

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1997

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Covers damaged/
Couverture endommagée

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Bound with other material/
Relié avec d'autres documents

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

There are some creases in the middle of the pages.

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

| | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 10x | 14x | 18x | 22x | 26x | 30x |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 12x | 16x | 20x | 24x | 28x | 32x |

The copy filmed here has been reproduced thanks to the generosity of:

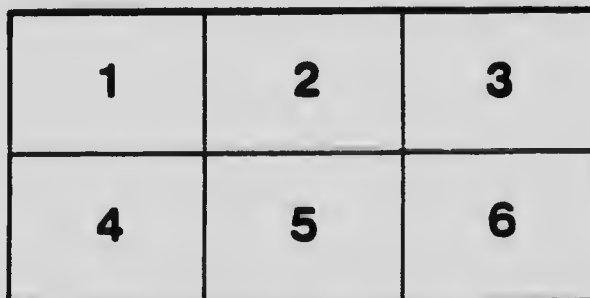
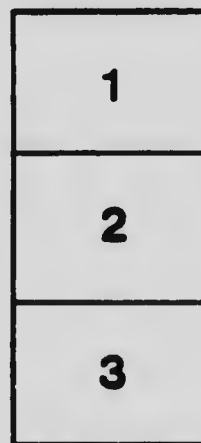
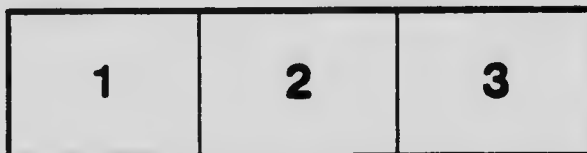
Archives of Ontario
Toronto

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche sheet contains the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Archives publiques de l'Ontario
Toronto

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par la première page et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par la seconde page, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

x

29

THE MACDONALD FUNDS FOR MANUAL TRAINING AND THE IMPROVEMENT OF RURAL SCHOOLS

EVIDENCE

OF

JAMES W. ROBERTSON

COMMISSIONER OF AGRICULTURE AND DAIRYING

BEFORE THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

1903

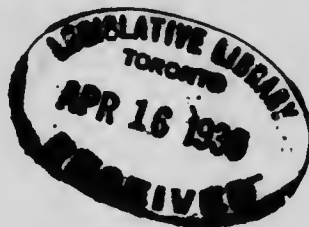
PRINTED BY ORDER OF PARLIAMENT



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

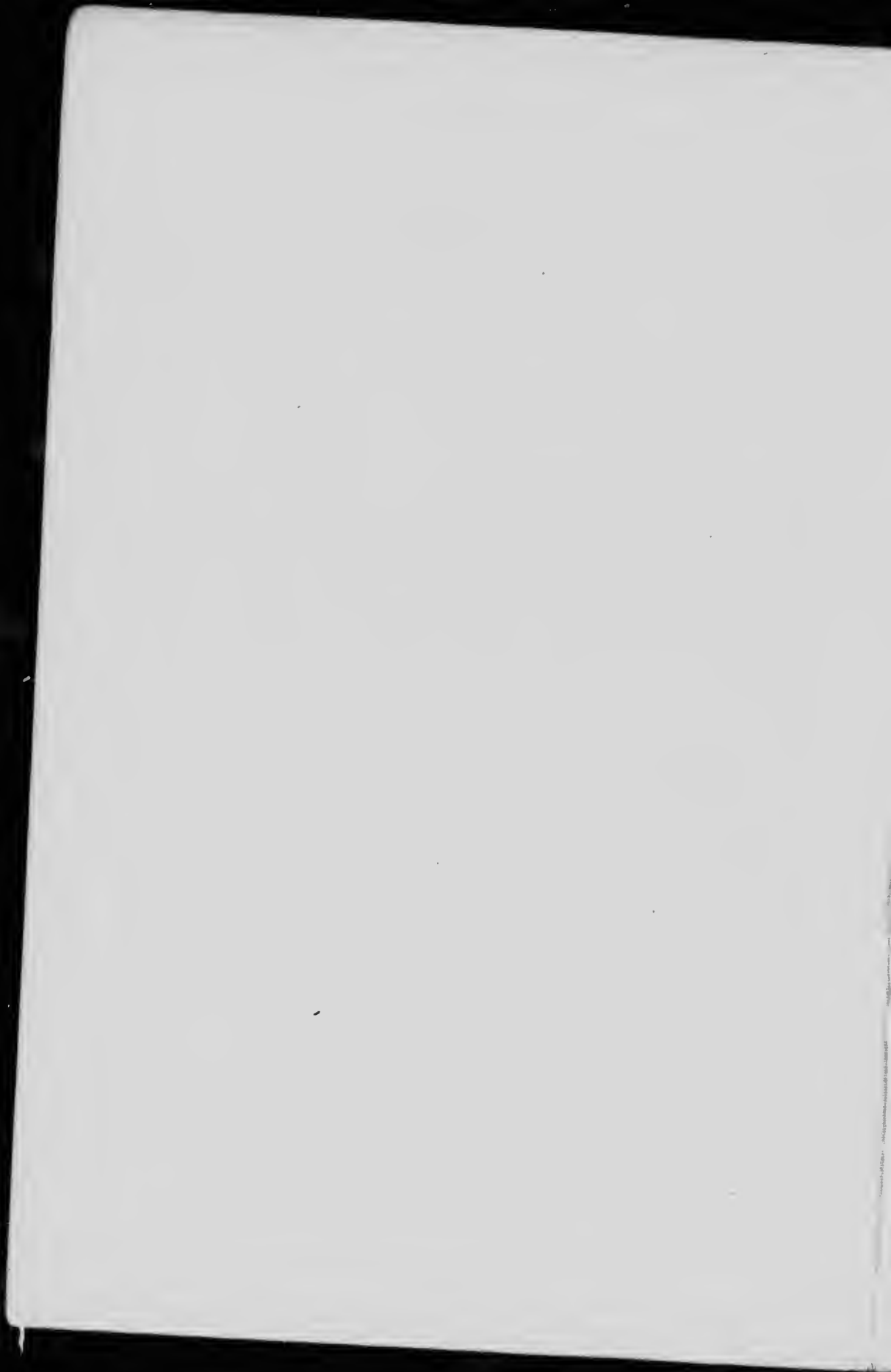
1904



LEGISLATIVE COUNCIL
APR 11 1930
RECEIVED

CONTENTS.

| | PAGE. |
|-------------------------------------------------------------------------------------------------------------------------------------|-------|
| Macdonald Funds for Manual Training and Improvement of Rural Schools. | 5-40 |
| The Relation of Governments. | 6 |
| Characteristics of the Uneducated. | 7 |
| On the Meaning of Education. | 7 |
| Does Education Pay? | 8 |
| Agricultural Colleges to Help Rural Schools. | 9 |
| Children in Rural Districts. | 10 |
| Improvements in Organization. | 11 |
| Weakness of Small School Districts. | 12 |
| On Public Opinion. | 12 |
| Instances of Results from Education. | 13 |
| What the Census showed in Ontario and Quebec. | 14 |
| Farmers' Colleges of Agriculture, Normal Schools and Rural Schools shou. ther. | 15 |
| Royal C. on Manual and Practical Instruction. | 16 |
| What is aining? | 20 |
| Different apprentice work. | 20 |
| To do things in the right way. | 22 |
| To Supplement books, not to Supplant them. | 23 |
| Extent of the Macdonald Centres. | 24 |
| Outline of the History of Educational Sloyd or Manual Training. | 25 |
| Consolidation of Schools. | 29 |
| Good Teachers. | 29 |
| Wholesome Children. | 30 |
| Efficient Supervision. | 30 |
| Good Buildings. | 31 |
| Neat and Beautiful Surroundings. | 31 |
| Public Interest and Support. | 32 |
| A Pioneer in Consolidation. | 32 |
| Other Townships. | 32 |
| School Vans. | 33 |
| The School Work. | 33 |
| Summary of Advantages. | 34 |
| Extent of Consolidation in United States. | 35 |
| The Plan for Canada. | 35 |
| Copy of Letter and Memorandum sent to the Premier of Ontario <i>re</i> the Mac- donald Institute. | 41 |
| Copies of Forms of Agreements used with School Boards. | 46 |
| Copy of Letter and Memorandum sent to the Premier of New Brunswick <i>re</i> a College of Agriculture for New Brunswick. | 49 |
| A Suggestive Course of Nature Study. | 52 |
| Books for Reference. | 53 |



JAMES W. ROBERTSON.

COMMITTEE ROOM 62,

HOUSE OF COMMONS,

FRIDAY, May 1, 1903.

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

Prof. J. W. Robertson was present by special request of the Committee and made the following statement in regard to the work being done under the Macdonald schemes for the improvement of rural schools by means of consolidation and otherwise:—

MR. CHARMAN AND GENTLEMEN,—I have been asked to come before the Committee this morning mainly to give some information on what has been done and is being done by the funds provided by Sir William C. Macdonald, of Montreal, for the improvement of education bearing upon agriculture. While I am still Commissioner of Agriculture, I am speaking this morning as a private citizen of Canada, administering private funds for the good of a great branch of the nation's interests. I have the happiness of working in the fullest harmony and co-operation with the department of education of every province, so I am not in any sense interfering with provincial rights or trespassing on the administration of educational matters by provincial authorities. Moreover, I have received permission from the Minister of Agriculture, acting for the Dominion Government, to carry on this work. In so far as the matter is connected with schools and education at schools, no public funds of the Dominion are used; the funds provided by Sir William C. Macdonald cover all the expenditures I make in that connection.

In my capacity as Commissioner of Agriculture I have had opportunities of seeing what is being done in other countries by government authorities for the improvement of agriculture through education and I have used these opportunities and the information obtained from them for the benefit of all the provinces of Canada alike. As far as we have gone at present, the funds which Sir William C. Macdonald has put at my disposal have been available to and expended in all the provinces, from British Columbia to Prince Edward Island. It might be permissible and desirable to say more than a few words before this Committee to show what a large bearing the education given in rural schools has on the progress of agriculture and the prosperity of the Dominion. If I might cite one paragraph to the Committee, I would quote a very short one from the report of the Commissioners appointed by the Imperial Government to consider the improvement of schools in Ireland, and to report on the subject of manual and practical instruction in the primary schools under the Board of National Education in Ireland. The report was published in 1898. I got very much help from this report and I have used its recommendations largely; so you see I am not going about this business in an amateurish fashion. The Commissioners in their final report say: 'The progress of the people in wealth and material prosperity must largely depend on the education given in the primary school, and to make that education thoroughly efficient and fit for its purpose is a task, we submit, which may well be undertaken in the highest interests of the state, whatever the necessary cost may be.'

Essentially the progress of the people in wealth and material prosperity depends on the quality of education in the primary schools. We in Canada enjoy very much prosperity and have made great progress. Much of that has arisen out of the quality of our education and of the particular application of special means for agricultural education in various fields and in various forms. I need only mention in passing that the bountiful harvests, absence of serious pestilence, and the enjoyment of peace have

given us good times in a wonderful degree; but we are making progress also by organization of the forces that make for the improvement of agriculture. I need not say further before this Committee that while wealth might come to a nation rapidly for a short time, real progress and stability in national life keep side by side with the progress in education. One discovery may make a nation rich at once, but the application of intelligent labour is the only sure way to make real progress; and that depends on education.

I say as an official as well as a citizen, that while we have institutions of self-government, of which this Committee is a splendid part and illustration, the meaning and merits of these things depend on the intelligence and ability and good-will of the common people; and that this intelligence, ability and good-will are fruits of the school-house. How can a people love and maintain liberty unless they love knowledge and promote intelligence? How can a people who prize intelligence diffuse it among the ordinary citizens of the nation unless they have an organized system reaching from the universities into the common elementary schools? And how can a people cherish and administer justice, pure and undefiled, unless they have an intelligent understanding of the principles of fair play, with courage enough to give them effect? A great citizen of Canada with his wealth is doing much to help the nation forward and upward; and through me has chosen to identify part of that work with the Department of Agriculture of the Dominion, and also with the departments of education of all the provinces in Canada.

THE RELATION OF GOVERNMENTS.

There is no spectacular politics in helping the common rural schools. There is no theatricals in getting down to fundamental principles and means to help the boys and girls in the country who are little heard of, but who need the action of the governments and of the legislatures to enjoy a fair chance. There is constructive statesmanship in such a policy. It is not the work of building with wood, hay and stubble; it is building with gold, silver and precious stones. It is building up fine character in human lives; it is work that is worth doing well. The government is the intelligence of the people organized for their protection against outside enemies, and against inside foes like ignorance, disease and crime. That is what responsible governments are supposed to exist for; and a pressing duty is to take hold of this problem of education for the benefit of the rural communities, and organize it. It deals with two things that concern the progress and the safety of the people. First, with the personality, with the personal power, of the individual citizen, and, second, with his chance in life. Personal power is added to only by education. That is the only means of improving what the Almighty gave any one in natural endowment. The ordinary child needs that as much as the child of rare mental powers; nay, perhaps needs it more.

Then I take it that governments are to some extent concerned with the individuality and also the opportunity of the governed. What is meant by opportunity? The right of individuals to liberty and to hold property; facilities for safe communication—for travel and transportation of goods; security of opportunity for earning a living and obtaining a fair share of happiness and possessions. These are in rough comprised in opportunity as controlled by governments. The post office, the railways, the common roads, the bridges, are fundamental to equity in opportunity and need not be discussed here. I want your attention on the subject of the personal power, the ability of the child. It is always with us and always needing improvement, enlargement, nourishment, by education. It needs it on the farm as much as, or more than, in cities, where men most do congregate.

I have spoken of personal power being gained by education. That may be augmented in the case of any individual by the control of wealth and other forces. In that sense the great resource that we have in Canada reinforced and increased the national power, which is the aggregate of the power of the individuals. And believe me, the quality and effectiveness of that power may be added to in geometric ratio by

the quality and ability of leaders. No nation has ever attained greatness in any direction that had not its own leaders. Every people will follow leaders born into sympathy with their aspirations and trained into ability to meet the new conditions of every new advancement. Let our leaders for the new conditions in agriculture, for the new needs in education, be trained in our own college of agriculture, properly fitted into systems which include the rural schools, and they will mightily help the rural communities.

CHARACTERISTICS OF THE UNEDUCATED.

Will you join me for a moment in considering the characteristics of the entirely uneducated person? That is, not the man who cannot speak good English, because many men who are highly educated do not speak it at all. By the uneducated person I mean the person who is ignorant, the person who is helpless, the person who is selfish. I do not care which of these three is taken, they are severally and collectively the stamp of the uneducated. As there is progress out of ignorance into enlightenment, out of helplessness into personal ability, out of selfishness into public spirit, there is so much substantial gain. I think the schools should concern themselves with helping the child to think clearly, to observe clearly, to investigate carefully to understand fully, and to manage economically. Why should a child in school be deprived of the privilege of studying nature when he lives by natural processes and the whole human race is sustained by them? Before schools were invented that was the way by which the race made progress. The school came in to supplement the unorganized study of nature and manual training; but by and by it came near depriving the child of what was really essential to him, by absorbing the whole of his time with formal studies from books. Manual training is an essential part of good elementary education. Who are the masters of the earth to-day? Who became the first masters of the earth? Put man on the same level with the wild beast with the longer tooth and stronger claw, and man is soon nowhere; but let him take a club, a weapon, a tool, and he is master. With fire in the one hand and a weapon or tool in the other, the mastery is asserted and maintained. Man became the tool user; then the user of instruments; and the masters of the globe to-day are those who can best use weapons, tools, machines and instruments. For what is the modern struggle for markets—for the 'open door'? Is it not to give security of employment to the myriads of workmen who use tools and run machines? Of course the commerce which has grown from ability with tools, machines, and instruments, in factories, on farms, and in shops of all sorts, is not the best thing we have even in this period of great trade expansion. Far from it; so let us see that the ability for work and the capacity for happiness are alike conserved and developed by the schools. In our zeal for teaching the 3 R's, and a whole lot of other things, the training towards and into ability to do things with the hands has been left out of the schoolhouse. For that reason I have sometimes been disposed to feel pleased rather than sorry when I heard that a boy had gone fishing instead of sitting passively on a bench at school. You may reform a boy's manners after he grows up, but it is doubtful whether you can in a similar superficial way reform the structure of his bones or the texture of his nerves and brain. Perhaps the quality of the bones depends upon his getting wholesome milk until he is three years old, and the development of his brain upon his being trained to use his hands and eyes and senses before he is fourteen.

