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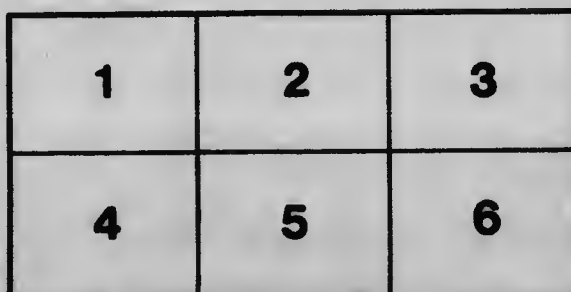
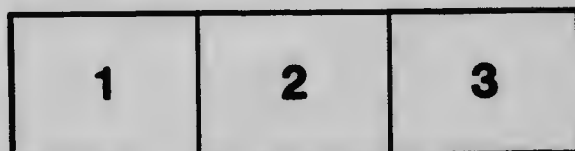
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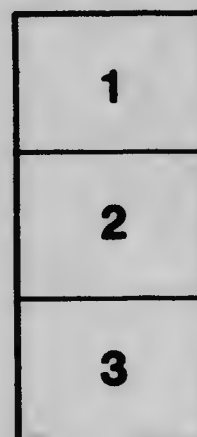
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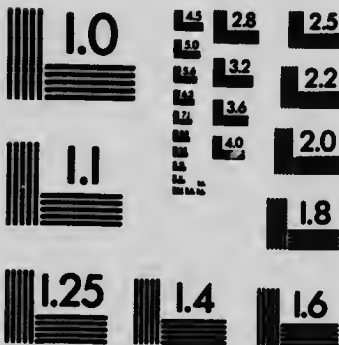
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THE MACDONALD MOVEMENT FOR RURAL EDUCATION

EVIDENCE

OF

JAMES W. ROBERTSON

L.L.D., C.M.G., PRINCIPAL, MACDONALD COLLEGE

BEFORE THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

1906-7

PRINTED BY ORDER OF PARLIAMENT

As advance sheets of the Committee's Final Report

MACDONALD COLLEGE, QUE., CANADA

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1908

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MAP OF ISLAND OF MONTREAL.
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THE MACDONALD MOVEMENT FOR RURAL EDUCATION.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

OTTAWA, WEDNESDAY, April 3, 1907.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 a.m., Mr. McKenzie, Chairman, presiding.

Dr. James W. Robertson, Principal of the Macdonald College, Ste. Anne de Bellevue, Quebec, attended by request of the Committee and made the following statement:—

Mr. Chairman and Gentlemen,—I am very much obliged to this Committee for the opportunity of laying before its members some information regarding the Macdonald College, and what has become known in Canada as the Macdonald Movement for the advancement of agriculture and education. Many of us look for much benefit from them to the whole of Canada. I gratefully recognize that in the past, when I had the honour and privilege of being Commissioner of Agriculture and Dairying for the Dominion, this Committee gave me many opportunities in its meetings and in its reports of laying before the people of Canada some of the plans which the Department of Agriculture had under consideration for the promotion of agriculture; and I am venturing to hope that the Committee will let me, in my new capacity as Director of the Macdonald Movement and the Macdonald College, continue in the same friendly relationship.

SOME PROBLEMS AND EXPERIMENTS.

Some of the problems which we Canadians have to face and solve for ourselves are common to all self-governing nations, but others of them are peculiar to us. For instance, there are special national problems due to our youth; to our size; to the character, vastness and potential values of our undeveloped resources; and to the large amount of foreign blood pouring into our citizenship. The large inflow of foreigners who come to mix with our people adds difficulties to the ordinary problems of agriculture and of education. These people bring in not merely different methods of doing things but different social standards and ideals. The traditions they have inherited, the conditions under which they have been brought up, their outlook on life, these are all different from ours. For our safety and their welfare it is necessary that these people should be so educated, so led and so guided by competent leaders that they will be inclined to live on the land, and not to herd in the cities; that they will be able to live on the land with profit and contentment to themselves and thus join our own people in making our civilization progressive and wholesome for the whole of us.

To help in the solution of some of the problems arising from those conditions is part of the work for which the Macdonald College has been founded and endowed by Sir William C. Macdonald, of Montreal. We are all making experiments; we are doing that to the extent to which we live in a way that is consciously rational, trying to do the best we can with ourselves and the conditions in which we find ourselves. We are trustees of life, and of the institutions and national honour of Canada, as

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well as of the immense natural resources of the country. With the highest appreciation of the work of this Committee and of the Parliament of Canada, it remains to be said that many of our efforts in government are still only experiments. Even our form of government, as yet, is only on trial. We have much to learn; much to find out by patient, careful trials in agriculture and education and government, and without we have reason for some satisfaction in that we are making genuine progress. We are making progress towards having the will of the people prevail in an intelligent way with integrity, with justice, with courage and good-will. Out of our experiments in those matters there are embodied into laws and institutions and customs what we as a self-governing people think to be desirable and good, leaving these flexible and serviceable for further adjustment to new needs.

It has taken the older nations many centuries to learn how to manage their soils in order to get the most out of their climate. That the climate is one of the chief factors in profitable agriculture is sometimes forgotten. It has taken the older countries centuries to accumulate what one may call agricultural and industrial intelligence as applied to rural life. To make up for our youth in those respects, it is necessary that we should do more for the young people who are looking towards agriculture than we have been doing for them, or than has been done for them in any country so far. I think adequate educational and training work is not being done in this — any other country for the young people, looking towards a rural life and agriculture. What to do, and how to do it, are parts of the national problems. It appears to me that the solution of problems in agriculture for prosperous, beneficial rural life are inseparable from progress in education, including agricultural and industrial education. The sure way to increase the wealth and well-being of the people is by the application of intelligent labour, and the quality of intelligence in labour is one of the fruits of some form of education. Instead of standing still and grumbling at what is not, but what might be, it is worth while trying to improve the conditions and to solve the problems which confront us by doing the something which we believe to be right and best and by observing the results of our efforts. All rational progress is attained by learning the lessons from consequences.

THE MACDONALD MOVEMENT.

Permit me to lay before the Committee a brief statement of some of the consequences from some of the efforts which have been made in the Macdonald Movement. I think you will join me in seeing that our efforts have been on the right lines, and that much more can be done in the same direction with great benefit to all the people. Some people look for consequences to come in a capricious sort of way. In agriculture there is no room for caprice; there is the inevitable consequence from every adequate cause. Good crops do not come by chance, and bad weeds are not banished by wishing them away. Take an illustration of this in a rather large way from what has happened in parts of the province of Quebec, not far from where the Macdonald College is located. Many years ago the people were beguiled into the easy-going farm practice of growing and shipping hay; the United States markets were close by and attractive. I could take you in the province of Quebec across vast areas in the St. Lawrence valley which were as fertile in soil possibilities and much more so in regard to the climate than the highly-lauded prairies of the west — areas immensely superior as places for permanent homes, because of the soil, the climate, the trees and the abundance of pure water. The farmers on those areas in Quebec kept on growing and shipping hay, growing and shipping hay, growing and shipping hay, until those fine stretches of alluvial soil are now yielding less than 1½ tons of hay per acre, and that often of rough and weedy quality. Such land is being gradually impoverished without enriching the people in pocket or in agricultural, industrial or commercial intelligence and ability. The hay from 200 acres when sent out of the country carries away more of the elements of fertility than the whole \$6,000,000

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worth of butter exported from Canada last year. Do you catch my point? A crop from 200 acres of land shipped out of Canada in the form of hay depletes the soil of the country more than the whole \$6,000,000 worth of butter exported last year. Do we not need more education, more agricultural education, more industrial education for the management of the land of this country? The condition which I have mentioned does not prevail over the whole of Quebec. It is not quite so bad in many parts of Ontario, but a similar condition will inevitably prevail over the prairies of the west, and with much more disastrous results, unless the farmers on those lands, especially the newcomers, are informed and trained how to make the most out of the land without robbing it; how to get the best of crops with regularity while keeping the land reasonably free from injurious weeds. If the land of the west becomes harried and impoverished like some of the lands in the St. Lawrence valley was betide the west. It has nothing else to fall back on.

For the whole country, then, as a matter of protection, safety and insurance, it behoves us to look well to the training of the young people towards rural life, and to look well to the training of leaders for them. The Macdonald Movement, as helped by Sir William C. Macdonald, has nothing destructive in it. It does not desire to destroy anything that now exists in rural districts, except weeds, but it hopes to help in building up something better than is now known and done, and thereby displace what is poor. It aims at helping the rural population to understand better what education is and what it aims at for them and their children. It plans to help in providing more competent leaders for the horticultural and agricultural population. Somebody's watchfulness, somebody's thoughtfulness, and somebody's thoroughness are always required; and the progress of the people in all worthy ways can be increased in what might be called geometric ratio through intelligent leaders who possess and use such qualities with unselfish public spirit.

SOME RESULTS FROM AGRICULTURAL EDUCATION.

