

of by-products of the dairy have, through the raising and fattening of these hogs, helped the whole business of farming very materially.

We must not omit a reference to the egg and poultry industry. In both of these the output is the largest in our history, and the year's prices are on the whole satisfactory. The position of our products in the English markets has been greatly improved.

Next, let us turn to the dairy trade. Here we have the brightest page of the year's record. The production has been large, the prices high, and our reputation in our great market, the motherland, much improved. Canadian cheese has well maintained its proud position and its immense export. Our butter export has increased enormously, about seventy per cent. over last year, which was itself so large; while the price has averaged in the English market fully two cents a pound better than at any time in many years. A specially gratifying point is that Canadian butter has again this season improved its relative position on the English market, and has more firmly established its good reputation.

From this sketch of the agricultural season what lessons may we draw? First, it appears to me that we Canadian farmers may renew and strengthen our confidence in our country, our business, and ourselves. The success of the season is due to a wide area of fertile soil and a healthy, temperate climate; to natural conditions favorable to the best development of a sturdy industry, and to the mental and physical capacity of our people taking full advantage of these conditions.

Secondly, it is evident that our greatest profits, most noted progress, have been in the live-stock branches of our farming. To understand the full meaning of this is most important; and the better it is understood the more satisfactory it appears.

Our crops may be divided into two classes: the one exported and the other consumed at home. We have no recent figures that are complete; but, for comparison, we may take the census and practically the same proportion is still true. Without counting pasture grass, but taking the gross weight of all other crops, twenty-five twenty-sixths of our total crop yield is used in Canada, and of this five-sixths is used to feed animals. Including pasture grass, we can say in round figures that considerably more than five-sixths of all the crops of our farms' produce goes into our live stock.

How doubly important, therefore, is it that our live-stock business should be profitable, since it appears to be more than five-sixths of the whole business of the farm in Canada. Of course, this includes both our export and home consumption. With the single exception of cheese, we consume much more of every class of animal products at home than we send abroad. Even of butter, notwithstanding the recent great increase of our trade, we still eat twice as much at home as we export.

With the present undoubtedly large increase of our population, and the extraordinary prosperity of the country, our people are no doubt consuming a much greater proportion of animal food than they did in 1891; and, therefore, the present relative importance of our live stock is greater even than in 1891.

With these facts before us, it is certainly of supreme importance that our live stock should be of a character to make the best possible use of this enormous product of our fields. If we devote our energies to producing crops, and then practically throw them away by feeding them to poor or inferior stock, we lose not only the labor expended on the stock, but also that expended on the growing of these crops and the use of our land. Then surely the supreme question for us is how to improve the general quality of our live stock?

We boast that Canadian stock is of the best. So it is, a small minor proportion of it which appears at our exhibitions or is to be found at the well-known homesteads of our best breeders. But any one who knows our stock generally, knows that it is not true to say that the majority of Canadian live stock is of the best or really first-class.

What, then, is the most important consideration for the improvement of this stock? Whence do we take our inspiration on live-stock matters? Where do we go to buy animals for the improvement of our stock? Great Britain. We find there the homes of the breeds which are the standard of excellence in domestic live stock: Durham, Ayrshire, Clydesdale, Shropshire, Leicester, Berkshire, Yorkshire, Tamworth. What do these names indicate? The places of origin of these breeds. They are not named from an individual, but from a locality. They have not been produced by an individual, but a whole section has steadily and systematically, for a long course of years, bred to a certain type which was found to have the best and most profitable qualities for that neighborhood or that market.

My observation leads me to believe that our people have very little appreciation of the importance of breeding systematically to a type. It is true that here and there, scattered all over Canada, but chiefly in Ontario, we have men renowned, not only in Canada, but in other countries, for their success as breeders: and I believe the best of these are as well informed and thorough in their practice as the best in the world. Something much more than this seems to be called for. Is there in Canada a district or county where any particular type of animal is especially celebrated? I have not found it. It is true that in some counties Shorthorn bulls have been plentiful, and there steers of a better

quality are to be found; and in some localities Clydesdale horses can be more easily found than in others. But, even in any such instance, the would-be buyer would find fully more animals not showing any signs of the type he wants than of those that fill his eye. In other words, we farmers, as a whole in Canada, have been breeding in all sorts of criss-cross ways, without any system at all: the result being that our stock generally is in any particular place of no particular type.

There have been one or two striking object lessons in our country of how not to do it, which are worth drawing attention to. In the Province of Quebec years ago there were two classes of stock with very valuable qualities and of well-defined characteristics, well worth perpetuating and capable of further development under proper management. These were the French-Canadian pony, or small horse, and the French-Canadian cow. To-day it is almost impossible to obtain a pure representative specimen of either of these. Why? Because as the country opened up, a little knowledge, which is so dangerous a thing, crept in amongst the *habitants*. The Canadian mares were bred to all sorts of stallions, often really pure-bred, but generally of a class not fitted to cross with them; the produce would be bred to a horse of some totally different class, and so on again, until the unfortunate foal of to-day has crosses of eight or ten different types, introduced haphazard and irregularly, and is therefore bound to be a misshapen, ill-balanced creature, and no two of them alike.