ON THE MEANING OF EDUCATION.

Let the boy be trained by the processes of his schooling to think clearly towards a definite end, believed by himself to be useful and beautiful. Let him be trained into expression of his thought, not only in words, but in deeds, and in things. These will help to form and bring out habits of carefulness and of accuracy—that fine passion for truth—and of self-reliance. These lead a man to seek mastery, not for selfishness, but for the service of his fellows and of truth.

Education is not obtained from books, except in a small measure; it is a series of experiences. That brings me to speak, if I may for a moment, on the term education itself. One would hardly accomplish much if he were talking about schools and education with one meaning in his mind, while the people to whom he was speaking had another in their minds. I have known two men quarrel most furiously in an argument because one man was thinking of one situation, and the other of an entirely different situation. That is the way uneducated nations try to settle a difference of judgment. When we get sufficient education among the common people, nations also will adjust their differences by observation, investigation and mutual understandings.

In the schools we used to be told that education meant 'a leading out.' Therefore, if you lead the mind out, the boy has education. Take an elastic band: the more often I 'lead it out' the less use it becomes. There is no use in a leading out unless you lead the mind to do something when it is out. There is no use in leading a boy out to a perception of ideas unless he does something with the ideas in time to make perception part of the process of education toward ability. That is how education is gained and progress made—by putting every new idea to the proof—to the limit of its power to serve and nourish—by doing something with it. Education is a series of experiences. If a man gets the sort of education that means being led out for show at examinations, he may get more of the same sort in real life. A friend of mine, a very candid clergyman, had been led out to some congregation east of Toronto with a view to a call. Somehow he did not please them, and was returning home on the same train on which I travelled. He said to me, 'I feel just as I suppose a horse may feel at a horse sale, when he has been led out and the horse dealer has said: "That will do; just trot him back." I am being trotted back.' That is the judgment the great public will pass on every man's life who lets himself be led out for anything else than to do something useful with and by his ideas when they are out. That is the judgment the great Arbiter of all life will pass, 'Who will render to every man according to his deeds,' and not according to dreams and fine theories. If a man does nothing with his ideas except to recite them, he is not educated. So education is a series of experiences leading out to ability; ever increasing ability; ability to see, to understand, and then to do. Ability to see and ability to do—these two halves, seeing and doing, make education

DOES EDUCATION PAY?

Some one asks, 'Does education pay?' That is a question put by the citizen who pays the taxes. What does pay? What is worth while? What is life itself and the world worth to anybody? Nothing, except as they provide for and make for richness of experiences. 'What shall it profit a man if he gain the whole world and lose his own soul?' You may stick everything he can desire around a man, and what would they be worth to him unless they helped to enrich his life, his experiences? If you put flowers around a blind man with no sense of smell, of what use or benefit would the flowers be to him? However, the presence of a blind man does not abolish the beauty or fragrance of the flowers in your garden.

It is wise to take note of all the methods and means that have been successful. It is foolish for a man to say that he will start from the beginning without first doing that; such a man would proclaim himself a fool in any practical undertaking. The most that people of any generation can do is to improve a little on what their forefathers left them. We have made progress along several lines. Cannot these lines be broadened and lengthened; can new ones be joined to them, while still getting full service from what has been found useful in the past? There is need for more knowledge among people who farm, in regard to managing the natural forces in accordance with the laws that govern all plant life and that govern all animal growth.

Let me make an explanatory parenthesis here. There is a real difference between knowledge and ability. There is a wide difference between soil physics and practical tillage. Every man who understands soil physics can manage land and crops better than if he did not understand the principles. Knowledge will help every man to great

ability, but it does not in itself constitute or confer business ability. A man may know all about the composition of a soil and still be a poor farmer. Therefore, some one may say, 'Throw knowledge to the winds.' Not so. Every man does better in so far as he knows more and knows better; but a man may know much and not be able to apply it. There is a difference between scientific knowledge and the business application of it. Huxley once said he could not grow as big turnips as Hodge, but he could tell Hodge what would enable him to grow still bigger turnips and to make more money. The agents who become instruments of progress in farming and other affairs are Men, Knowledge and Wealth. With the efficiency of these as factors, and with the effectual use of them as means, education has nearly everything to do.

The use of faculties trained to the widest range of enjoyment, is what makes for the richest experiences in life. Education itself is a series of experiences leading up to personal intelligence, ability and unselfishness. It is not a remembrance of names, although sometimes memorized knowledge of a second-hand sort has been counted its object. It is a series of experiences from the doing of things, whereby ability is gained to enjoy things and to enjoy life. In every sense education does pay. It is the one thing that enriches the life of individuals and nations. As nations have ideas and ideals, so they live and lead, and thus are they powerful. What is China, with her six hundred millions of people? and she has had bookishness and examinations for centuries. On the other hand, Germany is training the hands as well as the heads of her boys. Her schools and universities are progressive, and the country is making great headway, not only in the arts and sciences, but in all that gives power to dominate in human affairs. Let us rather follow the modern German methods, and not be led any further in the Chinese way of doing things in our common schools.

Education always stands for some sort of power—power to see, power to know, to understand, to do, and therefore power to be. If we are now on similar lines of thinking regarding education, we are ready to consider in what further respects our agriculture may be developed by the application of education, such as is to be promoted by the Macdonald Rural Schools Fund.

China has more men and women than we, other peoples have more knowledge and greater learning than we enjoy, many countries have much larger wealth than we possess, but I do not know of any land in which these factors are more active towards progress than in Canada, any land in which men and women are using knowledge and wealth with more effect, with more success in helping on the weal of the nation.

AGRICULTURAL COLLEGES TO HELP RURAL SCHOOLS.

Any system of education which aims at or proposes to help the people who work on farms must be a system that will help the elementary rural schools; because those are the schools where the future men and women on the farms will get their formal education, during my life time anyway. I listen with interest to many speeches, and I hear men say, 'Why can we not have such education for the farmers as the doctors get; why can we not have a farmer's college?' Let us examine that proposition with regard to its meaning. A doctor does special work for the community. He is not an ordinary member of the community; but is doing work that concerns the permanency, the vitality, the security of life in the community. A few men only are allowed to have charge of that branch of work, and then only when they are properly prepared for it. Otherwise they would bungle things and we would have a calamity. A doctor needs special preparation for special work; and he can gain it only by devoting himself for a long period after having received a college training. The farmer needs special training for his special work, but where can he get it? The few men who are to be doctors have to be spared from other occupations until they are twenty-two or twenty-four years of age. They have to be spared for schools, colleges, hospitals, as otherwise they could not get the sort of education they require. But can the ordinary farm boy be spared from the farm until he is twenty-two or twenty-four years of age? If he could be spared, and I hope in course of time a larger number of them

may be spared, it would be of some advantage to him. But let us look at the other side. In Canada there are about one hundred and forty thousand young men in the rural districts of suitable age to go to college; that is, between the ages of sixteen and twenty. If all these boys were to get the same chance, we would need colleges capable of training over a hundred thousand boys. The fine agricultural college at Guelph, in the province of Ontario, seldom, if ever, had more than a hundred boys in the first year classes. If we undertook to provide a similar education for all the boys of that age from all the farms in Canada, we would need several hundred colleges as big as the one at Guelph. In this country of ours a certain number of young men are preparing to be doctors, and there are institutions enough that offer them all suitable courses of instruction. Every man who wants to be a doctor and has the natural ability, good health and perseverance, can get the education that will fit him to become one. Now, there are in this country, of a similar age with students in medicine, not fewer than a hundred thousand young men who are preparing to be farmers, and if they are all to get the same chance and training enjoyed by the students at the Ontario Agricultural College at Guelph, we would need hundreds of colleges to do the work. That is entirely impracticable; and in my opinion undesirable and unnecessary. The ordinary boy on the farm should have, as far as he can get it, the education that will fit him to become a good farmer. If he cannot have a chance of college life, if we cannot take him to college, we must take the knowledge and uplift of the college to him at and in the school to which he does go.

CHILDREN IN RURAL DISTRICTS.

From the census of 1901 I estimate that there are, in round figures, 746,000 children from five to fourteen years of age, in the rural districts, and 450,000 children of the same ages in incorporated villages, towns and cities. Multitudes of children in Canada have not the opportunities of a good education. That applies particularly to perhaps one-third of the 746,000 children who live in the rural districts. Educational leaders have been taken up with the education of children in the strong, rich communities. Courses in elementary and advanced schools in towns and cities are being adjusted to meet the commercial and industrial needs of children for the office, the store, the workshop and the professions. Courses in rural schools have not been adapted to the needs of the children in rural districts. Little attempt has been made to change or improve the course of study or the methods of training at country schools, and thousands of rural schools in Canada furnish their pupils with an exceedingly poor preparation for the duties of life.

The educational leaders have been concerned with the improvement of the schools in towns and cities in strong, rich communities, and with adjusting them to the needs of the urban population; but hardly any one has turned the power of a strong intellect and used voice or pen to the improvement of rural schools, which are now less efficient for the needs of the time than they were 25 years ago. The neglect of the rural schools has not been from the want of wealth, because Canada is increasing in wealth perhaps faster than any other country with a rural population. The fault has been the want of appreciation of the real worth and value of education in the community. That apathy leaves our rural schools in most cases in the hands of inexperienced young girls as teachers. A large proportion of the boys and girls to the number of 746,000 I have spoken of, are getting all the schooling they get under the care of a young girl teacher of nice temperament and nice manners, but without knowledge from experience or observation of the meaning of life in rural parts; knowledge that the boys and girls should have imparted to them.

The population of Canada is advanced enough in intelligence and civilization to recognize its responsibility for the present and future well-being of those 746,000 children in rural districts; and it is abundantly able, out of its accumulated and growing wealth, to provide all of them with a good elementary education.

I do not discuss in the meantime the 344,000 young people between the ages of fifteen and nineteen years, living in the rural districts, who might receive systematic educational help after they have left attending school every day. Continuation classes on several evenings of the week, or opportunities for short courses during the winter months, when their labour is not necessary on the farms, would be a great boon to them and a fine investment for the country. Considered only in the light of the value of the labour of these young people, the cost of continuation classes in the evenings, and of short courses during the winters, would be made up tenfold to the community by their increased ability. More than all that, a new interest in life at home, a wider outlook with contentment, and the development of ambitions and aspirations to be useful, would be priceless assets to the good.

With all our getting and our growing, it behooves us to give the children of the country the best possible start in life towards making the most of themselves in the various walks of life amongst ourselves. It should be possible for every child born in Canada in this century to get a thoroughly good elementary education. If our civilization should confer that upon them as their birthright, it would be in every sense a blessing, greater by far than any inheritance of natural or developed resources belonging to the nation. The appalling waste of child-time in thousands of our rural schools is little less than a crime against humanity.

IMPROVEMENTS IN ORGANIZATION.

The public schools of Canada have played a great part in raising the general level of intelligence to a comparatively high plane. In our appreciation of that, we should not be led to conclude that they are doing all they could do, or all they should do, for the children in rural districts at the present time. The school systems and schools of the towns and cities of the Dominion, are unquestionably excellent as compared with those of other countries. The opportunities for education in rural districts in Canada are not more meagre than they are in some other parts of the world, but they are not worthy of Canadians at this time in their history and prosperity.

All schools to be vital with the people have to be continually adjusted and adapted to the new needs of new conditions of society. People want commercial courses now in the cities, they want typewriting courses, and shorthand courses and technical education everywhere. The word "technical" has a catchy quality, and unless discerning wisdom control it, it too, like the word "classical," may cover a multitude of shams. The schools in rural parts require to be adjusted to the needs of the rural people, so that these schools will have a bearing on the life interests, on the opportunities and occupations of the localities, and not be separated in subject matter and outlook from the home life and from the occupations whereby the parents earn their living. From the course of study and the subject matter in many schools in rural districts to-day, you would not suppose that the fathers of the children you see in them had any concern with or connection with soil, or crops, or animals.

It may be taken as a principle on which we are proceeding in the maintenance and development of systems of education in Canada, that all the resources of the country, as far as they are required, should be made available for the education of the children. Public education is now recognized as one of the functions of the state or nation. The property of the state—that is, of all the people of the nation—as a last resort, must be available for educating the youth of the state, as it would be, in the last resort, for the defence of the liberties of the state. Education in itself is the greatest defence and means of defence.

Expenditures for the maintenance of public schools in Canada are met by the provincial authorities, county authorities, township authorities and ratepayers of individual school districts or sections. The proportion borne by these different bodies varies in the different provinces. As a rule, the financial assistance from the central authority, either county or provincial, should be paid as an encouragement, and in proportion to what the people of the locality do for themselves as far as they are able.

WEAKNESS OF SMALL SCHOOL DISTRICTS.

The making of a unit large enough to include all the school districts in a township need not, in any sense, weaken, discourage or prevent local enterprise or liberality. A large unit for the maintenance of schools, like a township or even a county, makes for effectiveness, economy and equalization of burdens. The larger the unit the less unequal are the burdens on the poorer of the people. 'Ye also who are strong ought to bear the burdens of the weak, and so fulfil the law' of citizenship.

The smaller the unit of organization for taxing and for administration, the less adequate and efficient are the educational results. The smaller the unit, such as poor school districts with a small population, the less is the number of school days in the year, the less regular is the attendance of the children, and the fewer are the years they go to school.

There is a need for a better organization of the systems under which rural schools are established and maintained, as well as of the methods and the agencies in the schools: organization for scope, for economy and for efficiency. For scope, so as to be able to take in more and to do it better: for economy and especially for economy of child-time. Our most wasteful and unwarranted extravagance in Canada, without any exception, is the waste of child time in the common schools. The children come to school and do not apply themselves; and they get into that habit of doing nothing effectively; and so you find them inefficient when they are grown up, because of the habit of ineffective use of time, acquired in the schools and which becomes a menace to the national prosperity. You cannot have 25 or 40 children in a little school under one mistress trying to cover the whole range from 'A B C' up to preparing for high school, and each getting a fair share of a teacher's time, or anything like it, or the helpful companionship and encouragement that come from the presence of larger numbers of pupils at about the same stage of mental development, in the class. Then there is need of organization for efficiency—to have good teachers of experience. In many provinces, in most provinces, one-third only of the teachers in rural schools have taught more than three years, and one-third of all the teachers change their schools every term. Is that not a lamentable state of things in a country that calls itself enlightened like ours, that only one-third of the teachers have more than three years of experience and that one-third change schools every term? How can we have efficiency under such conditions? I would not leave a valuable herd of cattle under a herdsman and change him every six months. The herd would very soon come to grief if that were done. We pay so little heed to elementary education, we have made it of so little importance in rural districts, that only a man who is going to be a lawyer or a doctor or a dentist or a clergyman, becomes a teacher there for a brief period in order to get a little money to help him to enter his profession. This class forms a large proportion of the male teachers in rural schools; and for the rest we have young women teaching for two or three years only.

The aim, in even the least advanced of the localities in Canada, should be to have the schools open not less than 180 days every year; and in the well settled and developed rural districts, not less than 230 days in the year. Even that, which to some teachers might seem a long period, is only 230 out of 365 days in the year. Most of us work at least 280 days in the year. If the teachers and children cannot stand the strain, it is time to inquire whether much of the work is not of a wrong sort, or in a wrong direction, tiring the children by requiring a passive and receptive attitude for too much of the day, and wearing out the teacher by the wasteful repression.

ON PUBLIC OPINION.

I know that public opinion must give its sanction, its approval, to any public movement to make it thoroughly effective; and I know also that the factor in national life called "public opinion," itself requires to be educated. Every nation needs leaders, born into sympathy with its history and aspirations, and trained into ability to man-

age its affairs in any new environment. The farmers should take an active part in this movement, and help to adjust the public schools to the requirements of their children. There is now an awakened interest in plans for their improvement, and some remedy for their unsatisfactory state is one of the pressing needs of the time.

The new education should meet the present-day needs of the people, who are amid new conditions in society and industry, brought about largely by increased control of forces of nature for utility and pleasure. The changes that have come and are coming, have made the outlook for the well educated farmer, his wife and children, still better, and have made the prospects and condition of the ignorant farmer deplorable.