Let me offer you briefly a few instances. The dairying industry is the rural industry in Canada which has been helped most by organized educational effort. It is not the only one that needs it, and it is not the only one that would respond to and profit by it, but it is the one which has had the advantage of organized educational effort for the longest period. Twenty years ago the value of the exports from Canada of butter and cheese was about seven and a half million dollars, whereas the value of the exports of those products last year was over thirty million dollars. There is no part of agriculture that would not respond as fully as the dairying branch has responded. The benefits are not only in the improved quality of the products, in the increased volume and value, but also in the heightened and deepened intelligence of those who are engaged in dairying. The dairy farms of to-day yield more than they did fifteen years ago; the very opposite is true of the hay fields of Quebec which I mentioned a moment or two ago. Besides, there is the intellectual and social alertness of the people. In the one case you have comparative isolation with the least intelligent kind of labour on the land; in the other, you have co-operation at creameries and cheese factories, and the development of business methods and business ability which bring the farmers into association with the manufacturing and transportation interests of the country. I need not pursue that illustration further.

Another instance of the same kind of thing might be taken from the experience of Denmark. Shortly after I had the honour of being appointed a public servant, to help in this forward movement for agriculture and education in Canada, some twenty-one years ago, I paid a brief visit to Denmark. I saw and learned very much there from which I tried to bring back the lessons to the Province of Ontario. At that time the people of Denmark were developing organized industrial and agricultural education for the grown people and for the young people who were to follow rural occupations. One of the means which they used in later years was what are

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called 'Co-operative Testing Associations.' These are associations wherein a number of farmers unite to test their milking cows, to discover the most economical methods of increasing the yield of milk, improving the quality of the milk and reducing the cost of production. As a result of three years' work at one typical co-operative testing association, viz. that of Farrup, the farmers increased the yield of milk per cow by 942 pounds per annum, or 18 per cent., and increased the yield of butter per cow by 47 pounds per annum, or 24 per cent. In the meantime, they managed to improve the methods of feeding the cows, and thus reduced the cost of production. This little kingdom of Denmark, with a population slightly less than that of the province of Ontario, sends to the United Kingdom some of the same sorts of agricultural products as Canada, and takes out of the English markets on an average over eight million dollars a year more than any other country gets for the same quantity of butter, bacon and eggs. That is the premium obtained by the Danes for superiority of quality and condition; the premium for the adoption of industrial and agricultural education. That amount would pay the rural school bill for all of Canada at the present time. The large and wealthy province of Ontario spends some three and a half million dollars annually on all her rural schools, and the kingdom of Denmark takes out of England over eight million dollars annually as a premium for superior quality in butter, bacon and eggs. The rural population has been educated towards ability, towards intelligence in regard to rural life, and towards the development of a public spirit which makes for successful co-operation. There are material gains and very much besides.

I recognize that industrial and agricultural education is not all of education; and it is not something different and apart from the more general education given in schools and in colleges as well as on farms, in factories and in offices. It is really a part of life in training for a profitable and enjoyable life. As related to agricultural operations, its problems are two-fold, viz.: those on the side of the business or industries of agriculture and the adult people who are engaged in them, and those on the side of the children who are to follow the occupations when they grow up.

The purpose of agricultural or industrial education is on the one hand to impart, and on the other to acquire useful and usable knowledge pertaining to the conditions, processes, operations, management and organization of the affairs of everyday life, with training in the use of such knowledge in order to develop skill and to secure the benefit of mental, moral and artistic discipline through the acquisition and use of such knowledge.

SOME RESULTS IN EGGS.

Let me cite another instance of the benefits from agricultural education and development which may shed more light on this matter. Some years ago I had occasion to lay before this Committee some information and suggestions in regard to the improvement of the poultry business, particularly in respect to the fattening of chickens. Out of the work undertaken in that regard there grew a few breeding stations for the improvement of chickens for fattening purposes, and for the advancement of agricultural education as applied to the poultry business among the farmers. At the Macdonald College we now have some 250 pullets purchased last autumn (1906) from two of these poultry stations which had been maintained by the Dominion government. The pullets which we obtained were the selections of the fourth year from hens which were good layers during the winters, and which had vigorous constitutions. At Ste. Anne de Bellevue we have a climate not any milder than that of Ottawa. For our poultry department we have erected one good substantial fire-proof building for office class-rooms, judging room and incubator rooms. I have never seen any buildings at any of the great institutions, devoted to the improvement of agriculture and the advancement of agricultural education, which are nearly the equal of ours at Ste. Anne's; and the poultry buildings of the Macdonald College match the others

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for their purposes, particularly for the students who will take the short or long courses. The fine buildings are for the students. But it does not follow that we should put hens in fire-proof buildings and heat those also by steam or by stoves. We put the hens in small colony houses. The largest of these are 20 feet x 14 feet x 7 feet high. These accommodate from 50 to 75 hens each. We have smaller colony houses, 12 feet x 8 feet x 7 feet high, which serve for 25 hens each. These colony houses stood unsheltered in an open field all through the winter. They are constructed of wood, one board thick, except at the end where the roosts are placed, and there there are two thicknesses of inch boards with tar paper between. Our 250 pullets did not get into their quarters until some time in November. They began to lay a few eggs on the 19th November, and kept on improving on that all winter. As I have said, the colony houses are only one board thick, and occasionally the thermometer inside the house registered as low as 18° below zero.

The hens never got any cooked food or any troublesome mash; they got no concoctions with pepper in them—I think pepper is the hen's whisky, and whisky does not make for good products. These hens are fed once a day on a mixture of dry grain, containing wheat, oats, barley, buckwheat and corn. That is thrown on the floor which already has a depth of three or four inches of cut straw and roughage. The hens have access to a small trough at the bottom of a hopper containing either bran or crushed wheat. They have also access at all times to grit, oyster shells and meat scraps from the packing house. The winter was an exceedingly severe one. When the weather became cold and the water was frozen up in the colony houses, we stopped supplying water and shovelled in snow instead. These are the simple conditions under which these 250 hens have spent the winter at the Macdonald College. You will have come to the conclusion, to which others jumped, that we did not get many eggs, and that the hens suffered from frozen toes and other injuries.

Before mentioning actual results let me tell you of an instance of another sort which came to my knowledge within the last few days. I was showing a citizen of Quebec over the poultry department. He lives in the city and owns two good farms in the province. He said he had about 100 hens on each farm. His expression was: 'It was an awfully severe winter for hens; we did not get much more than 100 eggs all winter.' That was said by him at the end of March. He had had 200 hens in good warm places, fed in a very painstaking way. At the Macdonald College, as a result of industrial and agricultural education, the result of lessons in consequences, a result of trials to find out what to do and how to do it with the best results, we had 250 hens in these small colony houses scratching for their dry food, fed once a day and picking snow. As I have said, the thermometer ran down occasionally to 15° and 18° below zero Fahr. In the severest weather a cotton curtain was unrolled at night in front of the perches. The hens had no other protection beyond that and the one-board thick colony house. There was no sickness except in the case of two hens which the man in charge told me dropped off the perch from apoplexy, being too fat. These two were not laying any eggs. But in the case of the other hens, while everyone did not lay during the winter, we obtained between the 19th November and the 31st March over 10,000 eggs—to be exact, 10,122 eggs. In the coldest weather we got about six dozen eggs per day, and have been getting about 150 eggs per day in the milder weather. Then, when we put the eggs from these hens in the incubators they tested quite high for fertility, the range being from 93 to 76 per cent. fertile. The feed consumed by these 250 hens during the winter cost altogether \$117. These hens are the product of four years' selection, and in the four breeds kept there is not much difference in the results obtained. Twenty-five Rhode Island Reds laid on an average 51 eggs per hen; 25 Buff Orpingtons, 40 eggs per hen; 100 Plymouth Rocks, 40 eggs per hen, and 100 White Wyandotte, 39 eggs per hen, between the middle of November and the end of March. Two hens laid 83 and 85 eggs respectively. Seventy hens laid over 50 eggs each. Fifty-three laid less than 20 each, and thirteen did not

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lay any. Some of them had not responded to the industrial and agricultural education which had been provided. I do not think there is a single department of agricultural work in Canada that will not respond as well as these hens on the whole have done. That is the sort of thing that the Macdonald College is being established for. We are hoping that similar principles and methods will become effective in every department of agricultural and rural life.

By an honourable member:

Q. Did the hens get their feet frozen?

A. Not a single hen got its feet frozen. A few of the cocks, White Wyandottes and Barred Plymouth Rocks, got the top of their combs nipped. There was not a sick fowl in the lot.

Q. What kind of light did you give them?

A. We had one big window on the south side.

Q. Of glass?

A. Of glass, and we can push that back and leave a wire screen in position. We have allowed the window to be open nearly every day all winter.

By Mr. McLennan:

Q. What is the best food for them?

A. The feed for poultry, if you want to get eggs, should be particularly strong in grain, like wheat. We give wheat, oats, barley, buckwheat and Indian corn, throwing it on top of the straw so that they have to scratch for a living. They do not do that for amusement; they have actually to scratch to get their living.

By Mr. Findlay:

Q. When it is 18 degrees below zero how do you keep the eggs from freezing?

A. That is also done without trouble. I do not know that the ordinary farmer would do it, but our man and hens did the work first rate. We have two rows of trap nests along one side; after the hen gets in she cannot get out until released. The man goes around twice in the forenoon and lets the hens out. He sees the number on the band of the hen's leg, and pencils it on the egg. The hen sits on the nest until released. It was rather a bother at first, but it works well. We get the record of the hen and she protects the egg. A record can be kept of every hen.

