

(Mr. McCallum) has said, it is impossible for an individual to arrive at this knowledge; experiments are too expensive. It must be done in a united way by a united people, and I cannot see any better way in which it can be done than by the Parliament of the country and the expenditure borne by it. The farmer must be taught, and there is no other way in which he can be taught than by experimental farms of this kind. He must be taught what is or what is not contained in the soil that is necessary for the production of a peculiar and particular kind of grain or fruit; he ought to be taught what the mineral elements of the soil are which are required for the production of wheat, oats and barley; he ought to be able to have the soil analysed at a minimum or no cost at all, and rely on the expenditure of the Government to see whether it contains these elements or not. If it does not, he has information that will guide him as to what kind of grain he should sow on that soil. Not only that, but the duty of the Government is to ascertain where these elements can be obtained, if not in the soil, in order that the farmer may be able to obtain them and return them to the soil. In the first place he must be taught what kind of mineral food is necessary for the production of grain, and, as I said before, whether the soil contains that food. He ought to be taught also, and he can only be taught this by bulletins issued from an experimental farm, whether his farm contains these elements or not. It is a very simple calculation for a scientific man to enter into, but very difficult for a man without the means of investigation to ascertain. Perhaps not one in a thousand agriculturists in this country know what the mineral food of plants is; perhaps not one agriculturist out of a thousand knows what amount of this mineral food is obtained in the average soil of the country. I could give you the amount of this mineral food that is contained in the average soils of the country, but it would take too long. If the farmer has already the amount of mineral food contained in the land, and the amount of mineral food each crop of wheat, oats and barley extracted from the land, it is only a matter of simple arithmetic to ascertain the number of crops he can raise from that soil in order to entirely exhaust it of that food; and as soon as it is exhausted, the soil becomes useless almost exclusively and entirely. It requires different food for wheat, barley and oats, and different elements to produce hay; what is required to produce wheat and barley. It is the duty of the Government to afford the farmers the greatest possible facility for obtaining this knowledge, and as soon as it is obtained he can pursue his vocation, not only with profit to himself, but with great advantage to the country. A great many of the farmers of the country believe that they can restore to the soil all the elements required, by returning the barnyard manures to the land. I can point out and will use this as an illustration to show how necessary it is for the farmer to be untaught this. Take land that produces wheat. We find that the ash of wheat is composed of 7 per cent. phosphoric acid; we find phosphates enter largely into the bones of animals and wheat; we all know as a matter of fact that the wheat of nearly every farm in the country is sold off the land never to be returned; we know that the bones of animals raised on that land are sold off, never to be returned. Then it is a question of arithmetic to ascertain how many crops of wheat and bones of animals can be sold off land to exhaust it of phosphoric acid. The reason why the wheat of the older Provinces is of a soft character and does not yield that good flour that was produced from the wheat in the earlier history of the country, is that the soil is exhausted of phosphoric acid, and the reason why the wheat of Manitoba and the North-West Territories, as well as Minnesota, is worth 10 cents per bushel more than the wheat of Ontario, and will produce a better quality of flour, is because the land is new and contains a large proportion of phos-

phoric acid. This is a matter of exact certain calculation from a scientific standpoint. It is then the duty of the Government to conduct experiments, because no individual can conduct them at his own expense, for he has not the knowledge or facilities for doing it. The Government should supply the farmers with that information in order that they may carry on their avocation with profit to themselves and the country at large. I will not go into the chemical analysis of soils, or into the chemical analysis of grains, as probably I might show the great importance of this measure. I will take it for granted the House is thoroughly convinced of its importance, and will only say again that the thanks of this House and of the farmers of this country are due to the Minister of Agriculture for introducing the subject to this House.

Mr. WIGLE. Representing as I do an agricultural constituency, I feel I would not be doing my duty to my constituents if I did not stand up here and endorse the action of the Government on this occasion. One reason why I have every confidence in the establishment of experimental stations in the different Provinces, is because I know their establishment is left in the right hands. When the hon. gentleman (Mr. Carling) was Minister of Agriculture in the Sandfield-Macdonald Government of Ontario, he established a farm near Toronto. I had occasion to look into the matter and I found it was a better farm than is the Agricultural College and the farm of Guelph to-day. He purchased some 600 acres within seven miles of the city of Toronto, located near the line of the Great Western Railway, so that it could be easily visited in ten minutes by parties coming to the capital of Ontario, but for party purposes and the satisfaction of good Reformers near Guelph, the Mowat Government appointed a commission, and one of the greatest reasons why the commission recommended that the Stone farm should be purchased was because there were too many Canada thistles on the other. Then it would not be practicable as a model farm, and they reported that the Ontario Government should purchase the Stone farm, because there were no Canada thistles on it, and it would make a model farm from the start. I took occasion to go into that matter at one time, and I found in the report of Mr. Johnston, who was the manager of the Stone farm which was run by the Mowat Government and was bought because there were no Canada thistles on it, the statement that field so and so, and field so and so grew nothing that year because there were so many Canada thistles on them that they could not grow anything. They bought that farm because there were no Canada thistles on it, and in a few years they could not grow anything because of the Canada thistles. That don't show the right kind of farming. I remember seeing in the *Farmers' Advocate*, published in the city of London where the hon. member for Bothwell (Mr. Mills) lives, a statement that the roads around the model farm at Guelph were so polluted with thistles that they were interfering with the farmers all round them, and that the farms in the vicinity of that institution were not worth so much as they were before it was established. I have every confidence in the Minister of Agriculture in establishing these farms. I believe he will establish them for the best interests of this country, and I believe he will not carry on a college with the farm as they do in the Province of Ontario. While the Province of Ontario's farm may be very well, if it were managed properly it would be still better for that Province than it is at present. There is one thing which I believe the farmers of this country are deeply interested in, and that is fencing. I am satisfied that in the older Provinces rail timber is about exhausted. We find the fences in this country are about rotted down, and it would be a great thing to experiment as to what kinds of hedges would be the best to plant out in the diffe-