THE FARMER'S ADVOCATE & HOME MAGAZINE

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cultivation was recommended by Mr. Rennie and others as the most satisfactory way of fighting weeds. It works well with both annuals and perennials.

Drying and Dehorning Dairy Cows.—Prof. G. E. Day had sent out questions to 364 representative dairymen throughout the Province, asking, among other things, how long, in their opinion, cows should be allowed to remain dry. The average time suggested in the 170 replies received was 57 days. With regard to the question of dehorning, 68 men acknowledged having had their cows dehorned. Sulphuric acid, Gillet's lye, and other applications were reported as having been used successfully upon the embryo horns of young calves.

Mr. Alex. Yuill, of Carleton Place, who opened the discussion upon this subject, is decidedly in favor of dehorning, but prefers not having it done before the animals are two years old.

Prof. Day is commencing a series of experiments in feeding dairy cows with a view to ascertain the most profitable ration to use on Ontario farms.

Lucern was referred to, in the course of a discussion upon the feeding of dairy cows, as an excellent pasture and hay. Mr. Taylor, of the Nebraska Experiment Station, who has spent the last year traveling in foreign countries with a view to obtain agricultural enlightenment, claimed that Canada is about the only country of the thirteen visited during that time in which lucern is not extensively grown. In Russia it is largely depended upon as a fodder crop, as was it also in Germany and France. In the Western States stock feeding could not be successfully done without it. In Nebraska hogs are fattened upon it in the green state, and it is not uncommon to winter them upon lucern hay.

Mr. R. Stott, of Lambton Co., read a short paper upon the subject, in which he claimed it to be the best of clovers on a dry subsoil. It should be seeded at the rate of twelve pounds per acre along with a grass crop. Keep all stock off it the first fall. It is well to sow orchard grass along with it, as they are both early and should be cut at the same time. If left till the stems become hard and fibrous, it is very injurious to stock feeding upon the hay. Like rape, it should not be fed wet or bloating will result. As pasture it will easily produce twice as much as any other sort. Pigs fatten upon it. It will not kill out after the first season. It is good to grow as a fertilizer, a pasture, and a soiling crop.

Stock Feeding.—Mr. Rennie, Superintendent of the College Farm, gave a highly practical address upon the feeding of farm animals. Comparatively few men are capable of ever becoming successful stock feeders. It requires more than training to teach a man to feed properly. One must understand the animals, must treat them kindly and feel anxious for their comforts. Such a thing as dogging stock should not be tolerated. All meat-making and milking stock must be kept docile. While a balanced ration is good, there are other things just as important. Comfortable, well-ventilated, well-lighted stables are necessary. The system of ventilation employed by Mr. Tillson (described in July 1st, 1896, issue of the ADVOCATE) was highly spoken of. Drafts must not be allowed. We have previously given Mr. Rennie's system of feeding the College stock, but it will bear repetition. All food is steamed by mixing the following foods the day previous to feeding it: Chaff, cut clover, ensilage, and pulped roots. The whole mass becomes moist, warm, savory and succulent. Punctuality is considered very important in all feeding. Feeding commences at the College barns at five o'clock a.m. Each animal is given what it will eat up cleanly in from one to one and a half hours. They are fed again at noon and at 5 p.m. The breeding stock get no grain except the corn in the ensilage. The milking cows get 15 lbs. of the steamed mixture three times a day, a few extra mangels and six pounds of mixed chop, about one-third bran. Mr. Rennie has great confidence in feeding bran, as he finds it is not only valuable in itself as a food, but it keeps the animals' systems in thriving condition. Young cattle, two years old, get 45 pounds of the steamed mixture daily and no other grain. Yearlings get 30 pounds, and the stock bulls what they readily consume, with no grain except the corn in the ensilage. All the old fat bulls that were on the Farm when Mr. Rennie came to it have been put away. Their gait was likened to that of a lady wearing a new dress,—staid, slow, and swaying. Now the bulls walk straight and sprightly and are thoroughly active and healthy.

Feeding steers get rape at noons until Christmas. It is cut in the fall and kept in piles for them. Considerable bran is fed to them during the preliminary feeding. Their grain ration is increased until they get about 7½ pounds per day towards spring; the grain consists of one-third bran and two-thirds of peas, barley, and oats, in about equal proportions by bulk. When beef sells for 4½ cents per pound, alive, it can be profitably produced upon this ration.

Horses get cut clover hay ensilage and pulped roots during the winter season, at a cost of 7 cents per day. In the summer, when the teams are working very hard, each horse gets 20 pounds of cut hay and 16 pounds of mixed grain daily.

The sheep should have a comfortable building, dry, free from drafts, and not crowded. Mr. Rennie considers a dozen sheep in a pen better for them than a larger number; each sheep should have from 20 to 25 cubic feet of space. The importance of keeping the pens cleaned out was emphasized again and again. Hot manure and the foul gases rising from it are extremely harmful to the health of the sheep. Once a week is not too often to clean out the pen. Feed the steamed mixture same as for cattle, night and morning, and pea straw at noon. Mr. Rennie is always careful to have the pea straw well saved. When lambs are a few weeks old they should have a creep pen, in which they are fed savory red clover hay, pulped roots, bran, and oil cake. The old trouble with sheep on the College Farm has disappeared since Mr. Rennie's system of feeding has been adopted. Lambs are weaned in July and put on rape sown at the end of May; they are turned out of rape between four and five p. m. each day, and turned upon fresh clover for the night. Sheep are sheared from April 15th to 30th, and dipped twice a year.

Breeding pigs are fed on pulped roots and bran at a cost of 60 cents per month for each mature animal. Fattening pigs are also fed considerable roots along with the grain ration.