By Mr. Ratze:

Q. Do you have a man there to lock the hens in?

A. There is a little wire door on a hinge in front of the ordinary nest. The door is pushed inward by the hen, and after the hen has got in, the door falls back into place and fastens itself by a drop wire.

By Mr. Derbyshire:

Q. As I understand, you watch the chickens as they come out of the shell to see if they scratch? If they do scratch you raise them, but the other pullets you do not; you punish them?

A. We would not be so unscientifically harsh as that. The only ones we do punish ultimately—which perish finally—are those that do not lay eggs for a long period. Their numbers are not recorded in our book of eggs. They are not what we desire to perpetuate; we let them drop out. We select those which have elected themselves into the book of eggs.

By Mr. Blain:

Q. What kind of fowls are they?

A. We keep four breeds. Barred Plymouth Rocks, White Wyandottes, Rhode Island Reds and Buff Orpingtons. Those we find to be useful fowls for all purposes

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—for laying and for fattening also. We shall add other breeds for instruction purposes. If you will come and see us at Ste. Anne's you will find a lot of things that are interesting. I hope the Committee will do us the honour of holding a session there next autumn or next spring.

By Mr. Schell (Oxford):

Q. How many pounds of grain do the 250 hens consume in a day?

A. I have got the exact figures here. They consumed altogether from 1st of November until the end of March:

Mixed grain (wheat, oats, barley, buckwheat, corn)	6,100 lbs.
Wheat bran	1,000 "
Skim-milk	200 "
Beef scrap	300 "
Grit and oyster shell	300 "
Mangolds	(Not weighed.)

Q. That is from November until March?

A. From November until March it cost us \$117 for the grain, grit, beef scrap, oyster shells and the skim-milk, and we sold about \$320 worth of eggs. We could have sold at higher prices. The price was 25 cents a dozen to our own people on the place and 50 cents to city people. We will do better when we are fully organized in reducing the cost of feed, in getting more eggs per hen and in the price.

SEED GRAIN COMPETITION.

Another striking instance of the result of industrial and agricultural education under the Macdonald Movement came from the Macdonald Seed Grain Competition. As direct and indirect results of that competition there has been a remarkable development in the cultivation and systematic selection of grain of high quality for seed. The Seed Branch of the Department of Agriculture itself was a direct outcome of the Macdonald Seed Grain Competition, as was also the formation of the Canadian Seed Growers' Association. As far as I can learn from the officers of the Seed Branch of the Department, before the Macdonald Seed Grain Competition was instituted, there was not known outside of the experimental farms more than some 360 acres of reasonably pure Red Fife wheat in the fields of Manitoba and the Northwest. There was plenty of No. 1 hard wheat for marketing, but the seed grain had become mixed. Last year it was reported that there were over 34,000 acres of reasonably pure Red Fife wheat growing in the Canadian west. That is surely a great gain in itself. From that area it should not be difficult in the course of a few years to have the whole of the west seeded in wheat true to name and true to strain. It is highly important for Canada that the reputation of the west for grain of superior quality should be maintained in the markets at home and in the markets abroad. By careful selection the rapidity of increase may be marvellous.

With Mr. C. A. Zavitz, Professor of Field Husbandry at the Ontario Agricultural College, I followed a case where he planted one specially selected seed in 1903—I saw an acre of barley from that seed growing in 1905. Two other remarkable instances of the improvements by Mr. Zavitz may be named here. For twelve years he had selections made of Joannette oats; on the one hand there was selected seed, large, plump and of dark colour; on the other hand, there was selected seed, thin, light, and of light colour. A similar selection from each crop was kept year by year for twelve years.

The result was that at the end of twelve years the crop from the large, plump dark-coloured seed yielded 26.1 bushels per acre more than the crop from the light, thin seed of light colour. The conditions of soil and weather for both crops were alike. Moreover, the grain from the large, dark-coloured seed weighed 10.5 pounds per bushel more than the other.

MANUAL TRAINING CENTRES.

The Macdonald Seed Grain Competition grew out of the work done to extend manual training in the public schools of all the provinces of Canada.

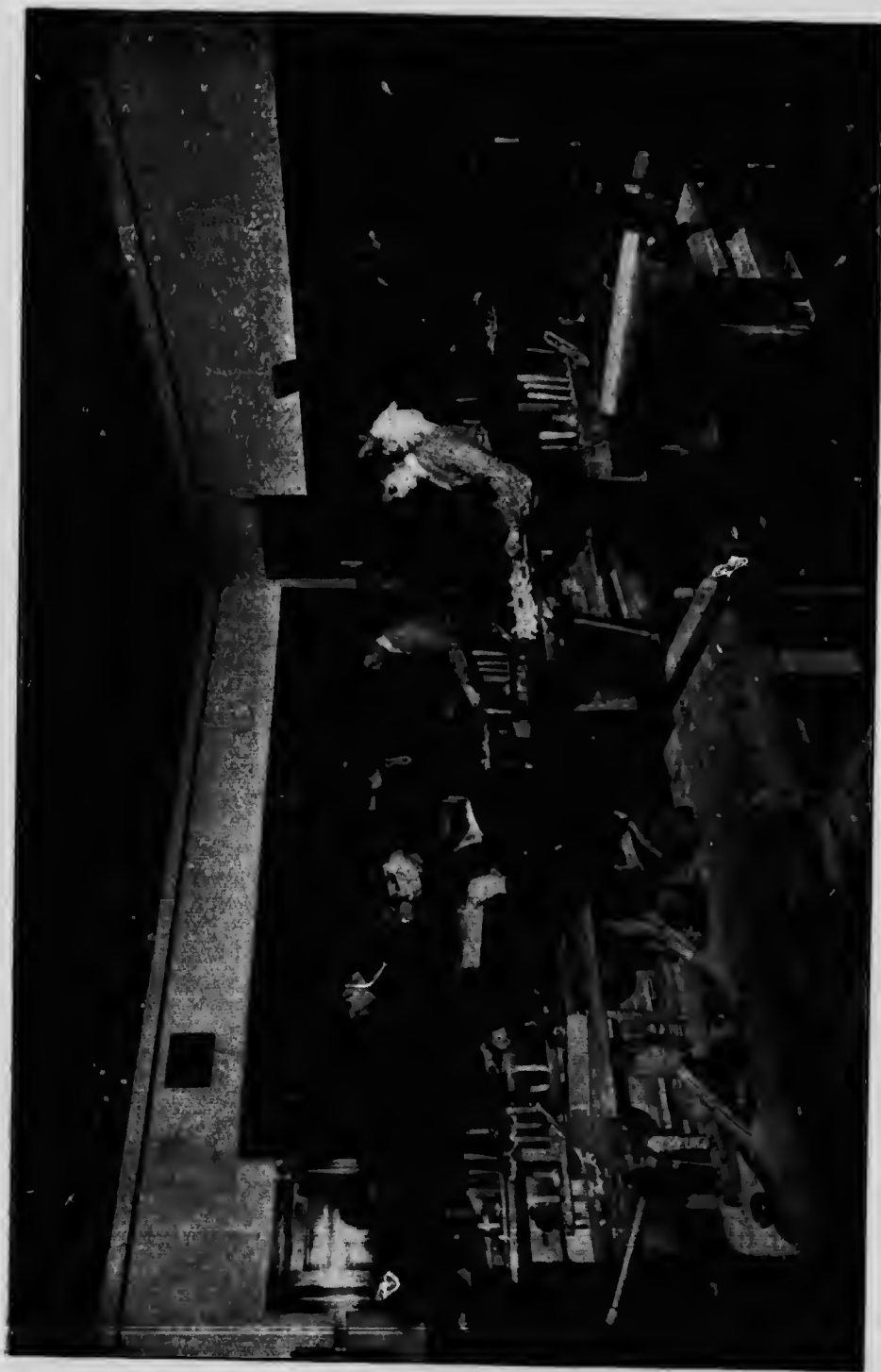
Sir William C. Macdonald furnished funds to establish manual training centres in connection with the public schools in twenty-one places from Prince Edward Island to British Columbia, and to maintain them without cost to the pupils or the public for a period, in most cases, of three years. At first special teachers of ability and experience were brought in from outside, mostly from England. Some twenty-seven manual training teachers were thus brought into Canada. As time went on Canadian teachers were trained and became duly qualified. Before the end of the period of maintenance by the Macdonald fund, there were forty-five manual training teachers on the salary roll at a cost of some \$3,600 per month, and more than 7,000 boys were taking the courses. Summer courses were provided for teachers of urban and rural schools. In the cities on Saturday forenoons, or at some other convenient time every week, classes were arranged for the teachers from whose rooms the boys went to the manual training centres. In Ottawa, these classes were attended by over ninety teachers, and in Montreal and in Toronto by over a hundred in each place. This work was begun seven years ago, and in 1903 (in Montreal in 1904) the local authorities in the several provinces took over and extended the work. The equipment was presented free to the school boards, and in the case of the Normal schools to the provincial governments. Now over 20,000 boys and girls in Canadian schools receive the benefits of manual training in their regular course under the school authorities as a result of Sir William's beneficence in giving that form of industrial and agricultural education a good friendly lift.