Many sorts of service to the community are involved in honorable and intelligent citizenship. One of the most valuable, although not highly valued, of those is the service of the public school teachers. The fruits of their labours—education—leading to intelligence, personal ability and unselfish motive—should be made available to the lowliest in the land, according to their capacity. A properly organized system of education should ensure that the lowly and the poor also receive help, guidance, encouragement and leadership from those nobly endowed and rich in intellect.

The gifts of wealthy men, the wisdom of mature minds, and the energy and enthusiasm of young workers, are being organized into the movement for the improvement of education in elementary schools in Canada. The public will derive the benefit; the public will approve; the public will follow; the public will support. Public opinion is being educated.

INSTANCES OF RESULTS FROM EDUCATION.

I need not give you instances of the results in material progress from education of the sort I have spoken of; I gave some of these before the Committee when I was here on a former occasion. Still I might repeat one or two instances briefly. In the matter of the production and exportation of butter, Canada was going far behind. In 1894 we sent out 32,000 packages from Montreal during the period of navigation. Then was begun a campaign of education and organization, to inform the people on the details of manufacture and on cold storage, the value of keeping butter cold, and of keeping the railway cars cold, and of keeping the chambers cold on the ships. It was a campaign of education, organization and illustration. It was so effective that last year the exports of butter from Montreal had risen to 539,000 packages.

I will also mention the work on Prince Edward Island by organizing and education in dairying which was commenced in 1892. In the year 1892, with the assistance of money given by the Dominion Government, I started one co-operative cheese factory at New Perth, in Prince Edward Island. The machinery was loaned by the Government. We sent an instructor to organize the business and to arrange the locality into routes for the convenience of those supplying milk. We ran the factory as a Government dairy station. In the autumn of 1892 I took the liberty of exporting to London \$3,600 worth of cheese manufactured at that station, and I can recall the remonstrances of some of the people against risking their cheese in any steamer. I got fault-finding letters asking me why I did not sell the cheese at home or in Halifax. I had been in England, and knew something about the English market; and as I had insured the cheese for about 12 per cent more than it was worth, I felt easy on the subject. The cheese got to England, and was sold there for the top market price. Some of it indeed sold for sixpence per cwt. more. I angled for that sixpence and got it. Then, when the Island people knew that they had got sixpence per cwt. more for their cheese than was paid for any other Canadian cheese sold that day in London, it assured them that they could make fine cheese. That was the beginning of the export of cheese—to the value of \$3,600.

At the taking of the census in 1891 there were four cheese factories in Prince Edward Island, with an output worth \$8,448; when the census of 1901 was taken there were 47 cheese and butter factories, with an output valued at \$566,824. There is the result of organization and education. There has been no increase in the number of

acres of land, and there has been but little increase in the number of cows kept. The change has been in the intelligent labour applied to the conditions. The people now run their own factories, and have repaid to the Government every dollar that was lent to them. I don't say that you could do this with dairying in all parts of Canada, but it can be done anywhere where the locality is adapted for it. There is no part of agriculture that is not susceptible to the same kind of improvement.

WHAT THE CENSUS SHOWED IN ONTARIO AND QUEBEC.

Take another instance on a larger scale. The province of Ontario is noted for the products of its cheese factories and creameries. It has made great advancement in quality and in quantity as between the two census periods 1891 and 1901. It increased the value of its output of butter and cheese from factories by over seven millions of dollars in ten years; that is to say, the value of the output in 1901 was \$7,136,965 more than the value of the output in 1891. The province of Quebec had not advanced so far in co-operative dairying; but a beginning had been made in organizing its cheese factories and creameries into syndicates. The syndicate was a group of cheese factories or butter factories employing the services of a travelling instructor.

In 1892 I had the pleasure and honour of helping to start a dairy school for the province of Quebec. I was director of that school for some years, and the Department of Agriculture at Ottawa authorized me, as Commissioner, to turn in \$3,000 a year of federal money to help the dairy school at St. Hyacinthe. Of course, I am not a constitutional lawyer. I was not supposed to know, and I confess I do not yet know, that the constitution of the Dominion reserves all questions and matters of industrial or technical education to the legislatures of the several provinces. I was not well informed with regard to that particular part of the constitution, and I confess I did not care very much. The constitution of a country, like the constitution of a man, may be for the weal of the country; and the weal of the country need never be subordinated for the sake of literal compliance with the phrases of its written constitution. 'The Sabbath was made for man and not man for the Sabbath.' So \$3,000 a year of federal money went to the province of Quebec to promote dairying and agriculture by means of education. We did not call it education. That might have been an unconscious slap at the constitution. We began by giving short courses in dairying. Some of the wiseacres said it was foolish to think of imparting any education worthy of the name in a two weeks' course. However, we made it a rule that only students should be admitted who had worked for one year in a cheese factory or butter factory. We had neither the time nor the money to devote to those floating atoms who, in an indefinite way, wanted a college education for dairying. So no one could get the course at St. Hyacinthe unless he had previously had one year of practical experience. These were the very people we wanted to help. These were they who needed help. Then, the provincial authorities went further in organizing the factories in syndicates. No one was allowed to become a syndicate instructor unless he had taken the course, or courses, of instruction at the St. Hyacinthe Dairy School. During the first year (1892-1893) 214 students took the course. The next year 268 students took the course. The third year 323 students took the course; and so on.

Let us come back now for a moment to the census period, and see what the census says about the progress of co-operative dairying in the province of Quebec during that period. I have said that the province of Ontario did very well in the census period in the development of its cheese and butter business. The value of the output of the cheese and butter factories in Ontario in 1901, was \$7,136,965 more than it was ten years before. I am referring now to the growth and not to the total output. In Quebec the output was \$9,343,371 more than it was ten years before. The Quebec people were said to be backward, but they made this advance because of the instruction given in dairying—by means of education and organization. I could multiply such cases all over the Dominion.

I could put my fingers on the places and the means—by means of organization and education as applied to farming in the provinces. I believe that similar means would be equally effective along the whole range of agriculture, from the cultivation of the soil to the finishing and shipping of the products. For that reason, and still more, to give the boys and girls the best chance possible to become the best they may be as men and women, I am heartily co-operating with Sir William Macdonald to promote better methods of education in the rural schools, the use of more suitable subject matter for the training of young minds in the rural schools, and the development of a more wholesome spirit and loftier ideals of education in the common schools, that the boys and girls may get the benefit as well as the grown men and women. All this work is strictly educational. Every means employed has been used to stimulate, to induce, to lead the people to think and to do. Lots of men used to make fun of my speeches; I suppose they do so still more to-day.

The CHAIRMAN.—We are always very much pleased with them.

A. Sometimes they say: 'What is Robertson driving at? What does he mean by his humour; by his entertaining stories?' I never come to a meeting without having this thought in my mind, 'I will make these people think—think definitely with a purpose, towards expression by work and life—if I can.' That is a fine aim and use of education, to develop the ability to think clearly, then to know, and then to manage well by doing something. Trace out the development of cold storage by the work of our Department and it has been along these lines. These are the lines we hope to follow in this movement for the improvement of rural schools.

FARMERS' INSTITUTES, COLLEGES OF AGRICULTURE, NORMAL SCHOOLS AND RURAL SCHOOLS SHOULD WORK TOGETHER.

I want to have our rural school systems organized so that they will be correlated with the other existing institutions bearing on the education of rural communities. The organization of farmers' institutes for the grown people living in the country should be correlated to the rural schools for the young people living in the country. Then these two will have the same purpose, adapted, however, to the different conditions of the people, one class grown up, the other young.

Then the farmers' institutes should be in close connection with the colleges of agriculture. Every farmers' institute worker should have taken one or more of the short courses, not merely to be able to say something really good, but in order to say it in the most effective way. Suppose each province had a number of men trained for that, don't you think they could make addresses of a half hour each on the best methods of cultivation, and other subjects full of valuable information for their neighbours? In this way you would make available the teaching talent of the best practical farmers in each province. Let one man from the college staff go with two of the local men to each institute meeting and address the people. That is the means whereby the best knowledge of the best would become the common property of all in the locality.

Then, too, they should have close relations to the reports we publish from the Departments of Agriculture, so that if there be subject-matter in these reports, of value, they would be useful as a means of mental culture in the rural schools to a greater extent than some subjects entirely unconnected with their own life or country or conditions.

The rural schools should be correlated with a college of agriculture in every province, itself properly co-ordinated with the normal school, where teachers for rural schools receive their professional training and also a part of their scholastic course.

I am glad to know that as a partial result of this Macdonald movement, in the province of Nova Scotia, where I was lately a number of times, the provincial government has decided to build a college of agriculture; and to identify that college with the Provincial Normal School and with the rural schools. The legislature has voted

sufficient money to build a capital college of agriculture and to maintain it; and besides that, voted no less than \$36,000 at the last session, to help to consolidate the rural schools, along the lines of the object lessons we are giving this year by means of the Macdonald Rural Schools Fund. In New Brunswick, I was invited to speak before the legislature at Fredericton only last week, and I was assured by the premier, and the members of the government, that they would do something in that province,—likely have an agricultural college identified with the normal school, and thus help to improve and enrich their already excellent rural schools—comparatively excellent rural schools—with the culture, with the contact, with the uplift of the university itself, which thus would find its helpful influences exercised in all the schools.

We must not consider the school question from the standpoint of expense at the schools alone. There can be no great advance in agriculture, which is a subject of interest in which Canada is most strongly, most vitally concerned, except by education, and no permanent improvement in education in the rural schools, except by consolidation of the rural schools. The two are inseparably linked together. Agriculture needs better schools, and better rural schools can be obtained by consolidation. There are obstacles and difficulties in sight, but the end to be gained is greater than any hindrances that loom up in the way. By means of the Macdonald Rural Schools Fund we have planned to give object lessons in the consolidation of rural schools and that to help to bring about in Canada what I have indicated in other words, viz., to make the country one more desirable to live in, and our people more prosperous, contented and happy, by progress in education—by progress in ability, in intelligence and in good-will and co-operation.

HOUSE OF COMMONS,
ROOM 34,

May 12, 1903.

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

Professor JAMES W. ROBERTSON, recalled, addressed the Committee as follows:—

MR. CHAIRMAN AND GENTLEMEN,—I am to continue my statement this morning on what is being done by the Macdonald funds for the improvement of education, especially in rural schools. To make the information fairly complete, I hope that the members of the Committee will permit me, after a brief address, to put in some appendices and some additions to my evidence in written or printed form.

In nearly all other countries of late years a good deal of attention has been paid to the improvement of education on what is called practical lines; that is, on the line of training the children's bodies that they may be able to do things efficiently in the way of manual and industrial labour,—in training the children's bodies for the sake of training their minds through their bodies.

ROYAL COMMISSION ON THE SUBJECT.

In 1896 the Commissioners of National Education in Ireland requested the Lord Lieutenant to appoint a commission to inquire and report with a view to determining how far, and in what form, manual and practical instruction should be included in the educational system of the primary schools under the Board of National Educa-

tion in Ireland. The following are extracts from the fourth and final report submitted on 25th June, 1898:—

'In carrying out the task imposed upon us by Your Excellency's Commission of January 25, 1897, we have had ninety-three meetings, of which fifty-seven were sittings for the receiving of evidence. We have taken the evidence of 186 persons whom we considered qualified to give information on the matters submitted to us, and we have visited 119 schools, in most of which we have had an opportunity of seeing manual and practical instruction actually given.'

'With a view to ascertaining the existing facts with regard to manual and practical instruction in Germany, France, Switzerland and Holland, we employed as our assistants to visit these countries, Messrs. Purser, Rolleston, Bonaparte Wyse, and Hughes-Dowling. The reports of these gentlemen will be found in Appendix B. We have had the advantage, too, of the assistance of Mr. M. E. Sadler, Director of Special Inquiries and Reports to the Committee of Council on Education, who was kind enough to furnish us with a memorandum on manual training for boys in primary schools in foreign countries. For our information regarding schools in the United States, we are indebted to the very complete and exhaustive reports issued by the United States Bureau of Education. We have also had the benefit of the experience of one of our colleagues, Professor Fitzgerald; who took the occasion of a visit to America, in the autumn of last year, to see some of the primary schools in that country.'

'RESULT OF INQUIRY.

'After careful consideration of the evidence laid before us, and of the facts which we have seen for ourselves, we now proceed to report, in accordance with your Excellency's Commission, how far, and in what form, manual and practical instruction should be included in the system of primary education carried out by the National Education Board in Ireland. We may at once express our strong conviction that manual and practical instruction ought to be introduced, as far as possible, into all schools where it does not at present exist, and that, in those schools where it does exist, it ought to be largely developed and extended. We are satisfied that such a change will not involve any detriment to the literary education of the pupils, while it will contribute largely to develop their faculties, to quicken their intelligence, and to fit them better for their work in life.'

'REASONS.

'The considerations by which we have been led to the general conclusions above set out, will be fully discussed in the second part of this report, under the several heads of manual and practical instruction. But we think it will be for your Excellency's convenience, that the general summary of our conclusions should be here followed by a general summary of the grounds on which they are based.'

'REASONS MAINLY EDUCATIONAL.

'1. First, then, there are reasons founded on educational principles. The present system, which consists largely in the study of books, is one-sided in its character; and it leaves some of the most useful faculties of the mind absolutely untrained. We think it important that children should be taught not merely to take in knowledge from books, but to observe with intelligence the material world around them; that they should be trained in habits of correct reasoning on the facts observed; and that they should even at school, acquire some skill in the use of hand and eye to execute the conceptions of the brain. Such a training we regard as valuable to all, but especially valuable to those

NOTE.—The Commissioners visited schools in Ireland, England, Scotland, Sweden and Denmark.

whose lives are to be mainly devoted to industrial arts and occupations. The great bulk of the pupils attending primary schools under the National Board will have to earn their bread by the work of their hands; it is therefore important that they should be trained, from the beginning, to use their hands with dexterity and intelligence.'

'REASONS FROM EXPERIENCE.

'2. Next, we have the practical experience of those schools in England, Scotland, and on the continent of Europe, in which such a system as we recommend has been already introduced and tested. The evidence we have received on this point is absolutely unanimous and, as we think, entirely conclusive. We have been told, over and over again, that the introduction of manual and practical training has contributed greatly to stimulate the intelligence of the pupils, to increase their interest in school work, and to make school life generally brighter and more pleasant. As a consequence the school attendance is improved; the children remain at school to a more advanced age; and much time is gained for the purpose of education.

'We inquired particularly whether the literary side of school studies—reading, writing, arithmetic, grammar, and geography had suffered any loss by the change; and the answer was uniform, that no such loss had been observed. In some cases, we were assured that the literary studies had been positively improved by the introduction of manual training. This result was accounted for, partly by the increased intelligence of the children, partly by the constant change and variety of their occupations,—many of the most useful exercises being only a kind of organized play, and partly by their increased interest in their work.

'We regard it also as a very significant testimony to the value of manual training, that wherever it has been once introduced, it has, with hardly an exception, been continued and extended. There has been practically no disposition to go back to the old system, which made primary education almost exclusively literary in its character; and after an experience extending over some years, there is a general consensus of managers of schools, inspectors and parents, that the value of primary education has been greatly enhanced by the change.'

'A BASIS NEEDED FOR TECHNICAL EDUCATION.

'3. Lastly, there is a consideration of a practical character, which seems to us deserving of no little weight. A strong desire exists throughout this country, and it is growing stronger every day, for the introduction of a general system of technical education. It is thought that a good system of technical education would contribute largely towards the development of arts and industries in Ireland; and in this opinion we entirely concur. But the present system of primary education is so one-sided in its character that it leaves the pupils quite unprepared for technical education. The clever boys trained in the national schools, if they are disposed to seek for a higher education, may pass with advantage into intermediate schools of the kind now general in Ireland; but they are not fit to enter a technical school, even if they had such a school at their doors. Now it seems to us the changes we recommend would go far to remedy this defect. The system of national education, modified as we propose, would give an all-round training to the faculties of the children, and would thus lay a solid foundation for any system of higher education—literary, scientific, or technical—which might afterwards be found suitable to their talents and their circumstances.'

'CONCLUSION.

