

non-tuberculous, the owner who freed his herd from the disease could not fail to reap a handsome harvest."

Commenting on this statement one of the leading English agricultural journals says:

"This charge will certainly be sharply challenged and resented. Owners of pedigree herds have not generally adopted the course referred to, chiefly because they do not believe in the reliability of the tuberculin test, and they seem to be supported in that doubt by evidence of the eminent medical men. The question can only be settled by elaborate laboratory and other experiments. Doubtless, however, a large number of breeders are having their herds tested. The fact that the export trade in pedigree cattle has been successfully conducted and widely extended for the past twelve years under the tuberculin test—which is insisted upon against the cattle of this country, but not as regards their own by foreign and colonial governments—is evidence that British herds are able to emerge satisfactorily from the trial. Breeders have also been doing much more to establish the soundness of their herds, and it is on soundness that this important trade is based. They have been vigorously applying hygienic principles in the housing and management of their stock, and in other ways have been raising the health standard. The fact that with a vast increase in the consumption of meat and milk in this country, there is a great decline in human tuberculosis is a proof that these are not the chief sources of the disease, and of this the late Dr. Koch was fully convinced.

"The attack made upon breeders of pedigree cattle will make little difference to the action of the enlightened benefactors who have raised the reputation of British live stock to the highest point throughout the world, for they will continue, according to their own judgment, to breed robust cattle unsurpassed for the production of beef and milk, thus showing as they have always done that they are lacking neither in intelligence nor in public spirit. Breeders will do well to continue to accept with considerable caution much of the scientific advice which is being so liberally showered upon them, and not to go in advance of the more reliable teaching of experience which they have acquired in the management of their herds."

It is true that much is possible in the development of a strong, hardy, robust herd of cattle through the adoption of the best methods of feeding and housing. Hygienic principles must be followed to raise the standard of vigor, but where tuberculosis is prevalent in a herd, it cannot be eradicated without taking special means. Compulsory testing may not be advisable, but where a breeder owns and operates a large herd of pure-bred stock it would seem to be to his own interest to keep it healthy. The tuberculin test properly conducted we believe to be reliable, and it has been demonstrated that it is possible to keep calves from diseased dams free from the disease by a thorough system of isolation, never allowing them with diseased cattle nor to take the milk of their diseased dams. Slaughtering valuable breeding animals because they reacted to a tuberculin test could not be tolerated. Of course those far advanced and showing very marked clinical symptoms are not likely to be valuable to keep and might better be destroyed, but many react which go on for years in apparent good health and breed and milk to advantage. Such should be operated under the Bang system of tuberculosis treatment. Breeders of pedigree stock should be encouraged to breed clean herds, should not be driven by scientific investigation to do unreasonable things, but all changes of laws relating to testing should be so made that the investigator and the breeder may work hand in hand to exterminate bovine tuberculosis and all other contagious animal diseases which it is necessary to bring under the ban of the law.

Our English Correspondence.

CATTLE FEEDING IN ENGLAND.

Recent researches made in England into the nutrition of animals have been proving many things of interest. It has been shown that if a number of animals in store condition are put on a fattening diet, at the end of a feeding period of twelve to twenty weeks about half of them will show live-weight increases differing by about fourteen per cent. from the average live-weight increase of the whole lot. In other words, the probable error of the live-weight increase of a single fattening ox or sheep is fourteen per cent. of the live-weight increase. This being so, it is obvious that very large numbers of animals must be employed in any feeding experiment which is designed to compare the feeding value of two rations with reasonable accuracy. For instance, to measure a difference of ten per cent., it is necessary to reduce the probable error to three per cent. in order that the ten per cent. difference may have a certainty of thirty to one. To achieve this, twenty-five animals must be fed on each ration. These conversant with the numerous reports of feeding trials which have been published in the last twenty years will agree that in

very few cases have such numbers been used. We must admit then, that many of the feeding trials which have been carried out can lay no claim to accuracy. Nevertheless, they have served a very useful purpose. From time to time, new articles of food come on the market, and are viewed with suspicion by farmers. These have been included in feeding trials and found to be safe, or otherwise, a piece of most useful information. Thus, for instance, Bombay cotton-cake, when first put on the market was thought to be dangerous on account of its woolly appearance. It was tried, however, by several of the agricultural colleges and found to be quite harmless to cattle. Its



The Head of a Champion.

Bonnie Brae 21st, champion Hereford bull at Toronto and London, 1913. Exhibited by Dudley Smith, Hamilton, Ont.

composition is practically the same as that of Egyptian cotton-cake, and it now makes on the market practically the same price. Soya-bean cake is another instance of a new food which has been similarly tested and found to be safe for cattle if used in rather small quantities and mixed with cotton-cake. The price is now rapidly rising to that indicated by its analysis. Work of this kind is, and always will be, most useful. Trials with ten animals, while they cannot measure accurately the feeding value of a new food, are quite good enough to demonstrate its general properties, and its price will then gradually settle itself as the food gets known.

GRAIN AS STOCK FOOD.