I cite the following from a former report I made to indicate the true character of manual training lest some one should suppose that its purpose was to make carpenters or young men skilled in woodwork, admirable as these two forms of ability are in themselves. 'Manual training develops in children habits of industry, and leads them thoughtfully to adjust their acts to desired ends. It begets a sense of responsibility, in response to which the child rises to the exercises of its powers in sustained efforts suited to its strength and intelligence. It brings about the mental habit of appreciating good work for its own sake, and is quite different from that sort of education which consists in informing the pupils about the facts within a definite area of knowledge in order that they may be able to pass examinations on the subjects included within it. The so-called dull boys, who are not quick at book studies, have in many cases been found to show great aptness in the manual training part of education. It prevents them from being discouraged with school life, and from feeling any sense of inferiority to the quick children. It gives them habits of carefulness and makes them self-reliant, hopeful and courageous. All of these are manifestly most desirable educational results. It is also a soothing and strengthening corrective to the quick and excitable children who become over-anxious about examinations on book subjects.'

'The glow of satisfaction from having done something well with one's own hands has certain stimulating and strengthening effects. Is it not the same as that which is revealed by the sacred historian when he wrote "And God saw everything that He had made, and, behold, it was very good"? It is a good thing to let boys and girls become partakers of this divine joy in their own work. The happiness which springs from the consciousness of having begun and finished a piece of good, useful work by one's own labour, is more than a mental and physical tonic. In large measure it allies the worker with the Power that maketh for righteousness. It gives power to overcome obstacles, and the power to overcome obstacles in the path of material, mental, moral and spiritual progress is perhaps the most desirable quality which can be acquired through education. "Train up a child in the way he should go, and when he is old he will not depart from it."

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MANUAL TRAINING IN WOOD, MACDONALD CONSOLIDATED SCHOOL, KINGSTON, N.B.

SEED GRAIN PRIZES.

Out of the Macdonald Manual Training Fund came the Macdonald Seed Grain Competition carried on by boys on farms dotted all over Canada from the Atlantic to the Pacific. The main purpose of this movement was to improve the crops of Canada by encouraging the general use of seed improved by selection from varieties of which the product is in demand or has a relatively high market value. The use of such seed increases the quantity of produce per acre; makes the quality better, and thus renders rural occupations more profitable and the people who follow them more prosperous and more contented. In growing crops two fundamental principles should be recognized: 1. The relative measure of success with which crops obtain their food from the soil and the air is determined by their environment—their opportunities. These opportunities depend primarily on the climate or weather as well as on the soil, and are modified largely by cultivation, particularly by a suitable rotation of crops, by manuring and by drainage. 2. The relative measure of success with which crops obtain their food from the soil and the air is determined by the power of each individual plant to take in, absorb and assimilate food from the soil and the air—the power of the plant to overcome obstacles and the ability of the plant to do things in its own environment. A plant is a living and working organism. Its capacity to live and assimilate is largely determined by the source whence it inherited its qualities.

In the summer of 1899 I put aside \$100—my own money, not the public funds—to offer in prizes to Canadian boys and girls who would send me the largest heads from the most vigorous plants of wheat and oats from their fathers' farms, partly to learn whether the country could be got ready to accept the principle and adopt the practice, and partly to interest and educate the boys and girls. I had a wonderful response, and I paid the money in prizes with as much enjoyment as any money I ever spent. The letters I got from farmers and from their boys and girls were so suggestive and encouraging that in the following winter I went to my friend Sir William C. Macdonald, of Montreal, and said in substance: 'Here is a great chance to do some educational work in progressive agriculture; to do something interesting, something attractive, something definite, something beneficial to the whole community, something easy and yet with plenty of difficulties. Farmers and their families may fail to appreciate the educational advantages of a plan or scheme set out in a written statement, but here is something which would be so helpful and instructive to boys and girls that they would go on with it, and the habits of observation and thought and study would go on with them.' I told him \$10,000 for prizes would set and keep this thing going for three years. He provided the money with all good-will—my little \$100 come back a hundred fold—to offer as prizes to boys and girls to encourage them to carry out in practice the plan of selecting the largest heads of the most vigorous plants and growing seed from those heads on a plot by itself.

The yields from the crops of 1900 compared with those of 1903, on an average for all Canada for spring wheat, showed an increase of 18 per cent. in the number of grains per hundred heads, and 28 per cent. of increase in the weight of grains per hundred heads. In oats the figures were 19 per cent. of increase in the number of grains per hundred heads, and 27 per cent. of increase in the weight of grains per hundred heads. These are results from several hundred seed grain plots operated by boys and girls. Altogether over 1,500 entries were received. Out of that number 800 completed in full the first year's work, and 450 of them completed the three years' work in a satisfactory manner. The operations of the competitors were inspected from time to time during the term; the parents of the 450 competitors who completed the three years' work were found, as a rule, to be among the best farmers in the localities where they resided. Ninety-two per cent. of the reports said on behalf of parents and guardians that the quarter acre hand-selected seed plots carried crops decidedly more vigorous and heavy than the crops

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from the same varieties of grain grown on the same farm in the same season from unselected seed. The plots and farms with these seed grain plots were visited in many cases by an official of the department. It was learned from them, from the operators themselves, and from neighbouring farmers, that the crops grown on these hand-selected seed plots were heavier and better, and that the plants in them were more vigorous than those produced on the other parts of the farm from the ordinary seed of the same variety without systematic selection. When results so notable as those can be gained by three years of intelligent labour, what do you think is possible in thirty years when this practice has become the common one through which to obtain seed for grain growing on the farms throughout Canada?

CANADIAN SEED GROWERS' ASSOCIATION.

Many of the farmers on whose farms the competition was carried on were formed into the Macdonald-Robertson Seed Growers' Association, out of which grew the Canadian Seed Growers' Association. Its third annual meeting was held in June, 1906, and the report of its proceedings contained a marvellous record of valuable public service. Particular information was obtained from leading members of the association. These reported several distinct and definite gains from the method of selection which had been followed by the members of the association, viz.: the size and quality of the kernels definitely improved; the strains of selected seed maturing more evenly; the strains becoming better adapted to local conditions; varieties being kept pure; the strains becoming more resistant to disease and gaining in productiveness. All these are highly desirable and give added value to the crops in every case.

I made enquiries last year from the Seed Branch of the Department of Agriculture and from members of the Canadian Seed Growers' Association. I gathered from their estimates that one of the direct results from the seed grain competition was an increase in the value of the grain crops of 1906 in Canada to the extent of at least of \$500,000. That is high finance for you. High finance by a man of lofty intelligence and spirit—5,000 per cent on an investment of \$10,000, and the best of it all is that Sir William Macdonald has not sought and did not receive a single dollar of return for himself from it. That is laying up treasures where neither moth nor rust doth corrupt and which goes on gathering and diffusing benefits for ever and for ever for the people.

SCHOOL GARDENS.

Under the Macdonald Rural Schools Fund arrangements were made for providing a school garden at each of five rural schools in each of five provinces. A trained instructor was placed in charge of each group of five gardens and of the nature study work at them. He spent one day at one school and the next at another. The cost of this was met by Sir William Macdonald. If the Committee will permit me I would like to add to my evidence for its printed report some information as to what these school gardens are beginning to accomplish in various places for agriculture. I think the information would be valuable to the public, and I think you would be interested in learning something of the work which has been done in this way. Therefore, with your kind consent, when going over the transcript of my evidence, I shall insert a little more information.

At the school gardens an effort is being made to give the children information and training in three important matters in connection with agriculture, viz.: The selection of seed, the rotation of crops and the protection of crops against weeds, disease and insects. It is really industrial education. Children find out something by doing, observing and recording the results themselves, and I say it over again that all worthy progress, in matters that are worth thinking about, springs from learning the lessons of consequences. As soon as a child understands that, and governs his life



SCHOOL GARDEN, MACDONALD CONSOLIDATED SCHOOL, KINGSTON, N.B.

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accordingly, he becomes a better pupil and the promise of a better citizen in every sense.

The school garden is one way of making rural life more popular as well as efficient. It may be the first step towards actuating the people to pay more to make the schools more efficient. The best education in rural schools should make the people like rural life and also enable them to make it more profitable. The best way to make any workman like his work is to make him understand it. The beginnings of all that and much more are laid in the schools.

I cite only a few instances of the results from the experimental plots in the gardens managed by the children themselves. In Prince Edward Island, at Tyron, the children obtained an increase of 32 per cent. in the yield of wheat from a plot on which selected seed was sown as compared with a plot alongside for which the seed had not been specially selected. In Prince Edward Island, also, the children obtained a yield of 17 per cent. increase in a barley field after clover, as compared with a plot alongside where no clover had been grown.

At most of the gardens two plots, side by side, were planted with potatoes under equal and similar conditions. The treatment of both plots was alike, except in regard to the spraying with Bordeaux mixture to prevent blight. One plot in each garden was sprayed with the mixture three or five times as the case might require, whereas the other plot was left unsprayed. In every case the yield of potatoes from the sprayed plot was larger than the other. The following list shows the increased yield resulting from spraying at six gardens:

Knowlton, Que.	111 per cent.
Richmond, Ont.	100 per cent.
Carp, Ont.	85 per cent.
March, Ont.	81 per cent.
Guelph, Ont.	43 per cent.
Brome, Que.	41 per cent.

I quote from an article written by Mr. R. H. Cowley, one of the foremost inspectors of schools in Ontario, who has been appointed recently as superintendent of continuation classes for the province of Ontario:

"Three leading motives underlie the origin and growth of school gardens in Europe: 1. To provide a convenient means of supplementing the teachers' income, thereby simplifying the problem of maintaining the public school. 2. To promote a practical knowledge of horticulture and agriculture, thereby increasing the national prosperity. 3. To furnish means and material for the practical study of botany as a desirable department of scientific knowledge.