The same has to a large extent been the history of the cattle; and one will find in the same parish, and even the same herd, every imaginable cross of half the well-known breeds, but no uniform type and no certainty as to what the future generations of these cattle will be under a continuance of this system. In Maine, the Morgan horse was produced

they will have a number of different herds to choose from rather than where there is only one isolated herd of a particular class. And this is true, not only of cattle, but of the other classes of our live stock. I think I may venture to instance horse breeding in Canada as a glaring example of the failure to breed to a type. Some years ago a distinguished army officer was sent to this country to see if a purchasing station for the English army could be established in Canada. He, unfortunately, found no section of the country where the class of horses that he wanted could be purchased in any quantity. To-day the English purchasing officers for the army are on the lookout the world over for cavalry and artillery horses. They are not tempted to come to Canada, because our horses are such a mixture of all sorts of breeds that they could not pick up in a short time in this country a sufficient number of suitable animals to make it worth their while to come. In saying this, I fully appreciate that we have a certain number of very excellent horses in Canada, and that there are some men who have done great service to Canadian horse breeding; but the general principle on which most of our owners of brood mares have gone has been to mix up every conceivable breed in the product, with a result that is disastrous.

In my official position, as Minister charged with the care of agricultural interests, I have felt that the live-stock problem was one of the most difficult of solution, and therefore requiring most particular attention. It was with this in view that I secured from Parliament an additional sum of money to be devoted to the branch of the Commissioner of Agriculture and Dairying, and have created a new office in that branch of my Department. Your readers, I am sure, will sympathize with me in the satisfaction I feel in having obtained the services of Mr. F. W. Hodson as Live Stock Assistant in the branch of the Commissioner of Agriculture and Dairying. Mr. Hodson's experience amongst the live-stock associations of the Province of Ontario, and the excellent work that he has done there, gives me an assurance of what I trust will be the results of this new departure. I bespeak for this branch of my Department, and the work which through its officers I hope to energetically push on, the hearty co-operation and sympathy of the live-stock owners of Canada, and these are practically the farmers of our country.

Agricultural Education.

BY H. S. MACLEAN, ASSISTANT PRINCIPAL NORMAL SCHOOL WINNIPEG.

The nineteenth century has grappled with many difficult educational problems. Some of these it has solved satisfactorily; others, it must hand over to the twentieth century for final determination. Among the latter is the problem of agricultural education. Although this subject, when viewed in all its bearings, is really a complicated one, being bound up with many educational and social questions, yet it is gradually becoming more clearly understood; and, as its importance is now fully recognized by the best thinkers everywhere, there is good reason to hope that much new light will be thrown upon it, and that it will soon find its true place in educational work. Already a good beginning has been made, but there is much more to come. Also, it is gratifying to note that the beginning has been made at the proper end of the educational ladder; that is, in the primary school.

Frequently educational institutions are blamed for the tendency manifested by the young people of rural communities to leave their homes and seek occupation in the cities and towns. It is said that these institutions are the means of educating boys and girls away from the farm. A superficial view of the matter might, indeed, seem to justify this conclusion, but a more careful examination of all the conditions involved shows that the charge preferred is not well founded. Let us consider two or three of the causes producing the result complained of.

At the time in the history of agriculture when the soil was tilled with rude homemade implements, when grain was reaped with sickles and threshed with flails, when clothing was of homespun, the great majority of the people lived in the country and were engaged in agricultural pursuits. There was little inducement to leave the farm, for very few could find employment elsewhere. But with the advancement of civilization the conditions became completely changed. Progress in science has given rise to a division of labor by which the whole social organization has been revolutionized. The forces of nature have been harnessed so as to become available for the purposes of man. The railway, the steamship, and the telegraph have brought countries widely separated in space within easy reach of one another. Labor-saving inventions have enormously increased productive power, thus diminishing in a corresponding degree the number of persons required for any given amount of work. Large and important industries have sprung up, creating a demand for labor of many kinds, and consequently causing a rush of people from rural districts to cities and towns—the industrial centers. It is thus seen that the shifting of population is an inevitable outcome of the practical applications of science to the needs of mankind.

The bustle and stir of the city, the time it affords for recreation, and the variety of its amusements, tend to make it seem very attractive to many young people living in the country. Knowing little of the



HON. M. H. COCHRANE.
Hillhurst Farm, Compton, P. Q.

by the intelligent crossing of the English Thoroughbred and the above-mentioned French-Canadian mare. The result was a largely-spread class of horses, the best in the world for light buggy driving, especially on hilly roads. But they have been improved out of existence by indiscriminate crossing with several sorts of imported stallions, until now hardly any good typical animals are to be found in their old domain.

I am satisfied that one of the most important maxims to be kept continually before our stockmen, is to breed to a well-chosen type; and one of the most important rules to be understood by those having any influence in stock matters, is to secure and keep to a uniform type for each locality of our country. To-day a fair start has been made in certain sections in the breeding of certain classes of stock. It will pay all the farmers of that section to follow that line year after year, thus helping to make their neighborhood famous for whatever class of stock it may be that prevails there.

One of the most deplorable practices in connection with breeding is to change the type of the male animal. If, for instance in cattle, a man has started with a Shorthorn bull, it is supposed that he wishes to produce either a beef animal or a general purpose animal tending towards meat production. If a year or two afterwards he discards his Shorthorn bull and takes to a Jersey, he certainly is not improving his position, and, following such a practice, can never make a name for himself or his herd for any particular excellence; while if he had continued in the line of the Shorthorn qualities, intelligent work would soon have made him a reputation and brought him buyers from everywhere, and consequently better prices.

The same I believe to be true of a neighborhood. There is no doubt that more buyers will go where