Of English cereal grains as food for live stock oats take pride of place, but it is not perhaps so commonly known that their nutritive value varies more than any of the others. Research has shown

water. Newly-harvested and also mouldy oats are both dangerous to stock; the former should be stored a couple of months before feeding, and the latter need steaming to be safe. Barley as a food for stock is chiefly used for pigs and cows in England, and the poorer the season is for producing a good malting sample the better it is for giving a good feeding kind. Barley that has been laid also furnishes a better feeding grain than it otherwise would do. For horses, barley is found to be too heating, and fails to keep up the animal's energy, but can be safely fed to the extent of one-fourth of the total grain ration. For other classes of stock it is almost always fed as a meal owing to it being harder than oats, and therefore less easily masticated. As regards its commercial feeding value, barley is not as rich in oil and albuminoids as oats, but is richer in carbo-hydrates. Wheat grain is not much used as a farm food owing to its value as a human food. A certain amount, chiefly what cannot be sold, is, however, used, and its composition shows it to be richer in albuminoids and carbo-hydrates than either oats or barley, and also more digestible. As a foodstuff for animals, however, wheat can only be used in small amounts, as otherwise it causes digestive troubles. Especially is this so with newly-harvested grain, or that from a crop which has suffered from a plant disease. Wheat cannot be substituted for oats as a producer of energy, being more adapted as a fattening food.

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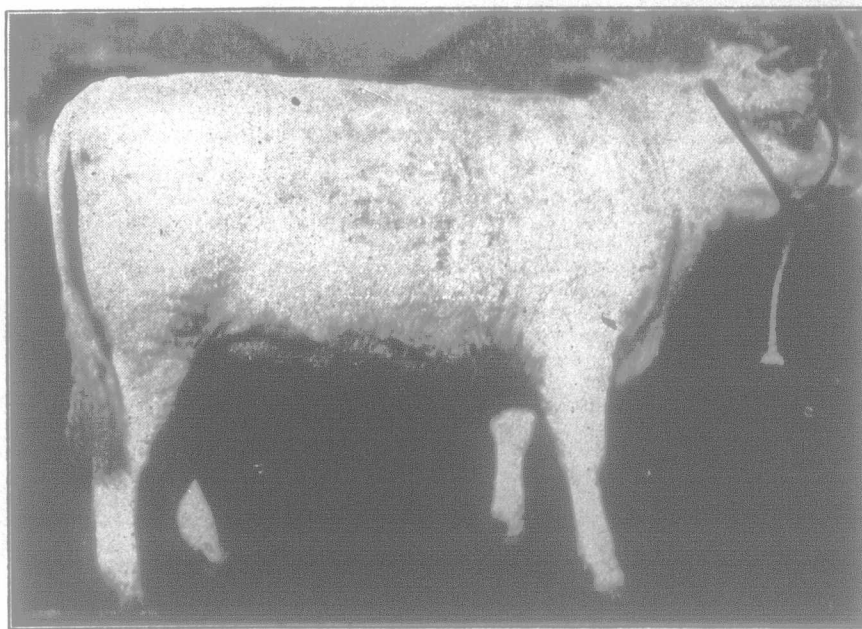
THE FARM.

Some Facts Concerning Lightning-Rod Efficiency

Some striking figures going to prove the protection afforded to buildings by properly-erected lightning rods were obtained by Prof. W. H. Day, of the Ontario Agricultural College, during 1912 and published in "The Farmer's Advocate" of April 24th, 1913. Statistics were collected from mutual fire-insurance companies insuring both rod-ded and unrod-ded buildings. Eight of these companies were in a position to furnish complete reports of their losses. During the year 1912 these companies wrote insurance on 10,644 farm buildings indicating that the total number of buildings insured would probably be about thirty thousand since the policies are renewable every three years. Of the buildings insured 21.1 per cent. were rod-ded. The eight companies had nineteen buildings burned, of which not one was rod-ded. Counting burned and damaged buildings both, there were 135 buildings struck, of which only two were rod-ded, or 1.5 per cent. Thus the comparison of rod-ded risks to rod-ded losses stands as 21.1 to 1.5. Or stating the data in another way, out of every 7,000 unrod-ded build-

ings insured by these companies, lightning claims were paid on thirty-seven, while in every 7,000 rod-ded buildings insured, lightning claims were paid on only two, or in other words, the unrod-ded building is 18½ times as likely to be damaged by lightning as the rod-ded one. These results cover all kinds of rods used in Ontario, and doubtless include some improper rod-ding. To save 85 buildings out of an expectancy of 37 means an efficiency of 94½ per cent.

From these figures it would seem that the fire underwriters might well afford to allow a more favorable premium to owners of rod-ded buildings, if, indeed, they accepted unrod-ded risks at all. In the course of a recent visit to the United States, looking further into the subject, Prof. Day ran across one Farmers Mutual Company in Michigan which only takes risks on properly-rod-ded buildings and is known as a "Lightning Protected" Company. The Company's inspectors inspect the rod-ding on every building when application is received. If the rods are not properly installed the application is rejected. Another Farmers Mutual Company insures both rod-ded and unrod-ded buildings, and as a means of identification we shall call it the "Unprotected Company." For four years, 1909-1912, risks of the Protected Company totalled \$55,172,075, and all the lightning claims paid by the company during that period amounted to the small sum of \$32.00, all



Silver Queen.

A Shorthorn senior calf, winner of second in a class of seventeen entries, at Toronto, for J. A. Watt, Salem, Ont.

that the older varieties of oats give a richer grain than the newer ones. The chief characteristic in which oats differ from barley and wheat is their richness in oil of a very digestible nature, and it is this that makes oats such a capital foodstuff for working horses. Apart from this, oats are far more palatable and beneficial to animals than any other grain, and the husks by which oat grains are surrounded help to stimulate an abundant flow of the digestive juices in the stomach and intestines. When feeding oats to horses it is well to crush them first, or mix them with chopped hay or straw moistened with