"The vast majority of European school gardens look to utility. Of the few that recognize the importance of the educational end, nearly all stop short at the acquisition of a certain amount of scientific information and the habit of careful observation. On the other hand, the Macdonald school gardens, while designed to encourage the cultivation of the soil as an ideal life-work, are intended to promote above all things else symmetrical education of the individual. They do not aim at education to the exclusion of utility, but they seek education through utility, and utility through education. The garden is the means, the pupil is the end.

"The Macdonald school gardens not only have a recognized place in the provincial systems of education, but they are attached to the ordinary rural schools, owned by the school corporations and conducted under the authority of the school trustees and the express approval of the ratepayers.

"The work of the garden is recognized as a legitimate part of the school programme, and it is already interwoven with a considerable part of the other studies. The garden is becoming the outer class-room of the school, and the plots are its blackboards. The garden is not an innovation, or an excrescence, or an addendum, or a diversion. It is a happy field of expression, an organic part of the school in which the

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boys and girls work among growing things and grow themselves in body and mind and spiritual outlook.

The true relation of the garden to the school has been in good part established by the travelling instructor, whom Professor Robertson appointed to supervise the work in each province. These instructors were chosen as teachers of experience in rural schools, and were sent for special preparation, at the expense of the Macdonald fund, to Chicago, Cornell, Columbia, and Clark Universities, and to the Ontario Agricultural College, Guelph.

The chief tools and implements requisite to the school garden are hoes, rakes, hand-weeders, garden lines, one or two spades and shovels, a wheelbarrow, hammer, saw, nails, &c. The pupils, as a rule, require only hoes, rakes, and hand-weeders. Those pupils who are sufficiently mature to work a plot by themselves, or along with a companion, can get along very well with hoes and rakes of the average size. In one case, where smaller tools were supplied, the pupils abandoned them after a little practice for those of the standard size.

In the largest school, two hours' work per week by the pupils was found requisite to keep the garden in proper condition. In one school the enthusiasm was so great that the pupils did all their garden work outside the regular school hours. At this school, also, the garden did not suffer from neglect in the slightest degree during the midsummer vacation of six weeks. Experience indicates that when the gardens are fully organized the plots can be well kept by devoting two half hours per week to the work. This time is mentioned not as the ideal condition, but as an encouragement to those who may desire to start school gardens in districts where prejudices are likely to be met. The fact is that in the ordinary ungraded school, and for that matter in the urban school as well, the working power of the pupils is ill-sustained throughout the day owing to their merely forced interest in much of the prescribed work. An awakening as to the educational waste of our schools is coming, and when the school garden is seen in its true relation, it will have a period in each day of the school programme during the growing season. The children have ample time to spare, and the work of the gardens is promoting their intelligence and progress in the ordinary school course.

Mr. E. A. Howes, who is now principal of the Macdonald Consolidated School at Guelph, Ont., had charge of the school garden nearest the city of Ottawa. I venture to include the following extracts from an article by him:

Bowesville, Ont., which is situated six miles south of the Dominion capital, has long been regarded as one of the most progressive sections in the progressive County of Carleton, and it is to the active interest of its people in the welfare of their school that the credit for a large measure of the success of the movement here is due. They have never interfered but to aid. Land sufficient to make a school ground comprising two and one-half acres was purchased, and this was enclosed by a neat fence with turned posts and attractive gates.

The daily attendance at Bowesville school may be placed at approximately fifty children, ages ranging from six to sixteen. The plan of dual ownership of garden plots has been followed here, a senior and junior pupil having joint ownership in a piece of ground (ten feet by twenty feet), working in conjunction and making a just division of the spoils at time of harvest. This plan gets over the difficulty experienced when juniors are shouldered with the entire responsibility of managing a plot, while it does not destroy the sense of ownership which makes proud the juvenile gardener. In laying out and cultivating the garden plots the entire work, with the exception of the ploughing of the ground, was performed by the children, and, it may be added, cheerfully performed. Neighbouring farmers brought manure for the garden and ploughed the ground.

The experimental plots, belonging to the senior class, deserve special notice. Experiments in crop rotation, in the effect of clover growth, and in potato spraying

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have been carried on, and results carefully noted. Bowesville is the centre of the largest potato producing section in eastern Canada, so particular attention was paid to potato spraying experiments. In addition to the class experimental plots mentioned, three of the oldest pupils carried on an independent experiment in spraying. Care was taken that the crop received neither more nor less attention, other than the spraying, than did the crop in a neighboring field. Rows of potatoes sprayed with Bordeaux mixture were grown beside rows receiving ordinary attention. When the resulting crops were piled side by side in the tool-house, showing an increase equivalent to more than fifty bushels per acre for the sprayed over the unsprayed crops, and also a decided improvement in size and quality, the farmers sat up and did more thinking than would have been the case had they read of the same results in some agricultural publication. It is not so much what these plots teach as it is the trend of thought induced.

SCHOOL GARDENS IN CARLETON COUNTY, ONTARIO.

From report by Mr. J. W. Gibson, the Macdonald Travelling Instructor for School Gardens in Ontario:

'There are five Macdonald school gardens in Carleton county—Carp, Galetta, Richmond, North Gower, and Bowesville, and two others, No. 1 March and No. 16 Marlborough.

'The time taken from the regular teaching hours is between one hour and one and one-half hours per week, or about 5 per cent. of the school time. My experience goes to show that of their own free will the pupils spend much time in their gardens outside of school hours.

'The pupils receive instructions along the following lines: Soils, plant foods (fertilizers), methods of planting and caring for flowers and vegetables, pruning and grafting of fruits, making and caring for hot-beds, transplanting, making and potting of cuttings, weeds and methods of destroying them, injurious and beneficial insects and means of combating the former, experimental work with plants, spraying to prevent fungous diseases of the potato, tomato, fruits, &c., &c.'

'The potato spraying experiment at the Carp garden this year gave an increase in yield of 85 per cent. sprayed over unsprayed plots; No. 1 March garden, 81 per cent. gain by spraying; Richmond garden, 100 per cent. (just double).

'The boys understand this work with Bordeaux mixture, and it is now being introduced extensively amongst the farmers of these sections.

'Written exercises in English and practical problems in arithmetic, done in the school and at home, are based upon the work in the school garden.

'The teachers affirm that the pupils are more energetic and industrious in the school room as a result of their study of things out of doors. It has helped rather than hindered them in their final examinations.

'NOTE.—As clerk of the entrance examination for the County of Carleton last July I made a note of the following results: From schools where no school gardens have been established, 49 per cent. of the candidates passed. From the five Macdonald schools, where all the candidates have been engaged in school gardening for three consecutive years, 71 per cent. passed, a gain of 22 per cent., and most of them with high standing.

'The garden work has added new life and freshness to all school work and the teachers have benefited not less than the pupils thereby.

'In these schools there is no longer that old-time tendency to destroy school property. The pupils have a new interest, a "proprietary" interest, in the grounds and buildings as well as in the garden.

'Many of them are turning their knowledge of gardening to good account at home. Twenty boys and several girls in the Carp school alone last year started early plants for their home gardens in hot-beds of their construction. One woman told me

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that her son, ten years old, took complete charge of their home garden, and that they "never had so good a garden before."

"This work is conducive to the physical health and development as well as to mental alertness of the pupils. New teachers have noticed especially the latter characteristic in the pupils of the school garden as compared with the others.

"The moral influence of a properly conducted school garden cannot be estimated too highly. Indeed, they outweigh all others. Here children are trained to respect the rights of others—one of the first principles of good citizenship. They learn independence and industry. They develop a real love for the outside as well as inside the school house. They see more and think more than they otherwise would. They show a growing interest in and a broader sympathy for all living things. They are finding more pleasure and more profit, too, in the cultivation of the soil than they ever dreamed of. Many of these boys will soon be our leading farmers."

W. H. Elliott, B.A., Vice-Principal Normal School, Toronto, Ont., reported:

From what I saw of the work in Carleton county in my brief visit, and from what I know more definitely of the work done at the Broadview Boys' Institute in our own city, it is my conviction that public school gardens are of inestimable value from a strictly educational standpoint, as well as from the more practical agricultural standpoint."

The following extracts are from letters and reports received from teachers in charge of school gardens, Carleton county, Ont.:

"The school garden seems to fill in the weak parts of our education for the growing child, as it tends to the moulding and developing of his character. I know that the general discipline in my room has been helped by the garden work and also that the pupils like their work in the school room better on account of it. If our politicians would try teaching school with a garden and then without one for two years, as I have done, I am certain that they would be willing to grant all the financial support required; yes, probably be too liberal with it."

(MISS) M. YORK,

Richmond Public School.

"My pupils are more observant than they were before we started school garden work, and seem to acquire a clearer understanding of all their work. Mr. A—— told me that the school garden had been a benefit to his boys, and that they were more independent in their work both in school and out of school."

W. PETTAPIECE,

Principal North Gower Public School.

