admit of their being cultivated to greater perfection and profit.

WASTEFUL FARMING.

Our farming during the past has not always been conducted in the most economical manner. Crops sometimes have not been sown with needed promptness, the fertilizers at command have not been made the best of, and much land that would have yielded good results, has for want of proper drainage and care remained unproductive to the owner. Loss to the country has also resulted from lack of information regarding the necessity of a proper rotation of crops. Canadian farmers will require to be more careful in these particulars if they would maintain for their country in these days of keen competition and improved appliances, that well deserved preeminence in agriculture which she has hitherto enjoyed. I might enlarge here indefinitely, but perhaps I have said enough in the few thoughts presented to show that there is practically no limit to experimental work, the results of which, when its true value is determined and made known, will be of inestimable consequence to farmers everywhere; and when I say that the experimental farms established by the Dominion Government are to take up this class of work especially, and report on it frequently for the benefit of the farmers, I think I have fairly answered the question, "What good will those farms be to the agricultural community?" The establishment of so many of these experimental institutions in Europe led to the consideration of the subject in America, and about thirteen years ago the first of these experimental stations was established in the State of Connecticut. Since then a number of similar institutions have been started, supported by annual grants from the legislatures of the different States in which they have been located, until the importance of the subject has so grown on the farmers in the United States that for a year or two past the people have been agitating for more liberal support from the general Government for such institutions, and last year Congress passed a bill known as "The Hatch Bill" which provides for an annual appropriation of nearly $500,000, to be divided amongst the different States, to be devoted entirely to this experimental work in agriculture, horticulture and forestry. In the meantime the Canadian Government has also been looking after the interests of the farmers. In 1884 they appointed a committee to enquire into this subject, and, from the information then obtained, and from the opinions expressed by practical farmers, who were called before this committee, the Government were led to consider the expediency of

PROVIDING EXPERIMENTAL FARMS FOR CANADA.

Our worthy Premier, Sir John Macdonald, who always takes the warmest interest in everything that tends to the prosperity of the agricultural classes, asked Parliament for an appropriation of $20,000 towards the purchase of a site for an experimental farm. In November of that year I was requested by the Government to visit the different agricultural stations in the United States, and also to ascertain by correspondence the working of similar institutions in Europe, and to prepare a report for the Government which might give them such additional information as they required in order to reach some conclusion regarding this work of experimental agriculture. I travelled through all the Western and Northern States, and visited every agricultural institution located anywhere near the Canadian boundary, and submitted a report of my investigations. The result was the passage of the bill known as "An Act respecting Experimental Farm Stations," which provided for the establishment of five experimental farms, one of which was to be located near Ottawa, to serve the purposes of Ontario and Quebec jointly, one in the Maritime Provinces to serve the purposes of those provinces jointly, one in Manitoba, one in the North-West Territories, and one in British Columbia.

THE OBJECTS AIMED AT

in establishing those farms might be better presented to you perhaps in the wording of the Act itself. The works to be undertaken were these:

(a.) Conduct researches and verify experiments designed to test the relative value, for all purposes, of different breeds of stock, and their adaptability to the varying climatic or other conditions which prevail in several provinces and in the North-West Territories;

(b.) Examine into the economic questions involved in the productions of butter and cheese.

(c.) Test the merits, hardiness and adaptability of new or untried varieties of wheat or other cereals, and of field crops, grasses and forage-plants, fruits, vegetables, plants and trees, and disseminate among persons engaged in farming, gardening or fruit growing, upon such conditions as are prescribed by the Minister, samples of the surplus of such products as are considered to be specially worthy of introduction.

(d.) Analyze fertilizers, whether natural or artificial, and conduct experiments with such fertilizers, in order to test their comparative value as applied to crops of different kinds.

(e.) Examine into the composition and digestibility of foods for domestic animals.

(f.) Conduct experiments in the planting of trees for timber and for shelter.

(g.) Examine into the diseases to which cultivated plants and trees are subject, and also into the ravages of destructive insects, and ascertain and test the most useful preventives and remedies to be used in each case.

(h.) Investigate the diseases to which domestic animals are subject.

(i.) Ascertain the vitality and purity of agricultural seeds, and

(j.) Conduct any other experiments and researches bearing upon the agricultural industry of Canada, which are approved by the Minister.

It will be seen from this category that provision is made for experimental work in all departments of agriculture in each of the provinces. In order to carry on this work the Act authorized the employment of a director, who was to have supervision of all the institutions; of a horticulturist who was to take charge of the department of horticulture at Ottawa; of a botanist and entomologist (the two offices combined), and I am happy to say that Mr. Fletcher, the gentleman appointed to that important branch, is present and will be able to speak for himself. It also provided for the appointment of a chemist, whose duty it will be to analyze fertilizers and conduct all chemical operations, and also for the appointment of an agriculturist who shall be specially charged with the management of the field crops and stock.

The Most Pressing Needs of the Canadian Farmer at the Present Time.