'In presenting this report to Your Excellency, we venture to express our conviction that, if our recommendations be adopted, the system of education carried out in the primary schools of Ireland can be made, within a few years, very thorough and complete. At present, no doubt, it is excellent in some respects; but in other respects

it seems to us seriously deficient. Insisting too much, as it does, on the study of books, it leaves the faculty of observation and other important faculties comparatively un-cultivated; and it neglects almost entirely that training of the hand and eye which would be so useful to the children in their after life, and which is now regarded both in England and on the continent of Europe, as an element of great importance in primary education.

'The development of manual and practical instruction, on the lines we have pointed out, will remedy these defects, and will not, we are satisfied, inflict any injury on the literary education which is now given. It will not disturb what is good in the present system, but only supply what is wanting. It will quicken the intelligence of the children, brighten the tone of school life, and make school-work generally more interesting and attractive. With the system of national education modified as we propose, the children will be taught not by means of books only, but also by the more simple and effective agency of things; and they will be better prepared for their work in life, which, for the great bulk of them, must consist mainly of manual occupations.

'It is hardly necessary to say that the changes we have recommended cannot be carried out without a considerable expenditure of money. But we feel confident that the state, which so largely maintains and controls the system of national education in Ireland will not hesitate to provide the necessary funds for improving that system, within reasonable limits. The progress of the people in wealth and material prosperity must largely depend on the education given in the primary schools; and to make that education thoroughly efficient and fit for its purpose is a task, we submit, which may well be undertaken, in the highest interests of the state, whatever the necessary cost may be.'

I have quoted freely from that report. I am greatly indebted to it. I consider it peerless even among parliamentary blue-books for the thoroughness of its information.

At that time, 1898-99, in fact before that, Sir William C. Macdonald had been most anxious to help to improve rural schools in Canada; and he came to me for some help in the way of plan-making and administration. I said that in my judgment the first thing to do was to give object lessons in the elementary schools of cities and towns so as to educate public opinion in favour of better methods of education in places where newspapers were published and to which the country people looked for guidance. He rather demurred, saying the city and town schools were already too good in comparison with the country schools and tended to draw people in from the country to the towns in order to get education for their children. Afterwards when he saw it would be a means of helping the rural schools, he said, 'All right, we will carry on the manual training in some town schools.' The man in the rural district imitates the man who lives in town. The man who lives in town has the best chance of being a leader; and the man in the country would not be willing to take a lower grade of education for his boy than a town man. It was important to get the leaders from the cities to recognize improvement by means of practical education. That was the reason for the Macdonald Manual Training Fund and its work. Manual training was the first step in this plan. The rural school was not an after-thought; it did not come out of the manual training movement. The manual training movement was a step towards the other end—that of improving the rural schools. Hitherto the wealth and wisdom of the country have been given to town schools. The little rural school has been left without help.

We began in a rather modest way. I had no intention of making the scheme as large as the Macdonald Manual Training movement has since become. The first plan was to start one good centre in connection with the public elementary schools in Ottawa in order to give an object lesson here, as being the capital of the Dominion, where many influential public men come and would be able to see it. We hoped to start one at Brockville, Ont., also, and one at some place to be selected in the maritime provinces.

We need in Canada to have the public go to school; to have public opinion—the factor in our life which must sanction and approve of every public movement if it to be effective—to have that factor educated that it may demand and provide better schools for the boys and girls of the rural districts.

You do not educate a boy by scolding him or denouncing him. You can help to educate him by praising him, by appreciating him; by giving him a chance to observe to recognize; to investigate; to understand; to do—these are the means of education—opportunities for observation, for recognition, for investigation, for understanding for doing. We are trying to educate the public by providing such means for them. We are hoping to give the public a chance to observe—to observe the better sort of schools to recognize its merits by investigation; to understand its use and bearings. That is the use of the Macdonald Manual Training Fund and the Macdonald Rural Schools Fund, and the meaning of the two handsome buildings which are to beautify the campus of the College of Agriculture at Guelph. The public are to have a chance to observe, investigate and understand, and then either go on with the new education, improving it, or give it up, as they decide for themselves.

After securing the assent of the Minister of Agriculture and conferring with the Departments of Education concerned, I met the local school boards and in substance said: 'If you want manual training, as you evidently all do, then the Macdonald Fund, which I control, is ready to provide the equipment, to pay the teachers and to maintain the centres for three years.' The school board in each case was quite willing to have that done, and arrangements were made to provide manual training equipments in a number of towns and to pay the teachers for three years. To obtain thoroughly trained and experienced teachers we had to go abroad for them, because at that time there was hardly any manual training in Canada. There was manual training at the Woodstock College, in Ontario, at the High School or the Normal School in Truro, N.S., at the schools in Halifax, N.S., and at the High School in Montreal. There was also manual training in the McGill Normal School in Montreal. But none of that was directly in the elementary schools. Therefore, I went abroad for teachers of ability and experience. Now all that has been changed, and Canadian teachers have been trained and properly qualified.

WHAT IS MANUAL TRAINING?

It is not what is known as physical culture in schools. That is another thing altogether, where children have gymnastics and physical training to develop their bodies. It is not like the education in trade schools advocated in the old countries a century ago and given up afterwards because they were not educationally a success. It is not technical education. I have been saying that for three years, even to ministers of education. Technical education is teaching a trade or profession, or the principles of a trade or profession. We do not teach trades in the elementary school. We train the boy for the sake of ability in the boy. Manual training is the training of the faculties. It is not industrial education; it is the general culture of the powers of the body and of the mind through the activities of the body, which is an essential part of education.

DIFFERENT FROM APPRENTICE WORK.

The system is sometimes called English Sloyd, or manual training. Sloyd is a Swedish word for 'dexterity.' Educational manual training is an entirely different thing from carpentry.

The manual training room is not a workshop where operations are carried on with a view to the commercial value of the articles turned out. A workshop is a money-making institution, whereas a room for manual training—for Sloyd work—in connection with a school, is for the training and developing of the children, without regard to the intrinsic value of the work turned out, or to the length of time required

to make any particular object. Manual training is really a series of exercises so arranged as to have educational results.

How is manual training brought about? By working at a bench; making simple things in clay or cardboard or wood. It is a training in accuracy, in ability to control self and environment, in expression of thought, in deeds and in substances rather than in language.

A floor area of about six hundred square feet is enough to accommodate twenty pupils and one bench for each. A room 24 x 30 feet would be amply large; and would provide also for the instructor's bench and for a group of pupils to watch what he was doing. Ten classes of twenty pupils each, or two hundred in all, could be passed through such a room in the week. The benches are of convenient height and size, and each one is fitted with a rack for the holding of tools, and also with tools. Some of them are also fitted with a simple device for the holding of the drawings, so that the work with the tools may proceed with the drawing in full view all the time. General class instruction with the aid of a blackboard, is given by some teachers in a fifteen minutes' talk, before the particular work of the half-day begins; and instruction is given also to each of the pupils individually as the work at the benches proceeds.

Children come from their ordinary subjects and studies, for one half-day every week and go to the manual training room and have one half-day's training there in making drawings and in making things in wood. They do that in the elementary schools in Canada for three years, and during the three years they make about thirty objects or models. That training gives the children ability in several ways of which I shall speak in a minute, which the book studies do not give them as fully. I take these two sample things—a wedge and a spoon—to illustrate this. A boy will get a piece of wood and will be shown a wedge like that (producing small wedge made in manual training class). Then he will get a lesson on how to make a drawing of the wedge, that way, and that way and that way (pointing to the three faces of the wedge). He is taught also how to measure, to measure the wedge or other model, to measure for his drawing and then to measure accurately on the wood as he makes his own model. He is taught what to do next, in sequence to make the wood take the shape of the wedge. To do this he must think clearly, because the order of his action depends upon his thought. If he does not think clearly, he will cut the wood in the wrong place and have to begin again at the beginning. That is very different from accepting the marking of an error in blue pencil. He is taught to think clearly towards an end believed by him to be useful. That is a great gain. I used to think and reason on the problems of Euclid, but never knew what end I was striving for. Manual training helps to carefulness, to accuracy, and to self-reliance. You can never juggle with facts or substances here. You cannot commit a sophistry in wood.

Mr. A. H. Leake, Director of Manual Training for the Province of Ontario under the Macdonald Fund, says:

'The first lesson necessarily consists of an explanation of the rule and its divisions, whether metric or English, practice in drawing lines of given length, first without the rule and afterwards with, and the drawing also of simple elementary figures to give dimensions. After this the boys are taught by an examination of the model itself and the instructions of the teacher to prepare a simple working drawing. Line by line the model is drawn upon the blackboard, the boys pointing out as the work proceeds the actual line of the model represented by the line on the board, so that when the drawing is finished the boys have a clear mental picture of the object they are required first to draw and then to make. No mere copying of drawings is allowed, and to prevent this and also to test the efficiency of the instruction, the drawing is erased and the dimensions of the various parts given, and from these and an examination of the model itself the boys are expected to produce a drawing, fully dimensioned, from which the model can be made. At other times they are allowed to measure the model for themselves and make their drawings from their own measurements.

'In addition to the models comprising the different courses, suitable object lessons are given on the growth, defects and character of the different timbers used and

the construction of the tools employed and in these lessons care is taken that the boy has an actual specimen of wood, or the actual tool in his hand, so that upon it he may exercise his own observation and judgment.

'At present the bench work is almost entirely in wood, and consists of a series of models most carefully graduated, in order of difficulty, as to kind of wood, principles of construction and complexity of tool operations. Every model is made from a fully dimensioned drawing previously prepared by the boy himself, first to full size, and later on to a scale. Accuracy of form and measurement is insisted on from the commencement, and it is surprising to find how soon a lad becomes dissatisfied with anything but the best he can produce. No work is accepted that a boy does not conscientiously believe at the time to be his best; and when a lad has made, say model 3, he often asks to be allowed to make model 2 over again, having discovered during the making of number 3, faults in number 2 of which he was not before aware.

'A record of the attendance and work of each boy is kept, so that any time the progress of any individual may be seen. Each boy is provided with an adjustable bench and a complete set of bench tools, placed in a rack at its back, while round the room are arranged the tools not so frequently required. In addition a separate pigeon hole or locker is given to each pupil in which to keep, from week to week, his apron, his drawings and his work, and for the neatness and tidiness of which he alone is responsible. At the close of every lesson each boy swoops down his bench and replaces in its proper position every tool he has used. The rooms are also provided with museum cupboards, in which are exhibited the boys' best efforts, the standard models, and any interesting objects relating to the trees and timber of the province, that may be brought by the boys.'

An educational manual training course is always arranged with difficulties graduated to the ever-increasing capacity and ability of the pupils. When a boy has had experience in making simple things, he goes on to tasks which look more difficult but which in reality are just as easy to his acquired ability. He recognizes his own progress in ability—in power. That gives him confidence and a measure of self-reliance.

TO DO THINGS IN THE RIGHT WAY.

The boy learning to read or write does not get that advantage in as full measure: the consciousness of progress, by seeing the things done by himself. How many of us would know how to make that spoon, to tackle the task in such a way as to do the work well with the least waste of energy, material and time? That is the great qualification for any task one has in life. The boy is given a block of wood like that and is shown how to get a symmetrical, beautiful spoon out of it. The whole course is to train the boys into tackling difficulties in the right way, to do the right thing at the right time in the right way. He makes a drawing on the wood, then he begins to make it in the wood according to his drawing. He will saw that piece off, he will saw that piece off, he will saw this piece off, he will saw that piece off; and then he will begin, you see, to work down his spoon into its finished shape. The boy makes a drawing on paper, then he makes a drawing on wood, and follows the lines of the drawings on the wood with a saw. We all agree that this finished spoon is a beautiful object. It was made in one of our schools in Ottawa out of an oblong piece of wood like that I have just shown you. It illustrates the advantage which training into habits of carefulness confers. If the boy was not careful to make his first drawing right and then do his sawing in the right way, and in the right place, he could not end up with the fine curves of that spoon.

Q. The machines aid him, I suppose?

A. There is no machine; it is all hand work; there is no turning lathe in the place. It trains the boy in habits of accuracy; he is not merely guessing that it is about right; he has to get it exactly right, and that brings about that fine passion for accuracy, for truth, in the boy. The boy himself is the judge. That is a great gain. Instead of the boy always accepting the blue mark of his teacher's pencil in his ex-

ercise book, he brings his own judgment into play. It develops the habit of self-reliance. The teacher shows the boy how to do things, but nobody but the boy himself makes his model. If the teacher shows the boy how to use a saw, he does so on another piece of wood; the boy does all the actual cutting on his own material. That trains him to self-reliance, to depending on himself; that is a great gain.

TO SUPPLEMENT BOOKS, NOT TO SUPPLANT THEM.

Let me show you, if I may, for a moment how this supplements the ordinary book studies; it does not enable the teachers to do away with them. The book studies as a rule have rather magnified the value of knowledge: the knowledge of facts, of names and rules; that is what a book almost always does. That is not the case under this system.

The boy acquires a knowledge of things which are real to him; first by what is called sensuous knowledge, that is, knowledge he gets through his own senses; seeing, feeling, smelling, hearing and 'hefting.' When a boy is doing anything he is getting impressions through his senses. Secondly, he gains experimental knowledge by meeting obstacles and overcoming them. Moreover he adds to his logical knowledge; he reasons out that if he does a certain act or series of acts they will produce a certain result. This is far better than training the boy to a second-hand knowledge of facts which he gets from some other person's statements in a book.

May I for a moment show the characteristic differences between this and ordinary school work, and how this supplements that.

What are the differences most noticeable? The teachers in both are the prime factors; then what? What are the most noticeable things in the old schools? Books and examinations. Is not that so? What was most highly esteemed—most requisite in the ordinary examination? A knowledge of facts and names and rules and forms. Many a student says: 'If that does not help me in the examination, I have no time to waste on it.' But such a man will find his error bye-and-bye, when he is face to face with the obstacles of real life, which do not yield to anything but intelligence, ability and unselfishness. Books are good things, blessed things; the store house of the great thoughts, of the great achievements, of the great intellects among men. I would not whisper a disparaging word of books. But when you get a good book, a book to your liking, what is your attitude, whether you are young, middle-aged or old? An attitude of passive receptiveness. That is particularly the effect of the book on the mind of the young. Here are the bench, the tools, and the materials. They stand for the active and constructive. A boy who puts in part of his school time at these gets more good out of books in his passive and receptive periods. The bench is not in conflict with the book, but is the complement of the book; and both help the boy better than either would alone. Examination papers are the detestation of teachers, and they are not welcomed by the pupils. If a young man when he leaves school knows hardly any standard except the verdict of his superiors, he is ill fitted to meet life's difficulties for himself. It is good to accept the judgment of our superiors, and it is better to have the boy competent to pass his own verdict and say, 'That is the best I can do;' or, if it is not, 'I will go and do it better.' That is what the bench and tools and models demand and must have. They do not condemn the examination system, but make it effective. They help to turn out a strong boy willing to accept the decisions of his superiors, and knowing that he must pass verdict himself on himself and the quality of his work. Who cares if he cannot name all the varieties of spoons in wood that were ever made to represent the maker's thought of the beautiful, if he can make one spoon true to his model, to his idea? It is no education in the knowledge of oats to learn the names of the varieties of oats. It is an education to grow one variety under close observation and management. The bench and the tools make a boy have regard for a knowledge of relationships of things that are real to him; not merely ideas and abstract principles, but real to the boy of ten and twelve. He is trained by things

he knows are real. They are not any more real than others, but he knows they are. That is what counts in his education. These things make for character. The web and the woof of character are the ideas that are cherished, and the deeds done in the body. As a matter of fact most boys who have been rather dull at their book studies have proven themselves to be exceedingly clever and able in these manual exercises, showing that many a boy is not ripe enough at 12 years of age, in fact few boys are, for the reception of abstract ideas, but is ready to make progress in understanding of the concrete. That has been found to be the case and has been especially commented upon by the principals in the city of Toronto; boys considered dull in other classes have in several schools become the star boys in manual training. They did not have minds mature enough to deal with truth in the abstract, but they had minds suited to deal with truth in the concrete. Training in that way helps to prepare the boy for the life that he will probably have to lead. It gives him a correct idea of the relationship of cause and effect.

EXTENT OF THE MACDONALD CENTRES.