"I am ready to put myself on record as saying that the school garden has relieved much of the drudgery of the school work to which I was always accustomed. This year we had our school garden and it has been the pleasantest year of my school work. I would never again pass a summer without a school garden. I consider that the chief value of the school garden lies in the effect which it produces on the moral tone of the school. The juvenile sense of ownership is the greatest insurance on the success of the garden and incidentally on the care of the whole school property. The garden is the central point of interest for this end of the township, and it is not unusual to have as many as a hundred visitors at the garden on one Sunday afternoon. I have noticed that the cultivation of flowers has received more attention in the homes since the advent of the school garden, and I am often consulted about this work. I have not heard any unfavorable opinion expressed by responsible persons in this community, but on the other hand the most progressive men have spoken highly of the garden work."

E. A. HOWES,

Macdonald Consolidated School, Guelph.

'(Late of Bowesville Public School.)'

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'It is impossible to over-estimate the value of school gardening on our boys and girls. Instead of being detrimental (as at first supposed) to their advancement in the other branches of learning, it has had the opposite effect. Since engaging in the work my boys and girls have been first in all examinations, competing with children from other schools, including city schools. The whole tone of the school has been improved morally, socially, and esthetically. Our boys and girls have now a reverence for life unknown before, and it has awakened in them, as nothing else could do, a deeper interest in all life around them. It has helped to make school life a pleasure. Now the boy makes the excuse to get coming to school instead of the excuse to remain at home. It has aroused the interest of the entire community. The parents take a pride in "the work of our boys and girls in the school gardens," and never fail to bring their visitors to see the work that is being done there. The pupils learn practical gardening, and already their advice and assistance is often sought by parents and others interested in the cultivation of plants. Its influence is seen also in the homes of the pupils. Every home has its collection of house plants inside and its plots and flower borders outside. Our school board has come to realize the value of this work and are anxious to have it continued.'

G. A. MOORE,
Principal Carp Public School.

CONSOLIDATED RURAL SCHOOLS.

Four object lesson Consolidated Rural Schools were provided by the Macdonald Rural Schools Fund—one in each of the four provinces of Ontario, New Brunswick, Nova Scotia, and Prince Edward Island.

They were located at places chosen or approved by the Provincial Departments of Education. In each case a new building was erected to take the place of the small schools which at that time were serving the single sections proposed to be consolidated. They were each equipped with ordinary class-rooms and an assembly hall, and also for manual training, household science and nature study with a school garden.

A consolidated school board was elected according to the school law of the province concerned. It manages the school as a part of the school system of the province. The school in Nova Scotia was opened in September, 1903; in New Brunswick, September, 1904; in Ontario, November, 1904, and in Prince Edward Island early in the summer of 1905.

The Macdonald Rural Schools Fund meets for a period of three years the additional expense of the consolidated school over the cost of the small rural schools which formerly served the locality. The school sections contributed exactly the amount of the former expenditure, and the extra cost is met by the Macdonald fund for three years to enable the people of four provinces to have these object lessons and experiments in education.

One teacher from each province was chosen in advance to become the principal of the consolidated school when established. They were formed into a class with the other teachers who were to be in charge of the groups of school gardens and sent on salary and at the expense of the Macdonald fund to receive special training at Chicago, Cornell, Columbia and Clark Universities in the United States, and also at the Ontario Agricultural College. Other excellent teachers were engaged by the consolidated school boards. One object of the consolidated being to fit nature study with school garden work, household science and manual training into a course of study with the hitherto ordinary subjects in such a way as to give the best possible education for rural life, teachers with such special qualifications were employed. That increased the cost of maintenance. The remarkable and great increase in the daily average attendance of pupils also prevented any reduction in the number of teachers required, such as has been the case in the United States. There, consolidation of schools has been effected to a considerable extent in some seventeen different states,

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but without the improvement and enlargement of the courses by school gardens, household science and manual training.

The following table shows some of the statistical results from the first years of the consolidation under what I term the 'old' and the 'new.'

Name of Consolidated School.	Sections included.	Teachers employed.		Total of Salary per Annum.		Children enrolled.		Average daily Attendance.		CONVEYANCE.	
		Old.	New.	Old.	New.	Old.	New.	Old.	New.	No. of vans.	Average cost per van per School day.
				\$	\$						\$ cts.
Middleton, N.S.	8	10	11	3,495	5,729	361	409	198	284	11	2 08
Guelph, Ont.	5	6	7	2,200	4,450	174	238	116	171	8	2 60
Kingston, N.B.	7	7	5	1,700	2,950	125	163	55	134	7	2 15
Hillsboro', P.E.I.	6	6	6	1,190	3,300	148	161	89	119	6	1 67
	26	29	29	8,585	16,429	808	991	458	708	32	

The increased cost of the consolidated schools over the single rural schools is caused largely by the better salaries paid to the teachers. The 29 teachers in the section schools received on the average \$296 per annum; the 29 teachers in the consolidated schools received on the average \$566 per annum. It will not be necessary to pay so much for the teaching staff in the consolidated schools when the Normal schools turn out teachers qualified to conduct school gardens, some household science work and manual training as well as the ordinary book subjects. The cost of conveyance of the children is a large item of expense. At Middleton, N.S., the average cost per van per school day was \$2.36 in 1903-4, \$2.03 in 1904-5 and \$1.84 in 1905-6. When the school boards undertake to meet the whole expense themselves, still more economical methods of management will prevail. The larger children will walk to meet the vans at convenient points, and in some cases parents themselves will arrange for the conveyance of their children.

The educational results from these schools have been entirely satisfactory to the authorities, to the teachers, and especially to the parents and children. The average daily attendance at the consolidated schools was on the whole over 55 per cent. higher than the average daily attendance at all of the schools which formerly served the localities; at Kingston, N.B., it was over 140 per cent. higher.

The attractiveness of the consolidated schools becomes in itself a form of compulsory education—the interest of the children being the power which secures regular attendance. A great point has been gained when love of the school and love of the education there set the pace for progress.

One of the gratifying results is the large number of boys and girls, young men and young women, from rural homes, who are doing advanced or high school work. At one of these schools there were about 100 pupils in the high school grades. Many of these are preparing to be teachers in rural schools. When teachers, who themselves have been educated in consolidated rural schools, with nature study, household science and manual training, teach in single rural schools they will make the influence of their own training tell throughout many of the one-room schools.

At Middleton, N.S., after the three-year period was up, in August, 1906, the people themselves undertook to maintain the consolidated school with all the depart-



HOUSEHOLD SCIENCE ROOM, MACDONALD CONSOLIDATED SCHOOL, GUELPH, ONT.

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ments. Some of the routes on which the children were conveyed in vans had been six miles long. The area for the consolidated school was reduced, the more distant sections reopening their small schools. Some of the larger children from them find their own way to the consolidated school. The conveyance of the children in vans was a heavy item of expense. It had been over \$15 per annum per pupil in average attendance. That has been greatly reduced. The cost of conveyance is becoming less at all of the consolidated schools every year. As the ratepayers gain experience and become responsible for the expenditure (with perhaps grants of specific sums from provincial governments) the cost will likely be much further reduced. Sir William Macdonald contributes to the Middleton school \$1,200 per annum for a further period of three years. The consolidated schools provide so much better opportunities for education, that, while the cost is more, it is not apparent that the money they do cost could be spent in any other way with so much direct and lasting benefit to the people. And the people of Canada can well afford to spend as much as they desire to spend on their schools.

Notable results have followed in several of the provinces from these object lessons—Consolidated Rural Schools. Dr. MacKay, Superintendent of Education in the province of Nova Scotia, writes that in his province 53 schools have been consolidated into 22 effective ones. In the province of New Brunswick there are four large consolidated schools, each with nature study and school garden, manual training and household science. The provincial government pays half the cost of conveying the children and gives other special grants.

THE MACDONALD INSTITUTE AT GUELPH.

Sir William Macdonald gave the sum of \$182,500 to provide buildings and equipment at the Ontario Agricultural College, Guelph, to train teachers now in the service for this 'new education.' Besides serving that purpose the Institute has become a headquarters for manual training, for household science and for providing short courses of instruction and training for farmers' daughters and others in cooking, sewing, domestic art and other branches of domestic economy. Two buildings were erected. Short courses of instruction in nature study and school gardens were provided without fees to teachers. The governments of four eastern provinces where the consolidated schools were established gave scholarships to enable teachers to attend. Over 200 teachers have already taken these courses. When pupils who pass through consolidated rural schools go on through the Normal schools, each with advanced work and suitable professional courses in manual training, nature study and household science, they will be thoroughly qualified to carry on this better system of education.

As illustrating the benefit which the teachers say they have derived from the three month courses at the Macdonald Institute, I quote from two letters, typical of the expressions and attitude of scores of other teachers. Mr. R. F. Blacklock, Principal of the public school, Smith's Falls, Ontario, has said:

'I feel that I am especially indebted to you and Sir William Macdonald for the opportunity of attending the Macdonald Institute. I think I do not yet fully realize how much good I have received, but I feel that my life has been enriched by coming in contact with those grand young teachers from the other provinces and with Dr. Muldrew and the other teachers. Dr. Muldrew inspired me as no other teacher did before, and I am sure this is true of the other teachers, and though Dr. Muldrew is dead, his spirit still goes marching on in the lives of those with whom he came in contact.'

'I consider that the course has been a valuable one, because we were given glimpses of the world around us which we did not notice before, and especially because we were together—a band of enthusiastic Canadians pursuing the same line of work. I think I shall have a different feeling towards other provinces because of having come in contact with those people.'

