or inaccessible organs.

"Ordinary clinical examination, Professor M'Fadyean states, 'is almost valueless for the detection of tuberculosis in its early stage.' The temperature even in cases that have continued for months is often unaffected, or is affected so slightly as to be of no diagnostic service. Physical examination of the chest or abdomen often give no evidence of considerable disease in these organs, although such disease is subsequently disclosed in *post-mortem* examination. Tuberculosis in the udder or superficial and accessible lymphatic glands may be tolerably early discovered during life, but disease, even when extensive, if in deep-seated glands, can seldom be detected.

"In evidence of the futility of clinical examination to discover tuberculosis in its earlier stages, Professor M'Fadyean presents an analysis of the examination of 1,600 cows in the Edinburgh dairies in 1892:—In only four cases was there any notice-