The beginnings from which this movement sprang were small. As I have already said, the first intention was to establish one object lesson centre in Ottawa and two others. As the value of the work to the cause of progressive education became more evident, the plan was enlarged, and Sir William Macdonald made the increased provision in funds which that rendered necessary. Now we have 45 manual training teachers—experts in this branch of education—paid from the Macdonald Manual Training Fund. Agreements have been made with the school authorities at the following places; and in them manual training has been made part of the public school course. All of the agreements are not for three years. They all terminate at June, 1903, and a few of them were not entered upon until 1902.

In Ontario, Ottawa, Brockville and Toronto; in Quebec, Montreal, Westmount, Waterloo, Knowlton and Bedford; in New Brunswick, Fredericton; in Nova Scotia, Truro; in Prince Edward Island, Charlottetown, Summerside, Georgetown and Montague Bridge; in Manitoba, Winnipeg; in North-west Territories, Regina and Calgary; in British Columbia, Victoria and Vancouver.

In Toronto public schools there are only four centres accommodating 800 boys per week; in Montreal only one centre in addition to the double centre at the model school and McGill normal school; in all other places enough centres for all boys of suitable age in the public elementary schools. There are about 7,000 boys receiving the courses in the Macdonald Manual Training centres. In addition, the manual training is maintained by the Macdonald Fund at the provincial normal schools at Ottawa, Toronto and London in Ontario, and at Fredericton, Truro and Charlottetown in the maritime provinces.

Summer courses for teachers, already in the service of rural or urban schools, were provided. On Saturday forenoons, or at some other convenient time every week, classes were arranged for the teachers from whose schools the boys went to the manual training centres. In Ottawa these classes were attended by over 90 and in Montreal and Toronto each by over 100 teachers.

As I have said, there are 45 teachers paid from this fund, with a monthly salary list of over \$3,600; and after June, 1903, the work will be taken over by the local and provincial authorities themselves. We will make a gift to the school board in each place of the whole equipment; and in every locality, with perhaps one exception, where the arrangement is not yet made, I think the school boards themselves will carry on this work and extend it.

In Prince Edward Island the provincial government has taken over the chief instructor and made him a provincial officer. The same thing has been done in Nova Scotia and New Brunswick; I hope it will be done in Quebec; and it has been done in Ontario. Winnipeg will carry on the work, as also will the educational authorities at Regina, Calgary, Vancouver and Victoria. The work that has been started under

the Macdonald Fund will be carried on by the provincial and municipal authorities. In Nova Scotia manual training has been taken up in 14 other schools without assistance from the Macdonald Fund except that we have trained the teachers for them. It has been started in many other places in Ontario; and teachers have been trained for these also by the Macdonald Fund. This is an outline of the beginning of the movement; and as you see, it has had already very great growth.

By Mr. Ross (Ontario):

Q. How long is it since the movement was inaugurated?

A. Three years ago I gave an address in Ottawa, in November, 1899; that was the first public announcement of the plan. Perhaps it will please and serve the Committee if I put in an extract from that address, showing the progress of this movement in Sweden, Germany and some other parts.

OUTLINE OF THE HISTORY OF EDUCATIONAL SLOYD OR MANUAL TRAINING.

Only the barest reference can be made here to the history of Educational Sloyd. In fact I am not sufficiently acquainted with it to make more than mention of a few matters. Perhaps the movement has had its widest extension and best application in the elementary schools of Sweden. The following are quotations from 'The Theory of Educational Sloyd,' published by George Philip and Son, London:—

'The Sloyd movement in Sweden had begun in the late sixties and early seventies. It was first of economical rather than educational significance, i.e., it was a movement for home industries, which, it was soon seen, must begin in the school if it was to have any lasting effect. Sloyd schools were started in different neighbourhoods by private individuals, some of them close at hand in the lan or county of Alfsborg, where Count Sparre, the chief of the county, had formed a Sloyd Union. Struck by the new movement, Herr Abrahamson, in February, 1872, opened a work-school for boys at Nääs, and two years later a similar one for girls, with his nephew, Mr. Salomon, for director.'

'In 1874, Herr Salomon became inspector of Sloyd schools for the middle district of Alfsborg lan, a post which he held for several years.'

'To meet the demand for Sloyd teachers, Messrs. Abrahamson and Salomon, in 1874, opened a training department in connection with their school, this being the first attempt of the kind.'

'The question now began to be looked upon from an educational rather than an economical point of view.'

'One thing was already quite clear. The teacher only could make Sloyd educationally useful, and so he strove henceforth to make the Sloyd School and the Folk School one. From 1878, therefore, he began to take ordinary teachers from his own lan in 5-or-6-week holiday courses in Sloyd, whilst still continuing the work of the Seminary on the same plan which he had begun four years before. But in 1882 came a thorough change. The twelve-month courses ceased, and the short courses were extended, first to all Sweden, and then to teachers from abroad.'

'At the same time, too, all other forms of Sloyd were dropped in favour of the one that was found the most useful educationally, viz, Wood Sloyd. The concentration of attention upon this one allowed of a development of it for educational purposes which it can scarcely be said to have received elsewhere. And there can be no doubt, too, that it is this concentration which has been a powerful help in securing the introduction of Sloyd into the 1,900 elementary schools in which it is now taught in Sweden.'

'Nääs is a good Sloyd school, and much besides. It is the meeting place of leading teachers of all degrees and all nationalities, for common work, and for the interchange of ideas. Professors, inspectors, secondary and elementary teachers, women as well as men, there meet on common ground as comrades. It fulfils more than any other institution that could easily be named, the ideal we are aiming at in England in

the Teacher's Guild. And this is due to the earnest co-operation, for the last 20 years, of three men, each of whom in his own sphere has done his very best. Herr Abrahamson has made a noble use of his wealth in founding the seminary, and providing for its continued existence; as a kindly host, too, he makes his interest and presence felt in all that concerns the common work and the common pleasure. His nephew provides the ideas and the direction; whilst Alfred Johansson is mainly responsible for the teaching in bench work, which occupies such a large part of the day. But the chief burden falls on director Salomon.'

Thus Sweden and in a measure all Europe are indebted to these two benefactors, Messrs. Abrahamson and Salomon, for the wise and unselfish use of wealth and personal ability.

* 'The last thirty or forty years may be taken the period within which the movement now in progress, for the introduction into primary schools of a system of manual exercises arranged with a view to their general educational advantages, had its beginning.'

'Within the present century, Finland was the first country to give a recognized place in the curriculum of the primary school to woodwork and other manual exercises. That it did so was in great measure due to the influence of Uno Cygnæus (1801-1888). His project for the reorganization of the primary schools of that country was carried into effect during the years 1858-1866. Cygnæus laid great stress on the general educational discipline given by manual exercises, as distinct from the economic advantage to be derived from the early acquisition of manual skill. In 1866, instruction in some branches of manual work, such as woodwork, basket work, tin work, or iron work, was made compulsory in the training colleges for male teachers, and in all primary schools for boys in country districts.'

'In Norway this branch of school-work was first recognized in the official programme in 1860. It is only within recent years that much attention has been given to the usefulness of a system of manual exercises as a branch of general primary education. Since 1891 it has been compulsory in all Norwegian training colleges and town schools.'

'In Germany, the false start originally made by the establishment of the schools of industry naturally put a serious obstacle in the way of the introduction of woodwork and other manual exercises as a part of primary education. But now throughout Germany there is in progress a movement for the purpose, thoroughly inspired by the educational idea, and this movement is steadily gaining ground.'

'Until very recently the movement in Germany had to depend exclusively on private effort. Its chief support came from an energetic association, the German Association for Manual Work for Boys. A great number of the best teachers of this branch of school-work in Germany have been trained in a training college established by this association at Leipzig, under the directorship of Dr. Goetze, who is one of the leaders of the movement throughout Germany. This college is open to foreign students, and has been largely attended by them.'

'The movement in Germany has at length won its way so far as to have its claim recognized for state-aid to the work it has undertaken to promote. The governments of Prussia, Saxony, and Baden now make state contributions in aid of this branch of school-work.*

In England and Scotland gifts of money by private individuals and guilds enabled educational reformers to give the system a fair trial at many centres. During the decade now closing it has been taken up and extended by school boards, with the co-operation and financial support of the Department of Education.

In the United States it is making rapid headway. In most places where it has been introduced, the generosity of private individuals gave it a start; and it was then

* From memorandum on Manual Training for boys in Primary Schools in Foreign Countries, by M. E. Sadler, Esq., Director of Special Enquiries and Reports to the Committee of Council of Education, England.

taken up and made part of the public school system. I visited a school in Boston lately where I was informed this movement had its beginning in 1890. It is an endowed school, and the trustees (I am not sure of the correct designation) used part of the revenue to establish and maintain manual training. The report of the Committee on Manual Training intimates that the expenses of teachers at other schools in Boston for several years were paid by 'Mrs. Hemenway and Mrs. Shaw, whose names have become "household words" in Boston.' It is now part of the educational system under the school authorities; and this year I learned that there were 27 manual training centres in the public schools of the city. The foregoing are extracts from the address I delivered in 1899.

Q. Do you teach the boy the value of the material from which he is making his models; or, when it is a finished product; do you tell him suitable woods, valuable woods, and do you tell him the value of his time, and of the material used?

A. We do not take any notice of the value of the material or the time.

Q. You do not take up the commercial side?

A. No; we do not.

Q. You think the children are too young for the commercial side?

A. We think so. We do not think the elementary schools have to do with that. We teach the nature of the trees and the characters of the different sorts of wood; but the main purpose is to train the child in accuracy, carefulness and self-reliance, whether it takes him one day or many days to finish a task. When the boys have completed this course in Manual Training we hope to see them receive the beginnings of technical education in the high school grades. They will then consider the value of the materials. In the public elementary schools we do not train the children in regard to the value of materials, but in regard to the value of accuracy, carefulness, self-reliance and the character developed by these means.

The following extract is from a statement by Archbishop Walsh of Ireland, on the subject of Manual Training:—

"These objects are of no commercial value, at least they are not valued for their own sakes. So far as intrinsic value goes they might be destroyed as soon as they are made. As has been well said in one of the best expositions of the system they are, in this respect, like the pages of the copy-book that the child fills in when learning to write. It is not the objects themselves, but the making of them that is looked to. It is the work of making them that constitutes the means to the end that is aimed at—that end being the cultivation, not only of manual dexterity but of accuracy, of carefulness in little things, of neatness, of self-reliance, of patience, of perseverance, of concentration of thought upon the work to be done, of love for honest, well-finished work—in a word, the training and cultivation of all those faculties and habits which it is of the highest importance to cultivate as a preparation for the business of life."

Wright:

Q. There is one important feature I would like to mention that we have found in our school. It has almost entirely eliminated truancy. Every boy is there every time. You cannot stop him from that.

A. That is one of the many things that are advantageous. For instance, the attendance at the manual training classes in Ottawa is much higher than the average in other school classes. The boys are never absent from this if they can help it; the interest of the work appeals to the boy himself.

By Mr. Erb:

Q. Is the instruction to the class collectively, or to each boy?

A. The teaching partakes of both. Sometimes class instruction is given; perhaps a plane is taken apart or a saw is examined and explained to them. This is class instruction; and then each boy gets instruction at his bench, on the particular work he

is doing. He need not keep pace with the others; he makes as rapid progress as he is capable of making. The class instruction is in regard to the tools and woods and from the blackboard in drawings. The rest is individual instruction at the benches. One great gain in this is that the boy does not waste time. If you go into a manual training room you will find all of the boys constantly at work. If the committee would care to come down to the large centre at the corner of Elgin and Maria streets to-day you would find a class there and I am sure you would be interested.

By Mr. Wilson :

Q. How large are the classes ?

A. Twenty to one teacher ; a double centre holds 40, and then there are two teachers in the room. The boys are so interested in the work that strangers may come in with one brief glance of observation. The boys go on with their work. The training of a boy in using his own time is an exceedingly beneficial feature. As I have already said, in the common country schools one of the great wastes is the waste of child-time, from one teacher being unable to keep all the children occupied. I think it is the most lamentable phase of our whole system, but in the manual training the child seldom if ever wastes time at the bench.

By Mr. Thomson (Grey) :

Q. How does that differ from the instruction given in our reformatories ?

A. Manual training is in use in the best reformatories in the United States.

Q. Has it not been in use in Ontario for some years ?

A. I do not know.

Q. They employ something similar ?

A. They are engaged in making brushes and brooms and things of that kind.

In the United States reformatories they have had manual training on the Swedish system for several years ; and the incorrigible boys are put at it with excellent results. Reports say that the most incorrigible boys after three years' work have been so cured of their bad tempers by being taught to control their bodies, that they have been reformed by this more than anything that has been tried before.

We took for Canada the Swedish Sloyd modified by the Russian and English methods. Some of our original teachers had been trained in Sweden as well as in England.

Q. Why is it that Sweden is so far in advance of other countries in these matters ?

A. I do not know except that as far as I know in every country that is ahead in education you can trace the advance to the action of one or two men. One or two men did something and the others fell in. That is why Sir William C. Macdonald has devoted a great deal of money to education, believing that when it is once started, of this more excellent sort, the regularly constituted educational authorities will carry it on. If it is good it will spread. What is always required is a man,—a number of men from time to time, ahead of their time ; and through them the nation goes ahead.

By Mr. Thomson (Grey) :

Q. Those who come here from Sweden are very superior in engineering, surveying or any other work of that class.

By Mr. Wright :

Q. I would like the professor to emphasize what he said about the incorrigible boys. The most incorrigible boy we had in the Renfrew school became our best boy in manual training.

A. That has been found in many of the schools. There is an abundance of manual energy in the able bodied boy which must find expression through doing things ; and if he is trained to do useful things in a systematic way, his energy finds a natural outlet and he becomes an able boy. It also satisfies the boy.

The great progress that Denmark has made in dairying is very largely due to the excellent school system there. The butter maker we had at the Experimental Farm here in 1891 was a Dane and he had the benefit of this manual training in his school days. He made drawings and then worked them out in a way whereby he obtained a grasp of things. It was the mental and other training that he had that gave him the ability to take up a problem and work it out to a logical, practical, useful conclusion.

B Mr. Thomson (Grey) :

Q. There is no other reason for the excellence of the Danes than this technical or educational training ?

A. I do not think anything else counts for so much in their progress in recent years.

By Mr. Ross (Ont.) :

Q. It is the necessities of the country, I suppose, that make it desirable to have this manual training; or are they a superior class of people?

A. They are a good, sturdy, intelligent people, who have had far-seeing, capable leaders.

These teachers we brought out from Europe, mostly from England—we picked out the best men we could find—these teachers told me after being here two years, that they thought the Canadian boys in their classes showed more aptness, quickness and intelligence, than any children they had ever had before in their classes. That is the testimony of these teachers. Our schools have been too bookish; there has been too much of the passive and of the repressive in them, and too little of the active and the constructive.

How to apply these principles of education to our rural schools is a much more difficult problem than to apply them to a city school where they have graded classes.

Q. There are also graded schools in incorporated villages?

A. In towns, but not many in the country parts.

Q. There are also graded schools in incorporated villages?

A. There are a great many rural public schools in Canada that are not graded.

Q. Those are the purely rural schools that are ungraded, I guess ?

A. Yes.

The next part of the plan we have in contemplation is to give object lessons in important rural schools on similar lines to those followed in the object lessons in city schools. To make this clear to the Committee I think I cannot do better than put in part of an article I prepared recently on the improvement of rural schools by means of consolidation.

CONSOLIDATION OF SCHOOLS.

Some of the essentials for good rural schools are : (1) Good teachers with experience; (2) wholesome children; (3) efficient supervision; (4) good buildings; (5) neat and beautiful surroundings; (6) active public interest and adequate support.

If we cannot arrange at once to bring into existence all the desirable conditions for good schools, we should strive to create as many of those conditions as we can in as many places as we can. There is no witchery or fairy charm in the word or fact of consolidation to put away all the present weakness and ills of small rural schools. However, consolidation will bring opportunities and means for improvement within reach of the teachers, the people and the children. Ever increasing benefits may be found by using those to the fullest extent.

GOOD TEACHERS.

Teaching is a great art. It is the art of living, the art of living and labouring so as to lead young lives out into desire and ability to live usefully, and, therefore,

happily. The greatest of all teachers said, 'I am come that ye might have life and have it more abundantly.'