APPENDIX No. 4

'My work here is very heavy. I have charge of the schools here—twenty assistants—and have to teach a class of 45 pupils, but I feel I am in a position to help my teachers, and through them reach the pupils of this town and interest them more in the great world about us. It will make them better boys and girls—better men and women.

In conclusion let me again thank you for the part you have played in making this course possible. It is one of the best federating courses I know of. I am sure each teacher who was there now has a more healthy respect for the other provinces of Canada than he or she had before.'

Mr. Charles McBurney, principal of the Lachute Academy, Lachute, Que., has said:

'I am taking the liberty of sending you under another cover a specimen of the ordinary class work in drawing as taught by Miss B. C. Hall, a graduate of the Macdonald Institute, Guelph. The time given to a lesson is half an hour, and I took from the work finished.

'We have two of your graduates on our staff here. They were both good teachers before, but now they are wonderfully good. The course at Guelph gave them inspiration and showed them what to teach and how to teach it. The nature study work is most fascinating for the children and they are learning to see. I find that all the other work of the course of study is advancing much more rapidly, and the knowledge obtained is much more real because of the time given to that work. We shall have two school gardens going in the spring.

MACDONALD COLLEGE.

Macdonald College has grown out of these attempts and accomplishments, these trials and experiments and evidences of progress, as well as out of Sir William Macdonald's keen desire to help the rural population to build up the country and to make the most of it and themselves. In some measure it grew out of the school garden movement and the consolidated schools, to serve as a headquarters for the training of leaders. In some measure it grew out of the manual training movement, which is a first necessity in the general education of pupils if they are to profit by technical and industrial education afterwards. In some measure it grew out of the oft expressed desire on the part of the educational leaders over the whole Dominion for such advancement and improvement of education for rural communities as would not only prepare the children for life at its best in rural occupations, but would also satisfy the people as being the right training for their children. In consequence it was founded, erected and equipped for the following among other purposes:

1. For the advancement of education; for the carrying on of research work and investigation and the dissemination of knowledge, all with particular regard to the interest and needs of the population in rural districts.

2. To provide suitable and effective training for teachers, and especially for those whose work will directly affect the education in schools in rural districts.

The college occupies a beautiful site, over-looking the Ottawa river at Ste. Anne de Bellevue, twenty miles west of Montreal. The main lines of the Grand Trunk and the Canadian Pacific Railways pass through the property, and the stations of both railways are within its boundaries.

The college property comprises 561 acres, and has been arranged into three main areas, viz.: First, the campus with plots for illustration and research in grains, grasses and flowers, containing 74 acres; second, the small cultures farm of 100 acres for horticulture and poultry keeping; and third, the live stock and grain farm extending to 387 acres.

THE BUILDINGS ON THE CAMPUS.

- (a). The main building provides administration offices, class-rooms and work-rooms for the school for teachers, nature study, household science and manual train-



THE MAIN BUILDING OF MACDONALD COLLEGE.

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ing, library and reading-room, museum and assembly hall. (b). Two laboratory buildings furnish accommodation and equipment for the departments of physics, chemistry, biology and bacteriology. Both are connected with the main building by covered corridors. (c). The agricultural, horticultural and live stock building contains class-rooms, work-rooms, a live stock arena, farm machinery hall, dairy work-rooms, cold storage and adjacent green-houses for horticulture. (d). The poultry building has class-rooms, judging room, incubator-rooms, brooder-house and pens for different breeds of poultry. Colony houses for poultry are located on adjoining grounds. (e). The women's residence building contains reception rooms and bedrooms for over 200 students, a dining-hall to seat 350, a gymnasium, a swimming pool and all other modern accessories. It is connected with the main building by a covered corridor. (f). The men's residence building has accommodation for over 150 students, a gymnasium, a swimming pool and other modern appointments.

These buildings are of fire-proof construction in stone, brick, steel and concrete. The roofs of the six main buildings are also of steel and reinforced concrete, and all of the roofs are covered with red tiles.

Every building is provided with a complete system of ventilation whereby fresh air (warmed in winter) is furnished to every room, including bedrooms. A duct from each room removes the inside air and thus insures a continuous circulation of pure air.

Every room has a reinforced concrete floor; even if the furniture of one room should get on fire the fire could not spread beyond the room itself. There is nothing in the walls or in the ceilings of the rooms to catch or spread fire. In fact, there is not a wooden joist, a wooden stud, or a wooden rafter in any of the main college buildings. The buildings are put up in such a way as to cost the lowest possible sum annually for maintenance. One desires to speak of their massive and enduring qualities with the modesty which the founder would appreciate. Nothing has been done for display, but the one and a half million dollars invested in the land, the main buildings and their equipment are a gift for the benefit of the rural population of half a continent, with a particular desire to serve the people of the province of Quebec. Besides donating the whole property without encumbrance, Sir William placed a sum of over \$2,000,000 in the hands of the trustees of McGill University as an endowment for the maintenance of the work of the Macdonald College.

The buildings are heated, lighted and supplied with water from the power-house. A system of tunnels provides for the distribution of heat, light, power, water and gas. The power-house contains six horizontal tubular boilers of 150 horse-power each, with engines, electric generators, pumps and a gas plant. The water supply is taken from the channel of the Ottawa river and will be filtered.

THE SMALL CULTURES FARM.

On the small cultures farm is a commodious brick barn for the storage of garden and orchard produce, the grain grown on the experimental plots, the implements of cultivation, the machinery for threshing and cleaning seed, and for the stabling of horses.

There are several acres of apple orchards in full bearing. The greater part of 100 acres will also be used for commercial work, demonstration and investigation with large fruits, small fruits and vegetables. Macadam and other roads have been laid out and built to give ready access to the various sections.

An area of several acres is set apart for poultry runs, where 1,000 hens will be kept in simple colony houses, each built to accommodate from 25 to 75 fowls.

THE MAIN FARM.

The live stock and grain farm, comprising about 387 acres, is in good state of cultivation and provided with well-built roads. The farm buildings consist of a farm

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house, a number of cottages, barns with commodious stables for horses and different breeds of cattle and a piggery for different breeds of swine. The cattle stables have room for over 80 milch cows and 100 young animals.

As an instance of the use to which the small cultures farm and the main farm will be put, I may mention that we expect to distribute at low rates specially well-bred and selected live stock in cattle, swine and poultry, particularly to agricultural societies and farmers' clubs, throughout the province of Quebec. We propose to take up from time to time some definite research and illustration work, as, for instance, the improvement of the potato crop, in a manner similar to what we have attempted in the case of improving the poultry for the farmers and the markets. By the spring of 1908 we shall be ready to receive a number of apprentice-students who will assist in carrying on the work on the small cultures farm and on the main farm. When bright young men come to us from the farms of Quebec and other parts of Canada, we shall give them an opportunity of learning the best way of doing things under competent instruction. Diligent, earnest and trustworthy young men can earn enough on the college farms in summer to pay their board while attending the college classrooms during the winter. A student-apprentice in six months may earn his board and a first-class, second-class or third-class credit. A first-class credit will entitle the student-apprentice to free board and room, as well as free tuition in the college during the following six months. During these six months he would be expected to devote probably two hours a day to the continuation of his apprentice work in some of the departments such as horticulture, poultry, live stock or farm machinery. A second-class credit would give him three months' free board and tuition; and a third-class credit nothing more than board, room and working instruction during the summer.

DEPARTMENTS OF THE COLLEGE.

Students will be enrolled for courses of instruction in one or more of the three departments or schools of the college, viz.:

1. *The School for Teachers*, which provides practical and thorough training for teachers in the art and science of teaching.
2. *The School of Agriculture*, which aims to provide a thorough theoretical and practical training in the several branches of agriculture, and,
3. *The School of Household Science*, in which young women receive training in those branches of household economy that make for good home-making.

THE GOVERNMENT OF THE COLLEGE.

Macdonald College is incorporated with McGill University. Under the statutes, the Governors of the University constitute the Principal of Macdonald College, together with such other members of the staff of Macdonald College and such other persons as the Governors may see fit to appoint from their own number or otherwise, as the Macdonald College Committee. It is the duty of this Committee to direct the educational policy and curriculum, to frame and enforce the necessary regulations touching the details of the courses of study and teaching, the college examinations, the admission of students, the amount and mode of payment of fees, and the discipline and internal government.

There is also appointed by the Governors an Executive Committee of the Macdonald College Committee, whose duties are such as the Governors may from time to time determine, or as the Macdonald College Committee may entrust to it.

All courses given in Macdonald College leading to a degree in the University, the examinations held in connection therewith and fees payable in respect of such courses and examinations, are subject to the approval and under the control of the Corporation of McGill University.

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PLAN OF PROPERTY.**

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KEY TO BUILDINGS.

1. MAIN.
2. LIBRARY & NORTHWEST BARN.
3. CHURCH.
4. POLY.
5. HORT.
6. HORT.
7. POWER HOUSE.
8. LIVE STOCK & MANURE HOUSE.
9. GREEN HOUSES.
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THE CANADIAN PACIFIC RAILWAY COMPANY
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APPENDIX No. 4

Courses of study for the training of teachers for the Protestant schools of the province of Quebec, together with the examinations held in connection therewith, are under the direction of the Teachers' Training Committee.