The following paper was read by the Editor at some of the meetings of Farmers' Institutes recently held in this Province:

The most pressing needs of the farmer at the present time, though their name is legion, may be compressed into two short sentences. The first is an education that will better qualify him for his work, and the second, deliverance from the oppressions imposed by other interests in the commonwealth; or to put it differently, in the struggle of business prosecution to have secured to him fair play. Give to the farmer the first in certain quantity and he will be certain to secure the second, on the established principle that intelligence will never submit to imposition without a struggle to remove it, so that it may be said that our subject is contained in the first idea of our statement —that of a higher education.

We have assumed that the farmer has numerous grievances unredressed at the present time, and we have also stated that intelligence will never tamely submit to oppression, which drives us to the conclusion which will surely pass without contradiction, that the farmers are much in need of a better education, a conclusion that may easily be reached in other ways.

Progress in agriculture at various epochs of the world's history has been at a standstill. In the more recent centuries it has advanced at a walking pace, at the opening of our century it became a smart jog, at the middle thereof a run, and now, like the antelope of the wilderness, it rushes on with a succession of mighty bounds. The farmer of the spade husbandry era has not brought about this change, nor was progress such as we refer to accelerated in this country in the reign of the axe, through the agency of muscle. Muscle is a grand thing in its place, but when the various agencies that have lifted farming out of the stocks of muscle drudgery, and crowned it king among the industries, shall be marshalled in review, in the order of their deserts, muscle will not be there. It will be found that here, too, as everywhere, mind has been superior to matter, and that the mind of the scientist, the inventor and the machinist is mainly to be credited with the rapid strides that the agriculture of to-day is making. Or, in other words, those potent demonstrations were first propounded in the garb of theory, which so many of the sons of toil so thoroughly despise. The mighty march of progress is rushing past at a pace which muscle alone can never keep up with, hence the urgent need of a more thorough education of the powers of mind possessed by the farmers of to-day, and those who are to be the farmers of to-morrow. Yet muscle with the farmer is a factor that cannot be despised, and no definition of education for the farmer will be complete that ignores its importance. The definition of education by the teachers of the past ran thus: "Education consists in the drawing forth and training the powers of mind, so that their possessor shall become more useful in life" This definition may do for the merely professional man, but is neither broad enough nor sufficiently comprehensive to apply to the farmer. So little attention is paid to the development of muscle by the professions, that in a few generations the species becomes extinct, and has to be constantly recruited from the farm. Education for the farmer consists in so developing the powers of mind and muscle, that their possessor shall be enabled to utilize all the improvements of the day in the furtherance of his calling.

From this definition you will readily perceive that the progressive farmer of the present must be a life-long student. His education can only be got in part in the rural school, where first the young mind begins its wanderings in search of the treasures of the past. It can only be got in part in college, in the company of the master spirits of the living and the dead. It must be gathered largely in the realms of observation and experiment, the observation and experiment of others being made easily accessible to the former by means of books and the agricultural press. He must be a constant student of the improvements of the day, else he cannot keep abreast of the times, sitting in judgment himself upon their relative and intrinsic values, before giving them a place in his regular practice. The farmer in his efforts to secure a complete education for his son will guard his physical development and education with a jealous care. From an early day he will accustom him to the performance of labor in every department of the farm, with the development of his strength, for at no other period of life will ease and proficiency in the form of manual labor be so easily acquired. We have long held it as greatly advantageous, that a farmer be able himself, to perform manual labor in a more perfect manner than any one he employs, even though its performance should form no part of his regular daily routine.

Two of the agencies that we have named are beyond the reach of the generation at present engaged in tilling the soil. From the help that the common school and the college might give, they have been borne far hence by the ever advancing wave of the long journey. But the other aids referred to are easily accessible and also another educational medium transcendently important as we regard it to the passing generation, the Farmers' Institutes that are being formed of late in the various ridings of our province.

The dominant idea connected with their organization was educational, and to those already in the thickest of the fray they are pre-eminently adapted to the diffusion of knowledge on the great, grand science. We can only compare them when rightly conducted, to a great feast, where all the luxuries of a neighborhood and many from places far away, are spread out in an unlimited profusion, and of which all are invited to partake. The poet sings, "All the treasures of the east lay before the Doric spear," so here we may have all the rich experiences of the various points of the compass of a wide neighborhood, brought to the one focus, thrown into the lap, as it were, where choice may be made of what is deemed of value, and the rest emptied out. But our children can even fare better. The Minister of Education has promised us that at an early day more will be taught on agriculture in our common schools, and the marvel is that the farmers have not insisted on this long ago. How unfortunate it is that young lads intended for the farm have spent so much time in what was to them in many instances the unmeaning mummery of "The subject and the predicate," and kindred knowledge, who never knew during the entire period of their school days what "early maturity" meant, nor could they give the distinction between a beef and a dairy breed of cattle. And now before we leave this subject of education, if what we have said regarding it is to be forgotten, let this be remembered, that in the education of the young man or maiden, intended