In addition to scholarship the teacher should be an example of neatness, good manners, good temper and cheerful attitude towards life in general and towards the life of the schoolhouse in particular; and should know by experience that observing, investigating, recognizing and understanding real things are forms of mental activity and power superior to the mere remembering of words, names, forms and rules.

New methods of education such as Nature Study, Manual Training and Domestic Economy would be made easily possible at consolidated rural schools. The teachers would find great satisfaction and delight in them. As it is the part of the public to provide means for the education of the children, it is more particularly the duty and privilege of the teachers to make the best use of these means. Here, as elsewhere, for the public at large and the teacher in particular, the paths of duty, happiness and progress are in the same direction and run within the same bounds.

Centralization of schools would provide for perhaps fewer teachers, but better teachers of more experience. At the present time there are comparatively few, if any, prize places in the teaching profession in rural schools. The coveted posts are in the towns and cities; they draw the teachers of approved ability from the rural districts. Large central schools in the rural districts would provide what might be called, relatively, 'prize places' for teachers who would devote themselves to teaching as a life profession in rural districts. Teachers would stay in the same places far longer in consolidated schools than in one-room schools in the country parts.

WHOLESOME CHILDREN.

Various elements enter into the factors that make for a good education. Among these are a large enough attendance to form classes of children of about equal age and advancement in studies. The gathering of the children into a school where they could be properly graded, and, to a large extent, classified according to stage of advancement, would be a means towards that end. In that respect the town and city schools are in advance of the rural schools at the present time.

By centralization or consolidation, a large number of children could be brought together in one building. Strong classes could be formed, properly graded, and the children classified from time to time as advancement was made. Such classes stimulate every child to do his or her best. One child teaches another, on the whole, perhaps, quite as much as any grown teacher does. In other words, the stimulating, directing and informing power of a teacher is multiplied two, three or even four times to many of the individual pupils through the passing on, by pupils to their classmates, of the help they have derived direct from the teacher. It is not only the clever and bright pupils who do this. Every child, in some measure, interprets to its fellow child some part or some phase of a lesson. By gathering the children from five or six rural schools into one central graded school, the teaching power of the children of the locality for other children in the locality would be utilized. Each pupil in a class learns much from his fellow pupils. As the bright, quick ones see, in part, others are helped to see; as they reveal their methods of study, other children learn. Children also learn from classes to which they do not belong, as well as from children in the groups of their own degree of advancement.

EFFICIENT SUPERVISION.

Supervision of rural schools by school boards, inspectors and departments of education must be intelligent, sympathetic and skilful, co-operating with the teachers to bring the schools into touch with the homes and with the occupations of the people. Those who have the power of governing and responsibility of guiding must needs be in close touch with the lives of the people whose children are being educated, and in

sympathy with the life which the children themselves will follow when they come to mature years. It is most promising and hopeful that the public school inspectors are leaders and guides in education, rather than official valuers of other teachers' work.

It becomes necessary that members of school boards should have a clearer appreciation of the qualities essential to a good teacher ; and of the fact that the best teacher becomes still better by at least two years of experience. School boards, for the sake of saving a few dollars in salary, cannot afford to have the children practised upon all the time by young teachers who are gaining experience at the cost of child-time and of the opportunities which to those particular children never come again.

The indifference, ignorance and selfishness of some parents come between their children and the chance of a good education. The united power and influence of departments of education, inspectors, school boards and teachers, must be exerted more energetically and patiently in behalf of those little ones.

GOOD BUILDINGS.

The rural schoolhouse is rarely a thing of beauty ; it is sometimes a place of discomforts and a hindrance to the natural development of robust bodies and to the growth of mental vigor and activity. Many a school still lacks suitable desks with comfortable seats. In matters of heating, lighting and ventilation, the lonely little school has been left untouched by the improvements which have made town schools models for promoting comfort and health. Everybody admits the high educational value of a well-constructed, well-arranged, well-equipped schoolroom, with windows and floors shiningly clean, and walls decorated with pictures. 'Day by day beautiful, comfortable and clean surroundings will have their ethical influence upon his development until he comes to abhor anything that is not beautiful, well ordered and clean.'

NEAT AND BEAUTIFUL SURROUNDINGS.

Pleasant and well-arranged surroundings are silent, potent educational forces. The child naturally tries to put himself into harmony with what surrounds him. That effort, often unconscious to himself, is part of his education. What a charge that sentence brings against the untidy, uncomfortable, unlovely interiors and exteriors of many schoolhouses in rural districts, and against their fenceless, unenclosed and hardly decent surroundings !

There are over 100,000 school gardens in use in European countries. These beautify the school grounds and are used for educational purposes as well.

Why should not the schoolhouse and school premises be the most beautiful and attractive place in the locality ? If the children are to spend between six and seven hours a day there, should it not be made a place to be proud of, and known to them as worthy of all praise ?

Would it not be a good thing if the bare, neglected, depressing and sometimes hardly decent surroundings of the schoolhouse were improved into gardens, expressing the refined taste and skill of the people of the locality, under the management of their teacher ? If unsightly and repellent premises are not in themselves degrading, they have a tendency to dull the taste and the judgment of young persons as to what should be esteemed. It is of great benefit in early life to have one's surroundings of such a sort as to inculcate and develop a love of flowers, of pictures, and of good books. The school should be a place for supplying those conditions in such a way as to help on the harmonious development of the child's character.

The rural school, as every other school, should be so conducted as to bring about the formation of desirable habits. Among those are regularity, punctuality, obedience, industry and self-control. Children who observed beautiful things, nicely arranged inside the school and outside the school, would also be more likely to observe graceful

speech, good manners and unflagging truthfulness, and to become respectful and reverent towards the beautiful and the good.

PUBLIC INTEREST AND SUPPORT.

It is not to be expected that simple consolidation of schools will create, at once, all the desirable conditions which have been referred to. If the centralizing plan enables communities and school authorities to do better for education than they can do at one-room schools, it is so far a helpful one. In 1902 I visited consolidated rural schools in Iowa and Ohio; and after personal examination and inquiry, am convinced that many valuable advantages can be gained through the system of consolidation as it might be applied in Canada.

As far as could be learned at the places visited, there was almost entire unanimity of opinion among the ratepayers respecting the marked success and superior advantages of consolidation. While the scheme was brought into effect under vigorous discussion and considerable opposition, the adverse criticism has been disarmed by the results of experience. With few exceptions 'the kickers,' as they are designated locally, were ratepayers without children, or persons who feared some depreciation in the value of their own property, or, worse still, some increase in the value of the property nearest to the centralized school. Experience has proven the former of these two fears to be groundless.

A PIONEER IN CONSOLIDATION.

Six years ago Gustavus township, in Ohio, became the pioneer in that part of the United States in the consolidation of rural schools. There were nine school districts in the township, and as many small schools. Then the districts were united into one, and a central school was erected at a cost of \$3,000. It is a frame building, containing four large, well-lighted class-rooms, a small recitation room and cloak rooms. Instead of nine teachers in little isolated schools, there are now a principal at a salary of \$65 per month, and four assistant teachers at \$32 or \$30 per month, in the united school. Nine nice-looking vans are used to convey the children from and to their homes. These wagons, or school vans, have comfortable seats running lengthwise of the vehicle, waterproof canvas covers and spring gearings. Before consolidation the average attendance at the schools in that township was 125. On the day of my visit it was 143 out of an enrolment of 162. The year before consolidation the cost of maintenance of the nine schools of the township was \$2,900. Four years afterwards the cost of the centralized schools, including the conveying of the children, was \$3,156, being an increase in the expenditure by the township on its school system of \$256. However, the average attendance at the central school was so much greater than at the single district schools, that the cost of education was decreased \$1.59 per pupil on the average attendance. Moreover, three years of high school work is carried on in the consolidated school, and the total cost of that is included in the \$3,156.

OTHER TOWNSHIPS.

The people in five adjoining townships have also consolidated their schools. Those of Gustavus, Kinsman and Johnston were selected for special scrutiny as presenting typical phases of the system. The schools of Kinsman and Johnston townships have been consolidated for two years. At Kinsman the enrolment of pupils was 146, and eight school vans were engaged; at Gustavus 162 pupils were on the roll, and nine vans were used; at Johnston 175 pupils attended school, and ten vans were in service.

Although the weather was rainy, and the roads as bad as three inches of snow mixed with mud could make them, the children jumped out of the vans at Kinsman school with dry clothing and dry feet. Little boys and girls of six years came three

and four miles in comfort. The teachers said they came regularly in all weathers. Under the small district system in the township of Kinsman, two years before, the enrolment at the schools was 110; under the consolidated system it has risen to 146, without any appreciable difference in the total enumeration of children in the township. The high percentage of young children (6 to 8 years) and the large proportion of older pupils (from 15 to 20 years) were eloquent of the gains in education during the first two and the later years of school life in a rural district.

SCHOOL VANS.

The contracts for conveying the children to and from the schools are given to responsible persons. These are under bond to provide comfortable covered wagons and to comply with the regulations of the school authorities. The vans hold from 15 up to over 25 each. The longest route traversed was about six miles. The vans arrive at the school at from ten to twenty minutes before nine o'clock, the hour at which the forenoon session begins. The afternoon session closes at half-past three o'clock. At Johnston school where the closing exercises were observed, the children were in the vans starting for their homes in less than five minutes afterwards.

At Kinsman the eight vans are engaged at an average cost of \$2.07 per school day; at Gustavus, the nine vans at an average of \$1.25; and at Johnston, the ten vans at an average of \$1.27. The price of the vans was from \$100 to \$135 each. All the vans observed were drawn by two horses each. The drivers who were conversed with said they had not known of any injury to any child. They said the regulations required them to wait for the children at any house for a period not exceeding two minutes; that as a matter of fact, it was rarely necessary to wait one minute, and that a case where the children missed the van or were left from being late was very uncommon. The average attendance at the schools confirmed all that.

THE SCHOOL WORK.

Mr. R. H. Cowley, Inspector of Schools for the county of Carleton, Ontario, accompanied me; and through the courtesy of the principals of the three schools we were enabled to obtain some information not hitherto recorded. That included, among other matters, the free expression of the opinions of the pupils themselves on the relative merits of the old and the new. Mr. Cowley summed up these points as follows:

‘About five per cent of the pupils preferred walking to the old school rather than riding in a van to the new school. Almost without exception these were pupils who now have four to six miles of a drive in place of a former walk of one mile or less. At the same time these pupils expressed a decided preference for the work of the consolidated school. The evidence of both pupils and teachers goes to show that riding in the van is alike comfortable and free from injury to even the youngest children. The increased enrolment of pupils and the very high percentage of regularity in attendance struck the visitors as remarkable. For the past three months the daily average attendance at the Kinsman school, which is in that respect typical, was 91 per cent of the number of pupils enrolled. More striking in this connection is the fact that the percentage of regular attendance among the youngest pupils—those of five, six and seven years—was as high as that of any other class.’

‘The three lowest grades overtake the work ordinarily covered by the public schools in Ontario. The highest grade goes as far as our continuation class, Grade A, being competent to accomplish about three years of high-school work.’

The large classes and larger schools seemed to meet the social needs of the children better than the small isolated schools. The older boys and girls, grown into young men and women, had opportunities for going on with a high-school education without going away from home. There was said to be, and there appeared to be, a great de-

velopment of a spirit of co-operation and of mutual good-will and friendship from the wider and closer acquaintance of the children of the locality, and from the new interests created and recognized as being common to all and for the common good.

SUMMARY OF ADVANTAGES

The carrying out of the plan for the consolidation of rural schools and the free transportation of pupils affords many advantages.

(1) It ensures the engagement and retention of some teachers of higher qualifications and longer experience in rural schools.

(2) It creates conditions for a proper classification of pupils and for such a grading of the schools as permits the pupils to be placed where they can work to the best advantage for their own improvement.

(3) It permits the time-table to be so arranged that teachers can give each class and every pupil in the class more direct help and supervision.

(4) It makes it practicable for rural schools to enrich their course for all pupils, by nature study, manual training and household science, as well as by better music; and for advanced pupils, by instruction in agriculture, horticulture and allied subjects.

(5) It provides the beneficial influences of fairly large classes of pupils of about equal advancement (a) by more companionship; (b) by friendly rivalries to excel; (c) by children learning from each other and (d) co-operating under careful discipline; and (e) by class enthusiasms.

(6) It results in the attendance of a larger number of the children in the locality, particularly of those under the age of eight years and of those over fifteen years.

(7) It brings about a more regular attendance of pupils of all grades of advancement; and encourages punctuality and promptness. The school van calls at a stated hour; instead of that being a cause of trouble in families it has been found a decided boon.

(8) It guards to a greater extent the health and welfare of the children. Transportation in covered vans protects them against wet feet, wet clothing and consequent sickness.

(9) It makes it convenient for boys and girls in rural districts to obtain a high school education without leaving home. That keeps boys and girls suited for life in rural localities in those localities.

(10) It leads to the erection of better school buildings and more satisfactory equipment in all the requisites of a good school.

(11) It stimulates the interest of the parents and the public in the schools, and brings to the people of a township an institution in which all can have an equal interest and a worthy pride.

(12) It establishes greater sympathy between the homes and the schools, enlarges the influence of the school, identifies it with the best efforts and aspirations of the people, and leads to the formation of reading circles and clubs for mutual improvement.

(13) It may lead to an improvement of the public roads in the country parts.

(14) It would facilitate the rural free delivery of the mail.

By Mr. Stephens:

Q. They do away with the little schools?

A. Altogether.

By Mr. Ross (Ontario):

Q. Is it cheaper?

A. No, but it has cost less per average of daily attendance. The facts in regard to the township of Gustavus, Ohio, are that formerly they had nine little schools and these cost \$2,900 a year. After consolidation they built a consolidated school and floated debentures to pay for it in ten years. The annual cost for maintenance was \$3,156, or \$256 a year more than that of the little schools.

Q. And there were 37 more pupils in attendance?

A. Yes.

By Mr. Robinson (Elgin):

Q. Does that include the cost of conveyance?

A. Yes.

By Mr. Thomson (Grey):

Q. And they will have a better class of teachers who will be better paid?

A. Yes.

Q. They say that the great difficulty now in small rural schools is that teachers are too young for the teaching of children.

A. There they have a good man at the head of each consolidated school, paying him \$60 to \$70 a month, and three women assistants, instead of nine teachers in the rural schools. The cost was from \$1.25 to \$2.07 a day on the average, for each van, for conveying the children.

By Mr. Ross (Ontario):

Q. Were these covered conveyances?

A. Yes. Some are being built in Ottawa to-day.

EXTENT OF CONSOLIDATION IN UNITED STATES.

The system of consolidation of rural schools has been introduced to a greater or less extent into seventeen states. The object appears to have been to secure a more regular and larger attendance of the children, and in some cases to reduce the cost of education. So far as reported upon, the cost under consolidation with the free conveyance of the children has been less than formerly (under the old system of one-room school sections) in 70 per cent of the cases considered, the same in 18 per cent, and more in 12 per cent. Wherever consolidation has been adopted, the people have not gone back to the old isolated section plan. The boys and girls in rural districts receive a high-school education without going from home. On one occasion I paid a visit to the great library of Congress at Washington. It cost a fabulous sum to build. It makes one think of the description of the New Jerusalem with its wealth of colour, its superb massiveness, its beauty and grandeur; but in my opinion the consolidated schools I saw in rural parts of Ohio and Iowa were a greater tribute and credit to the enlightenment and advancement and high civilization of the people of the United States than the splendor and magnificence of the home of books at the Capitol. Through the consolidated schools the children are being led into paths of intelligence, ability and usefulness. Nothing paves the way to those acquirements like making smooth the path of little feet to come dry to school, and to come willingly every day.

THE PLAN FOR CANADA.

We in Canada want something better than mere consolidation. We want not simply consolidation, but consolidation, where conditions are suitable for it, as a means towards an improved time table and a course of study and methods of study sufficient

for present day needs. This is what Sir William Macdonald is going to do—put object lessons of consolidated rural schools in each of the five provinces, Ontario, Quebec, Nova Scotia, New Brunswick and Prince Edward Island. He will build the schools outright, equipping them for manual training, nature study with school garden, and household science which is a course dealing with foods, clothing and house-keeping.