The Professors so far appointed are Canadians in full sympathy with the aspirations and ideas of our people and with a knowledge of their needs. We hope for such a mutual bond of sympathy and confidence between the staff, the pupils, and the public as will enable the college to render the largest and best possible service to its constituents. In the widest sense its field is the world.

THE SCHOOL FOR TEACHERS.

By an agreement with the government of the province of Quebec, confirmed by an act of the Legislature, it was provided that a school for the training of teachers for the schools under the control of the Protestant Committee of the Council of Public Instruction should be established and carried on at Ste. Anne de Bellevue in lieu of the McGill Normal school in Montreal. In this department the college will give a thorough training to teachers by instruction and training in the school for teachers itself, and by practice in the model schools. The arrangements will afford excellent facilities to student teachers from all parts of the province. The session of this school will begin 17th September, 1907, and close on the 17th of June, 1908.

Besides the training of teachers for all the schools under the Protestant Committee in the province of Quebec, the college will receive other teachers for training and will also provide courses for teachers in (a) nature study work with school gardens, (b) household science, and (c) manual training. These teachers may come from any part of Canada and from elsewhere, 'all with particular regard to the interests and needs of the population in rural districts.'

THE SCHOOL OF AGRICULTURE.

First term begins October 1, 1907, and ends December 21, 1907. Second term begins January 3, 1908, and ends April 30, 1908.

Courses are offered in the School of Agriculture as follows:

- A. Short courses from two weeks to three months each.
- B. A two-year course leading to a diploma.
- C. A four-year course leading to the degree of B.S. in agriculture.

A. Short courses are provided and made as practical as possible in—

- 1. Live stock.
- 2. Seeds, crops and weeds.
- 3. Poultry.
- 4. Horticulture.

B. The two-year course embraces studies in:

- 1. Field and cereal husbandry.
- 2. Animal husbandry.
- 3. Poultry husbandry.
- 4. Horticulture.

Studies duly co-ordinated are carried on in the chemistry, physics, biology and bacteriology laboratories, bringing out the direct bearing of the sciences on agriculture. Adequate attention will also be given to English, mathematics and bookkeeping.

C. The four-year course: This is a continuation of the two-year course for the purpose of affording opportunity for more advanced knowledge of rural economy and more thorough and exact acquaintance with the natural sciences and their applications to the conditions, processes and organizations of rural life.

A student may proceed with the work of the third year towards a degree:

(a) If on entering his first year he presents a matriculation certificate, or an equivalent, and completes a satisfactory examination on the work of the two-year course; or

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(b) If he obtains 60 per cent. in general proficiency in the examinations on the work of the two-year course, and also has the permission of the faculty.

Third year.

English (composition and literature), French, economics, agronomy, live stock, dairying, horticulture, chemistry, physics, biology, bacteriology.

Fourth year.

English, French, physics, chemistry, biology, bacteriology, and one of the following optional courses: Animal husbandry course, agronomy course, horticultural course, dairy husbandry course.

THE SCHOOL OF HOUSEHOLD SCIENCE.

First term begins September 24, 1907, and ends December 21, 1907. Second term begins January 3, 1908, and ends April 3, 1908. Third term begins April 7, 1908, and ends June 26, 1908.

The school of household science occupies along with the school of education all of the second and third floors of the main building. It contains three large kitchens, a practice dining-room, a sewing-room, a class laundry, millinery and dress-making rooms, a house decorating room, a practice apartment house, several store-rooms and offices, all thoroughly equipped for instruction in the science and art of house-keeping.

Courses are offered in domestic subjects, as follows:—

A. Short courses.

B. A one-year homemaker course.

C. A two-year course leading to a diploma.

A. The short courses last three months each, are made as practical as possible, and include the study of:

1. Foods.
2. Plain cooking.
3. Sewing.
4. Laundry.
5. Home nursing, sanitation and hygiene.
6. Home art.
7. Care of the house.

B. The one-year home-maker course embraces practical and theoretical work in:

1. Foods.
2. Cookery.
3. Household economics.
4. Materials for clothing.
5. Dressmaking and millinery.
6. Laundry.
7. Fuels, ventilation and house sanitation.
8. Home nursing and hygiene.
9. Home art.

Simultaneous studies are carried on in the physics, chemistry, biology and bacteriology laboratories to show the direct bearing of the sciences on the practical side of housekeeping.

C. The two-year course is an extension of the one-year course, comprising a more intensive study of the subjects therein embraced and also more advanced laboratory work in the chemistry, physics, biology and bacteriology departments. English, mathematics and history are also obligatory subjects in this course, and the student is allowed to choose two of the following: Home dairying, poultry, horticulture, seeds and plant improvement and woodcarving.

APPENDIX No. 4

TERMS OF ADMISSION.

All candidates for admission to the Schools of Agriculture and Household Science:

1. Must be seventeen years of age.
2. Must produce satisfactory evidence as to moral character and physical health; and
3. In case of candidates for the courses in agriculture must produce evidence of having worked for a season on a farm in Canada, affording a practical knowledge of ordinary farm operations.

No entrance examination test will be required for the Short Course students, but all candidates for the one and two-year courses will be required to pass an examination in:

- Reading, writing and dictation.
- English grammar.
- Elements of arithmetic.
- Outlines of general geography and the geography of Canada.

TUITION FEES AND LIVING EXPENSES.

Tuition will be free to residents of the Province of Quebec, and, to the extent to which there is room, practically free to other Canadians.

There will be a small laboratory fee (not exceeding \$5) to cover the actual cost of materials used, and a contingency fee to cover possible breakages, penalties, &c.

Students in Residence.—The young women in residence will be in charge of a house-mother. A dietitian and housekeeper will supervise the dining-room and the work of the servants. A matron will be in charge of the men's residence.

Board and room will be furnished for \$3.25 per week each, where two students occupy one room, and in case of students occupying single rooms \$3.50 per week.

Further details as to the courses, &c., will be found in the announcement of the Macdonald College, which will be sent on application.

In brief, Macdonald College stands for the advancement of education, for the carrying on of research work and investigation and the dissemination of knowledge, all with particular regard to the interests and needs of the population in rural districts. Its motto is *Mastery for Service*.

There are no exclusions because of race or religion. We expect that students who belong to the various races, united in Canadian citizenship, will go there, seeking to develop high moral character, sturdy intelligent and energetic minds and wholesome capable bodies. The college is primarily for the sons and daughters of Canadian citizens, particularly for those of the province of Quebec, but its doors are open to other young men and women of good moral character, physical health and natural talent, who earnestly seek to qualify themselves for filling their places with benefit to others and with credit and satisfaction to themselves.

Mr. Chairman, I thank you and the members of the Committee for this opportunity of presenting to you something of what has been attempted and accomplished under the Macdonald Movement and of the work that is contemplated at and by the Macdonald College. I thought you would be interested in learning something of those matters, and your reception of what I have said has assured me that I was not mistaken.

HON. MR. FISHER.—The information which Dr. Robertson has given to the Committee to-day in regard to the Macdonald College at Ste. Anne's will, I think, be of the greatest interest to the agricultural community all over Canada. I hope that our people generally will take to heart the words that he has uttered in regard to agricultural instruction and development. They show the true spirit of investigation

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and of successful operation. Let me say just one word in regard to this institution at Ste. Anne's. Sir William Macdonald, with large-hearted generosity, and with what I believe to be a true appreciation of the most important needs of Canada, has out of his means placed an opportunity in the hands of the people of this country for enormous good. In doing this and in devoting this large amount of money to agricultural development, and thus appreciating and endeavouring to meet the real needs of this country, he has shown a wisdom as well as a generosity in his gifts. He has shown especial wisdom in choosing Dr. Robertson for the control and management of this institution. Without any desire to flatter, I do not think there is any man in Canada to-day who thoroughly understands the whole agricultural situation and the needs of the country as Dr. Robertson does. His experience as an administrator and public servant has given him unusual opportunities for the study of these things, and his success in the positions he formerly occupied augurs well for his success in this great undertaking. I hope that the members of Parliament, and the members of this Committee especially, will visit the institution in the near future. I have had the opportunity myself of seeing it grow and have felt the most intense interest in all that has been done. I think that Dr. Robertson in characterizing this as the best equipped institution of its kind is not saying one word too much. We have always as Canadians considered that Guelph was the very acme of agricultural colleges, I believe, in the whole world, and we have had the evidence of others who are not Canadians in that sense. With the example of Guelph before him and with the almost unlimited means at his disposal, I believe that Dr. Robertson, with the assistance of Sir William Macdonald, will be able at Ste. Anne's to do even better than at Guelph. I trust our friends will visit Ste. Anne's and observe what is going on there and learn what is intended to be carried on, and that the members of this House and of this Committee will take every means of distributing the information that is contained in Dr. Robertson's address.

THE CHAIRMAN.—I feel sorry that we did not secure an address from Dr. Robertson at a more opportune time this session. Had we met for this purpose earlier in the session we could have given him a much longer time for his address than merely an hour. Unfortunately, we did not think of it. However, we have done the best we could, and I trust that next session we shall afford him a better opportunity of enlightening us on the subject that he has brought to our attention to-day.

On motion of Mr. Sproule, seconded by Mr. Wright (Renfrew), a resolution of thanks to Dr. Robertson for his address was unanimously adopted.

Having examined the preceding transcript of my evidence I find it correct.

JAS. W. ROBERTSON,

Principal, Macdonald College, Ste. Anne de Bellevue, Que.