The Farm and the School was the title of an admirable paper given by Mr. Thorne, of Wooster, Ohio, in which he deprecated the attention too often paid to the study of ancient languages. The study of the natural sciences is of far greater practical importance, as they afford enlightenment upon the things with which we have to do in life. China was cited as an example of a country in which much attention is being paid to languages. Agriculture requires a wide range of scientific knowledge. The great function of the common school is to provide the pupils with tools with which to achieve success in life, and the best way to do this is to improve the schools in their present lines. Physiology and hygiene should occupy a large place in the curriculum of the common school. Geography is not as important as physiology. The course of studies needs from time to time cautious pruning and adding to as the demands of the times direct.

Domestic Science was ably dealt with by Mrs. Hoodless, of Hamilton, in its relation to public schools and as it is related to our agricultural education. A comprehensive review of the history and development of manual schools for the practical education of girls was gone over. There are now such schools in Boston, Washington, New York, and fifty other American towns and cities, as well as an excellent institution in New South Wales. Our educational system, good as it is, overlooks almost entirely the practical side of the woman's life. The woman's place is in the home; so she should be trained in being an ideal housekeeper and homemaker. Reference was made to lack of harmony in principle of the Factories and Educational Acts. One prohibited children from doing heavy labor in the factories before they were fourteen years of age, while in the school the mental faculties are strained up to the same age. The speaker expressed an admiration for the system adopted in the rural districts in England. The county councils there employed competent teachers in cookery, who gave two lessons a week to the wives and daughters of artisans. She regretted that so many farm houses were so poorly ventilated. Having lived in the country for twenty-four years, Mrs. Hoodless had no hesitation in saying that as a rule country houses, especially the parlors and spare bedrooms, were less well ventilated than those in city residences. Country life should be just as charming and more homelike than life in the city.

"*Our Province*" was the subject of an excellent address given by the Hon. John Dryden. The audience was reminded that Ontario Province is larger in extent than the New England States, with New York, New Jersey, and Maryland thrown in, and was 78,000 square miles greater than Great Britain and Ireland. Its natural scenery and mineral wealth are features of which we may well be proud. It contains greater wealth of minerals than British Columbia or Africa. Gold, copper, and nickel have lately been discovered in abundance. This will make the Province more populous and more prosperous agriculturally. Practical men are needed to develop the resources. The forests, minerals, and the soil contain the great wealth of our country. Reference was made to the excellent work of the Experimental Union, which will in 25 years have settled many things for facts that are now uncertain.

Dairying Experiments.—Mr. T. C. Rogers, of the O. A. C. dairy department, reported extensive and varied experiments in butter and cheese. It has been found that cheese having a larger per cent. of fat will keep better than cheese less rich. It has also been learned that washed butter will keep better than unwashed. Washed butter scored 40 out of 45 points, and unwashed 35 out of 45, soon after each was made; two weeks after they were again scored, when the unwashed had dropped five points and the washed had not changed. Other scorings showed the same result. Churning at a low temperature was also recommended to obtain the finest quality in grain, texture, and flavor.

Foul Brood Bacillus.—Mr. F. C. Harrison reported some bacteriological investigations, referred to in our report of the Ontario Bee-keepers' Convention in this issue.

Varieties of Small Fruits were reported upon by Prof. H. L. Hutt, the College Horticulturist. In strawberries the best yielders among 120 varieties tested are referred to in our report of the Fruit Growers' Convention in this issue.

Mr. Taylor, of Nebraska, in speaking of fruits, expressed, among other good things, a belief that each district had to find out its most suitable variety, and every gardener had to decide what was most suited to his garden.

The Garden as an Educator was the title of a paper given by Mr. Greiner, of La Salle, N. Y. In the opinion of the speaker, the balanced ration for stock is being given more consideration at the present day than the proper compounding of foods for the human family. The fruit and vegetable garden should be more used to fill this want. To be able to distinguish between beneficial and injurious insects, and to know how to combat the latter, is necessary in successful gardening.

Maintaining and Increasing the Fertility of the Soil was the title of one of the best papers presented. It was given by Mr. Thorne, of Ohio, who, upon rising, expressed his surprise upon seeing such a grand institution. He also complimented the College on the practical and intelligent character of the ex-students who had returned to their *alma mater* upon this occasion, which he considered a grand indication of the utility of the work being done. He also complimented the College on having a President who is so thoroughly interested in practical agriculture as President Mills proves himself to be. Mr. Thorne referred to the experimental work being carried on in Ohio. At five points throughout the State there are 700 plots under experiment and observation, from which he expected much would be learned.

A fertile soil is necessary to successful agriculture. Cropping necessarily exhausts the soil; it is therefore important that action be taken to prevent this depletion as far as possible, and to increase the store of plant food. Ontario commenced with a rich soil, but has on many farms become less fertile because of continued cropping. England provides us with an object lesson in having actually increased the fertility of her farms within the last two or three decades. What we require is more tillage, manuring, and drainage. To know the chemical composition of soil is not enough to determine its crop-producing properties. The availability of the plant food, as rendered by drainage, cultivation, and the plowing in of fresh manure, has the greatest influence on the production. The oxygen, hydrogen, and carbon of plants are all supplied from the atmosphere and water, but nitrogen must be provided by man's agency. Water in a certain proportion is very important, as it acts as a vehicle of the dry substances. One pound of dry substance in the growth of plants requires 300 pounds of water to convey it to its destination. The nitrogen supply is next to water in importance. When purchased it is from two to four times as expensive as potash or phosphoric acid. The question comes: Can we