By Mr. Wright:

Q. Is there any kindergarten?

A. That is part of the education in the best schools now. These consolidated schools will be under the control of the school boards and provincial authorities as before consolidation. The schools will be equipped by the Macdonald Fund, but the school boards will manage them.

By Mr. Hughes (Victoria):

Q. You have made arrangements with the provincial authorities?

A. Yes, to carry it on in conjunction with them.

Further than that, the Macdonald Rural Schools Fund meets, for a period of three years, the additional expense of the consolidated schools over the cost of the small rural schools. There is a fund in my name, and I stand in as a new ratepayer; and for three years the school authorities assess me, as administrator of the Macdonald Fund, for what the consolidated school costs more than the little schools. The school sections and other authorities contribute exactly the former expenditure; and the Macdonald Fund meets the rest. The school remains under the management of the local authorities, and the extra cost is met by the Macdonald Fund for three years to enable the people of these five provinces to have this object lesson and experiment in education. Further particulars regarding that are contained in the letter and memorandum which I sent to the Premier of the province of Ontario on the subject. I shall add them as an appendix.

To begin and carry on that work it was necessary that it should not be conducted in an amateurish way. I conferred with the educational authorities in the provinces and got the names of one or two of their best teachers for the rural schools in each province. For New Brunswick I took the science master of the Normal School, a former country teacher; and another teacher who was eminently successful with a school garden of his own. I obtained suitable men from the other provinces. I made a class of these teachers from Canada, and sent them to the University of Chicago, where they had a nature study course under Professor Coulter and Professor Jackman. Then they were sent to Cornell University to get short lessons on horticulture, agriculture, and insect life, with special reference to rural schools. Then they were sent to New York, to Teachers' College in connection with Columbia University, to receive special training there on how to make themselves effective as school teachers in this newer education. These men are now back at the Ontario Agricultural College at Guelph, each working his own garden plot as each child will work at the school. The consolidated schools are to be built this summer and it is expected that they will be in operation next autumn.

Q. Have you ever made an estimate of the length of the route? You say it is six miles square in the school section?

A. That is so in the United States; in some cases in Canada the route will be five miles long.

Q. Have you ever figured out what the comparative cost would be supposing you had vans in each school section as it is at present, compared with the cost to the township board?

A. I think it would not cost much more than maintaining the schools now if the consolidated schools provided only the same sort of education; the extra cost will come in in providing training and study by the new and at first more expensive methods of manual training, nature study and household science.

By Mr. McEwan:

Q. Did I understand you to say that the cost of conveying the children was \$1.27 per day?

A. It cost \$1.27 for the day, for each van, at Johnston, Ohio. There were eight or nine vans.

By Mr. Robinson (Elgin):

Q. Is there any arrangement for these vans to take the mails as they go along?

A. Not yet; but I have been discussing that with some of the public men.

We are also selecting a group of five rural schools in each of the five provinces already named. A travelling instructor will be placed in charge of the nature study at these schools, spending one day at one school and the next day at another. Each school will be provided with a school garden with a plot for each child of suitable age. We will maintain that also for three years, to see how far we can help the rural schools in that way, in localities where consolidation is not as practicable.

Sir William Macdonald further gave the sum of \$175,000 to the Ontario government to provide buildings at Guelph to train teachers now in the service, for this new education. Two buildings are being erected there. Courses of instruction will be provided by the Ontario government without fees to teachers from all the five provinces for three years. The Departments of Education in Nova Scotia and in Ontario have already established courses in household science in the normal schools. No doubt that will be extended in all the provinces. When pupils who pass through these consolidated 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 without any special short courses at the Macdonald Institute at Guelph or elsewhere. The institute with its short courses is intended to meet the needs of teachers now in the service of rural schools, to give them a chance to qualify; and the normal schools of the various provinces will doubtless provide for the training of the teachers who attend them hereafter. After the three years expire, the Macdonald Institute, having served its first purpose, is to become an integral part of the Ontario Agricultural College, to give farmers' daughters as good an opportunity for advanced education suitable for rural life as has been hitherto available to farmers' sons.

By Mr. Ross (Ontario):

Q. Where is the first school to be situated, in Ontario?

A. The consolidated school is to be near the Agricultural College at Guelph, and the group of schools with the travelling instructor, in Carleton county.

Q. Are they open for inspection, or at this season?

A. Not yet; the men are merely grading and fencing the gardens. In Quebec the consolidated school will likely be at Ormstown and the group of schools in Bromo county. In New Brunswick the consolidated school will be at Kingston and the group of schools near Woodstock. In Nova Scotia the consolidated school will be at Middleton and the group of schools near Truro. In Prince Edward Island the consolidated school will be at Hazelbrook, and the group of schools near Kensington. These specially trained teachers are under engagement to serve for three years to carry on this work.

It seems desirable also that the teachers in rural schools hereafter should be able to carry on advanced educational work at these rural schools by applying the lessons learned in the school gardens to agriculture and horticulture. The government of Nova Scotia is advancing in that direction; they have decided to build a college of agriculture at Truro and to co-ordinate its work with the normal school. The legislature of Nova Scotia also voted \$36,000 at the last session, to promote and assist in the consolidation of schools.

By Mr. Wilson:

Q. We have not any in Ontario!

A. Not yet.

Q. When I was a boy, Dr. Ryerson took this matter up.

A. Quite so. This manual training idea has been entertained by leaders of education for many years, but there were no means to bring about its introduction generally until Sir William Macdonald came forward. What Sir William and I were able to do, was to give effect to the judgment of the best teachers by organizing it and applying it in a systematic manner. I hope this movement will make the educational uplift of an agricultural college in each province available to all the rural schools. In that respect the Ontario Agricultural College at Guelph has certainly come far short of doing all the good educationally it might have accomplished. It has not touched the rural schools at all. The agricultural colleges should train men and women who would become teachers in rural high school work, teachers in consolidated schools, and in evening continuation classes in rural schools. Very few farm boys ever can go to college. When the agricultural colleges are identified with the normal schools, they will have new and wider channels through which to pass on the benefits which their courses of study and training confer on their graduates. That is what is being organized now in the province of Nova Scotia; I hope it will be carried out also in New Brunswick and in the other provinces.

By Mr. Sproule:

Q. There must be a number of rural schools that are taught by girls, and how will they get the benefit of this education unless the whole province is organized into these groups?

A. I have been discussing this matter with the provincial Departments of Education, and I think I am within the mark when I say that in ten years after the Macdonald object lessons have been given, we will have over 1,000 consolidated rural schools in Canada, such as I have been describing this morning, with manual training, nature study in school gardens, and household science. I think that this movement will grow and spread faster than the cheese factory or the creamery movements grew. Even if we get only 400 or 500 consolidated rural schools in ten years, then the boys and girls who come from these schools, having received training in their school days, in manual training, in household science and nature study, as I have mentioned, will become the teachers in rural schools. In that way, even in districts where the small rural schools cannot be consolidated, the benefit of the training which has been given in those consolidated schools will be passed on by the agency of the teachers who have come from them. Thus it will become possible to get the advantages of the education and training of the agricultural colleges, through the consolidated rural schools, out to practically all the rural schools.

By Mr. Ross (Ontario):

Q. I notice that one of the magazines in the United States has taken up this question of consolidated schools, and said something about your work in connection with this matter, and has spoken of it very highly indeed.

A. Yes; an article has appeared in the *World's Work*. It is by George Iles, a Canadian now living in New York. He asked me for printed matter on the subject, which I was glad to supply. His article is receiving a great deal of attention in the United States. This is one of the great movements in the educational world; and I think Sir William C. Macdonald on that account deserves the greatest appreciation and credit for the way in which he is using his money. As I have said, since the committee is willing, I shall supplement these remarks by a few appendices.

By Mr. Sproule:

Q. I would like to say one thing with regard to the work that Prof. Robertson has been doing in connection with these schools. It had occurred to me that it is

outside the proper domain of this Committee's work. We have had in the past in this Committee a conflict between the rights of the provinces and the rights of the Dominion. The matters referred to us by the House of Commons are such things relating to agriculture and colonization as may be brought before this Committee; and we are instructed to inquire into these matters and report to the House with such suggestions as our wisdom and judgment should dictate. But in doing that we have had two or three times a little trouble about travelling outside our domain. I think Prof. Robertson is doing a good work; but I might remind him that he is employed as Commissioner of Agriculture and Dairying, and he may find people disposed to find fault with him and say that in the work that he has been speaking to us about this morning he is interfering with the work of the educational departments of the provinces. It is to avoid this that I make this suggestion, because I think if we do not attend to it earlier or later, we may have some trouble and conflict. It is the easiest matter in the world to raise a little jealousy and a little feeling over the action of the Dominion parliament in connection with the work and the rights and the duties, and the jurisdiction of the provincial parliaments to whom are always assigned the duty of education, and the organization as to what kind of education they shall have in the provinces. This is a matter we should bear in mind.

A. I think if Dr. Sproule had been here when I spoke at the last meeting of the Committee he would have said that this aspect of the question has been fully considered. I do not undertake any of this work as Commissioner of Agriculture. I have the authority of the Minister of Agriculture to use my own time, as a citizen, in this work; and all the work I have done has been done entirely in accord with and through the provincial departments of education. My own preference was that Sir William Macdonald should put the work in the hands of a committee or a board of trustees. I thought that would have been an effective way. But Sir William Macdonald in substance said to me that if I would make the plans, administer the work and handle the money, he would provide sufficient funds to carry it through. He has done that so cheerfully that that side of the movement also has been to me a constant incentive and inspiration. The question was whether I would do it or not have it done at this time. I am doing it in my own time as a private citizen, and there is not a dollar of Dominion money going into the work.

By Mr. Wilson:

Q. You were asked to give this lecture by the Committee, I believe?

The CHAIRMAN.—Exactly so.

A. I have been guarded in the point raised, so as to avoid any conflict with the provincial authorities. I may tell the Committee that while I have worked hard for many years and enjoyed doing that in both capacities—as Commissioner of Agriculture and as a private citizen—if it came to abandoning this educational work or resigning my position as Commissioner of Agriculture, I would resign the Commissionership of Agriculture, because I am convinced that this educational work is of far more importance to the progress and welfare of the Dominion than my work as Commissioner of Agriculture.

By Mr. Robinson (Elgin):

Q. Dr. Sproule raised the question about seven-tenths of the teachers being females. Have you found any difficulty in that regard? Do you not find female teachers as good in this work as the male teachers in the United States?

By Mr. Sproule:

Q. I but thought when he stated that the agricultural college, that the work that is done there, was not as far-reaching in its ramifications as it might be if the school teachers in the rural schools were taught at the agricultural college, I merely sug-

gested that the bulk of the students at the normal schools were females, and that seven out of ten teachers were females, so that the pupils would not be able to get in the rural schools, where these female teachers taught, the benefit of the educational advantages at the agricultural colleges, as the female teachers do not attend there.

Mr. STEPHENS moved:

That this Committee now tender their thanks to Professor J. W. Robertson, Commissioner of Agriculture and Dairying, for the valuable and progressive character of the evidence furnished by him before the Committee in the current session of parliament.

The Committee notice with much pleasure the reported recognition by two of the leading Canadian universities of Professor Robertson's energetic administration in the public service of Canada, and the signal benefits that have resulted to her agricultural interests therefrom, by conferring upon him the educational degree of Doctor of Laws, and we hereby tender to Doctor Robertson our cordial congratulations upon his well-merited honours.

Mr. Ross (Ontario.)—I congratulate the country on having a gentleman in its service who is able to put before us so ably the matters which Prof. Robertson has detailed to us this morning.

Mr. Ross (Victoria.)—I have great pleasure in seconding the motion, and I may say there is no man in Canada who is so highly appreciated by the people of Nova Scotia as is Prof. Robertson.

The motion being put from the Chair, was unanimously adopted.

Having read over the preceding transcript of my evidence of May 1 and May 12, I find it correct.

JAS. W. ROBERTSON,
Commissioner of Agriculture and Dairying.

APPENDICES.

APPENDIX A.

BEING copy of a letter and memorandum sent to the Premier of the Province of Ontario *re* the Macdonald Institute at the Ontario Agricultural College at Guelph, Ontario.

OTTAWA, ONT., January 6, 1902.

The Honourable
G. W. Ross, Premier,
Toronto, Ontario.

SIR,—Sir William C. Macdonald, of Montreal, has authorized me to lay before you the following proposals. He desires to offer such assistance as he can towards enabling and encouraging public school boards and other educational authorities, (1) to improve the opportunities for education in schools in rural districts in Canada, and (2) to carry on the work at them in such a manner as will prepare and incline mos. of the boys and girls to live contentedly in the country and to follow occupations there with intelligent ability, happiness and success.

Taking cognizance of the reforms and advances in education in other countries, Sir William desires to hasten the introduction of such changes and additions as may be deemed desirable improvements in Canada.

For the purpose of this communication, these may be put into two divisions, viz. :—

(First), nature study and manual training as means of developing those faculties and forming those habits in children which the usual school studies, from books and theoretical subjects by themselves, leave almost wholly untrained and unformed,—for instance, observing carefully the common things around them, and investigating and tracing results back to their causes, all of which lead to a love of labour, a love of ideas and a love of nature; and

(Second), domestic economy or household science as a means of developing the intelligence of girls and young women and of training their minds and hands to those forms of ability which in after-life may be applied to home-making.

Consequently, I am authorized to say that if your government approves of the proposals presented in the accompanying memorandum and agrees on behalf of the province of Ontario:

First, to provide instructors at the Ontario Agricultural College for short courses in nature study for teachers from rural schools, without charging any fee for a period of three years;

Second, to provide a course or courses of instruction and training in domestic economy or household science of such sort and under such conditions and regulations as the government of the province may see fit to make; and

Third, to maintain, for those purposes, such buildings and equipment as are mentioned under parts 3 and 4 of the plan proposed,

JAMES W. ROBERTSON

Sir William C. Macdonald will donate a sum of \$125,000* to provide, for the province of Ontario, buildings and equipment as are indicated in a general way in parts 3 and 4 of the plan proposed.

In addition, he will provide a fund to give effect to parts 1 and 2 of the plan for the improvement of education at rural schools as indicated, for a period of three years.

If you desire to suggest any modification or change which would make the plan proposed more effective for the purpose indicated, Sir William requests me to say that he will be grateful for such contributions to its improvement as your experience and interest in the subject enable you to make.

I have the honour to be, sir,
Your obedient servant,

(Sgd.) JAS. W. ROBERTSON.

*Afterwards increased to \$175,000.

MEMORANDUM OF A PLAN PROPOSED FOR THE IMPROVEMENT OF
EDUCATION AT RURAL SCHOOLS; AND FOR THE ESTAB-
LISHMENT OF COURSES OF INSTRUCTION AND
TRAINING IN DOMESTIC ECONOMY OR
HOUSEHOLD SCIENCE AT THE
ONTARIO AGRICULTURAL
COLLEGE.

Having respect to the well known sayings, 'Seeing is believing' and, 'We learn by doing,' the plan which Sir William C. Macdonald offers as one desirable to carry out is presented in four parts,—three under the division of nature study, and the fourth under the division of domestic economy or household science.

PART I.—THE CONSOLIDATION OF RURAL SCHOOLS.

Part 1 of the plan is intended to give object lessons of improvements in education from the consolidation of five, six or more small rural schools into one central graded school, with a school garden and a manual training room as part of its equipment.

It is proposed to offer financial assistance to one locality in Ontario and one locality in each of the provinces of Quebec, New Brunswick, Nova Scotia and Prince Edward Island, to induce the people to undertake and carry on object lessons of improvements in education, with school gardens and manual training, all under the control of the regularly constituted educational authorities.

Notes on Part 1.

(a) In our educational progress not much has been done for the girls and boys in rural schools compared with what has been given to and made possible for the children in towns and cities. The difficulties which have hindered progress are said to have been: Want of money, the fact that the time table was already too full, and the fact that teachers are not properly qualified to take up better methods.

(b) In some districts the area for the rural school is so small that the lack of funds and the isolation of school authorities cause them to let educational matters

drift into weakness and inefficiency. If in some district an object lesson could be given of the consolidation of five, six or more weak rural schools into one well-appointed and well-sustained central school, that might lead to general improvement.

(c) In some of the United States the consolidation of rural schools has already been carried out to a considerable extent with very great gain in the quality of the education given in the locality, and in most cases with no increase of cost to the ratepayers.

It has not been difficult in Canada to arrange routes for the collecting of milk or cream to one central place; it would not be more difficult to arrange for the collection of children on various routes to one central school; and certainly the children of a neighbourhood are best worth the care, thought and spending of anything in the locality.

PART 2.—GROUPS OF RURAL SCHOOLS WITH A TRAVELLING INSTRUCTOR FOR EACH GROUP.

Part 2 of the plan is for the purpose of giving object lessons of the value of school gardens and nature studies at individual rural schools as a part of general education, to be begun by means of a travelling instructor, who would visit and spend one-half day per week with the children and teacher at each school of a group for a term of three years, or until a considerable number of suitably trained and qualified teachers would be available to carry on such work themselves at rural schools.

It is proposed to offer financial assistance to one group of ten or fewer schools in one locality in Ontario, and to one group in each of the provinces of Quebec, New Brunswick, Nova Scotia and Prince Edward Island, to enable the people to provide school gardens, and to undertake and carry on object lessons and experiments with improvements in education, all under the control of the regularly-constituted educational authorities.

Notes on Part 2.

(a) A group of ten, or fewer, rural schools in some locality should be chosen in which to give an object lesson or illustration of this better education. If a competent travelling instructor were engaged to spend half a day of every week at each of these schools, he would be able to train teachers and children into methods of nature study. The travelling instructor would be a specialist in nature study and nature knowledge as well as a good teacher in the subjects which have been common in the schools in the past.

(b) It would certainly be of great benefit to the children at any rural school if a school garden containing plots for every child above the age of eight or nine years could be provided. Those plots would be used (like slates of large size) to put 'things' on, to be rubbed off when they had served their educational purpose. The gardens could be used, as they are at a few schools in England, and as they are at many schools on the continent of Europe, for the training of children to habits of close observation, of thoughtfulness, and of carefulness.

(c) If one may mention a method which would seem to include the best, it would be that of tracing results back to their causes, until that habit of mind is formed in the children. When a child does anything with its own hands, such as planting a seed, pulling up a plant, making examination of the changes which have taken place during its growth, making a drawing of it, mounting it and putting its name on it, he receives impressions by the sense of touch, he sees, he hears the noise of the movements he makes, and he smells the soil and the part of the plant with which he is dealing. Those impressions are definite and lasting; they add to the sum of sensuous knowledge; they prepare for the perception of logical knowledge, in a common-sense way.

(d) For instance, if a child should plant ten grains of wheat in a row, ten grains of Indian corn in another row, ten sets of potatoes in another row, and ten clover seeds in another row; if he should pull up one each of these plants every week, and find out

for himself, under the guidance of a competent teacher, what had taken place in the meantime; if, further, he should make drawings of the plants and a written statement of the progress of growth, as he was able to observe it, from week to week, such a course, occupying only half a day per week, would certainly give a boy or girl a great amount of exceedingly useful information, and also habits of investigation, observation, comparison and thoughtfulness, which are immensely desirable. These would quicken the intelligence of the children, and lead them to have both desire and capacity for living happily amid rural surroundings.

(e) Progress in agricultural education would be made by starting evening continuation classes in the rural districts in connection with those groups of schools, or in connection with the consolidated schools mentioned under Part 1. These would provide the true solution for education in agriculture and horticulture of youths in the country at the ages from fourteen to eighteen. One or two central schools of each of these groups might be chosen for evening continuation classes. At these, what the young lad, working on the farm, saw during the day with his uninstructed eye, could be explained to him in such a way as to awaken a new interest in his work, and greatly increase his ability for enjoying it and carrying it on well.

PART 3.—SPECIAL COURSES OF INSTRUCTION AND TRAINING FOR TEACHERS OF RURAL SCHOOLS.

Part 3 of the plan has for its object to assist in providing short courses of instruction and training for teachers for rural schools, who desire to qualify themselves in these newer subjects and methods of education.

It is proposed to offer to the province of Ontario at the Ontario Agricultural College at Guelph, a gift of a building, including a nature study plant-growing house, and such equipment as may be required, in addition to what is there at present, for the accommodation of teachers while taking short courses in nature study for rural schools.

Notes on Part 3.

(a) To make possible such additions and changes in rural schools as have been indicated, and to let them be capable of anything like general adoption and extension, there is need for further preparation of the teachers. No doubt teachers in Canada would be willing to qualify themselves for this better sort of work, if an opportunity were provided. It seems desirable and practicable to give such teachers the opportunity which they need.

(b) At several places in England in 1901, short courses of instruction and training in methods were provided for periods of only three weeks, with the expectation of doing a good deal towards qualifying teachers to carry on their work in a better way. In Canada, it might be possible to arrange for courses of training for thirty teachers at one place, each course to last for two or three months. During this course the teachers would carry on nature study work as they expected the children to do it at the school afterwards. A plant-growing house for nature study work would not be so costly for construction and maintenance that it would be a very difficult accommodation to have, for the winter and spring months when outdoor work would not be practicable.

(c) If provision should be made for a class of about thirty teachers at each short course, it is hoped that the government of each province concerned would arrange (by providing a substitute or otherwise) to enable approved teachers in rural schools to take the short course without loss of situation or loss of salary.

(d) For a period of three years, at least fifteen teachers of rural schools outside the province of Ontario are to be eligible to receive instruction and training in each short course without any fees.

(e) For the first year, it is proposed to make, (1) an allowance at the rate of five cents per mile for the actual distance from the teacher's school to the Ontario Agricultural College, to help in meeting travelling expenses, and (2) an allowance of \$25 to help in meeting the expenses of board and lodging, to every approved teacher who has taken a full course satisfactorily.

PART 4.—DOMESTIC ECONOMY OR HOUSEHOLD SCIENCE.

Part 4 of the plan is intended to assist in providing courses of instruction and training in domestic economy or household science for young women from country homes, in order that they may have opportunities for acquiring practical and advanced education not less suitable and helpful to them, than the present courses at the Ontario Agricultural College are beneficial to young men, who take them with earnestness and cheerfulness.

It is proposed to offer to the province of Ontario at the Ontario Agricultural College at Guelph, (1) a residence building to accommodate not less than 100 female students and teacher-students, daughters of farmers and others, and (2) class rooms, kitchen laboratories and other equipment necessary for courses of instruction and training in domestic economy or household science.

Notes on Part 4.

(a) Suitable courses (long and short) which would include instruction and training in dairying, poultry-keeping, bee-keeping, fruit-growing and general gardening, with particular attention to the cultivation of vegetables and flowers, would be highly valuable to the young women who were able to take them, and through their influence would be of far-reaching benefit to the rural schools, and the rural population generally.

(b) Special regard might be given to properly arranged lessons and exercises,—

(1) in the selection, preparation and serving of foods in the most nourishing, wholesome, appetising, and economical manner;

(2) in sewing, dressmaking and the simpler forms of household art and decoration; and

(3) in the care and cleansing of rooms, fabrics, sinks, &c.;

All to the end that the pupils might know the relation of those things to health and comfort, and might observe those methods and practices which make for good living in simple, clean, well-kept and beautiful homes in the country.

SUMMARY.

Such in outline is the plan which Sir William C. Macdonald offers to assist in putting into effect as mentioned in my letter of even date. Besides the benefits which have been alluded to, there would doubtless be others no less important to the pupils, the teachers and the schools. The knowledge gained by observation, experiment and experience would indicate what changes or modifications of the plan might be made with most advantage to the people in rural communities.

(Signed) JAS. W. ROBERTSON.

OTTAWA, Ont., 6th January, 1902.

APPENDIX B.

BEING copies of forms of agreements used with school boards under the Macdonald Rural Schools Fund.

Memorandum of provisional agreement between the school trustees, or commissioners, acting for the ratepayers of the first part, and James W. Robertson, of Ottawa, in the province of Ontario, acting for the Macdonald Rural Schools Fund, of the second part.

Section I. Whereas it is desirable to offer some assistance to enable the people of and the neighbourhood to undertake and carry on an object lesson for improvements in education, through the consolidation of five or more rural schools into one central graded school, with a school garden and nature study, manual training and household science as parts of the school course, all under the control of the regularly constituted educational authorities:

Section II. Therefore, if the school trustees or commissioners, acting for the ratepayers of the school district or section, agree to unite with the school trustees or commissioners, acting for the ratepayers of at least four of the neighbouring school districts or sections, in the establishment and maintenance of a consolidated school, for a period of three years;

(1) By sending the children of school age to such school;

(2) By managing and maintaining the school through a board or committee, duly constituted to represent the people of the whole area, in a manner satisfactory to the Department of Education of the province; and

(3) By paying annually, during the three years, towards the cost of carrying on such consolidated school, a sum from each school district or section concerned, not less than the average amount expended annually for and in connection with maintaining the school in that district or section during the three years of 1899, 1900 and 1901;

Section III. Then, James W. Robertson, of the second part, acting for the Macdonald Rural Schools Fund, will agree:

(1) For the purpose aforesaid, to meet the cost of erecting an addition to some school building now in the locality, or to meet the cost of erecting at some point approved by him, a school building adequate to accommodate the children of the school district or section and at least four of the neighbouring school districts or sections;

(2) To meet the cost (a) of a school garden, (b) of preparing it for educational work for nature study, and (c) of providing equipment for the manual training and household science divisions; and

(3) To provide the school vans necessary for conveying children from the districts or sections outside of to the central graded school.

Section IV. In case the revenue from school districts or sections as already stated, and other sources such as municipal or provincial grants, are not sufficient to carry on the central graded school as outlined, then James W. Robertson, of the second part, will pay such a sum as may be agreed upon annually to meet the deficiency in revenue for a period of three years.

Section V. In consideration of the financial assistance, mentioned in Section IV, the board, or committee, who manage the consolidated rural school, are to employ as the head master, and as the instructors in manual training and household science, teachers who are approved for those positions by the Department of Education, and are recommended by James W. Robertson, acting for the Macdonald Rural Schools Fund.

Section VI. It is understood that the provincial government and municipal authorities will pay annually to the board or committee not less than have been paid by them respectively during any one of the three years of 1899, 1900 and 1901, for the schools and teachers in the area served by the consolidated school; and will pay also to the board or committee any special grants which may be provided for any locality to encourage or assist (1) the consolidation of schools, (2) the conveyance of pupils, (3) the use of a school garden and nature study, (4) manual training, or (5) household science.

Section VII. It is expected (although this expectation is not to be held as constituting any part of this agreement), that the provincial government will pay one-half the cost of conveying the children to the central school from districts or sections in which the small schools are closed.

Agreed to on behalf of the ratepayers of the school district,
or section

At. in the }
Province of. }
this. day of. 190 . }

Agreed to on behalf of the Macdonald Rural Schools Fund.

At. in the }
Province of. }
this. day of. 190. . }

Memorandum of provisional agreement between the school trustees, or commissioners, acting for the ratepayers of of the first part,
and James W. Robertson, of Ottawa, in the province of Ontario, acting for the Macdonald Rural Schools Fund, of the second part.

Section I. Whereas it is desirable to offer some assistance to enable the people of to undertake and carry on an object lesson for
improvements in education at rural schools, through the use of a school garden and nature study, all under the regularly constituted educational authorities;

Section II. Therefore, if the school trustees, or commissioners, of the school district or section agree to make nature study, through
the use of a school garden and otherwise, part of the regular public school course;

Section III. Then James W. Robertson, of the second part, acting for the Macdonald Rural Schools Fund, will agree:

(1) To meet the cost (a) of a school garden, and (b) of preparing it for educational work in nature study;

(2) To pay the salary and expenses of a travelling instructor, to spend at least half a day per week with the children and teacher at such school, for one year, or

until a teacher suitably trained and qualified, is available to the trustees to carry on such work; and

(3) To meet the expense of maintaining the school garden for three years.

It is understood that the provincial government or municipal authorities will pay, towards the cost of such nature study and school garden work, the full share of any special grant or grants which may be provided by them for any locality for such purposes.

Agreed to on behalf of the ratepayers of the school district, or section

At.in the }
Province of. }
this.day of.190.. }

Agreed to on behalf of the Macdonald Rural Schools Fund.

At.in the }
Province of. }
this.day of.190.. }

APPENDIX C.

BEING copy of a letter and memorandum sent to the Premier of the province of New Brunswick *re* a college of agriculture for the province of New Brunswick.

OTTAWA, March 14, 1903.

HON. L. J. TWEEDIE,
Premier of New Brunswick,
Fredericton, N.B.

DEAR MR. TWEEDIE.—Herewith I enclose you a memorandum *re* the establishment of a college of agriculture in the province of New Brunswick.

You will observe that I have outlined the organization into six departments. The illustration stations and farm would not be a necessary part of a college of agriculture, especially during its first few years. A department of agriculture and live stock would include the dairying service which has been carried on in the province during a number of years. The departments of nature study and horticulture might be united under one head; and some of the more scientific parts of the work might be carried on by the science master at the normal school, or by one of the departments of the university. The departments of agricultural chemistry and physics and of English and mathematics could be carried on in connection with the work at the normal school, or in connection with the work at the university. To begin with, there would really be need for only two very competent men; but I would like to have an opportunity of discussing carefully what may be available at the university or at the normal school before giving a matured opinion on that matter. That would apply also to any estimate I might make for the costs of buildings required.

However, I am quite clear in my opinion regarding the desirability of having the college of agriculture closely identified with the normal school, and, as far as practicable, with the university. In many cases in the past, colleges of agriculture have been institutions carried on apart from the regular public school system of the provinces or states in which they were located. That has hindered their usefulness in very many respects.

If you desire it, I shall be glad to visit Fredericton some time after the legislature assembles, in order to confer with your government on this matter and to furnish any information to the legislature which I may be able to impart, on education for the improvement of agriculture in the province of New Brunswick.

Faithfully yours,

(Sgd.) JAS. W. ROBERTSON.

MEMORANDUM *re* THE ESTABLISHMENT OF A COLLEGE OF AGRICULTURE IN THE PROVINCE OF NEW BRUNSWICK.

The educational system of the province should be considered as a whole.

I. The course or courses of study should primarily be such as,—

- (1) To develop good sturdy characters, and right habits in the pupils; and
- (2) To qualify them to fulfil the duties of citizenship with intelligence.

II. Efforts to develop the elementary and secondary schools should be directed towards adjusting the subject-matter and methods of instructing the boys and girls, to prepare them for engaging successfully in occupations suited to their own locality or to some other part of the province.

(1) Nature study and school gardens; manual training in drawing, cardboard and wood; and domestic economy, are all in that direction.

(2) Some assistance for the extension of these has been and will be provided from the Macdonald Funds in the province.

III. Some work of a specialized character should be carried on in the high schools or academies and in the consolidated rural schools, preparing for technical education in agriculture and industries. After a time the work would become partly technical for the older and more advanced pupils.

IV. There is urgent need for one institution of college rank, where agriculture and horticulture would be taught effectively in short and long courses.

(1) The working farmers (in all the departments of soil, plant, and animal culture) require opportunities for short practical courses of instruction and training, adapted to them in their present circumstances and degree of intellectual advancement.

(2) The young men and women who are to teach the elements of agriculture, horticulture and industries and the sciences relating to them, to advanced classes in consolidated rural schools and academies, require a thorough training. A college of agriculture and industries, co-operating with the normal school, would furnish the best means in sight for giving such a training to teachers.

(3) A college of agriculture would be invaluable in improving the educational powers of successful farmers. They would become more efficient as instructors and leaders in farmers' institutes. The best knowledge of the best farmers would thus be made available to all the farmers in the province.

A college of agriculture would provide for co-ordinating and employing all the educational factors and forces of the province for the benefit of those engaged in its agriculture, horticulture and industries.

The following is the *order* (in time) in which it would appear desirable to have the matters to be dealt with taken up by the college:—

A. Short courses of instruction in special subjects, such as cultivation of soils, improvement of seed grains and crops, live stock, horticulture, dairying, poultry-keeping, bee-keeping, blacksmithing, carpentry, building construction, &c. These as already referred to under IV (1).

B. Courses in nature study and domestic economy and in the sciences relating to agriculture,—

(1) For teachers-in-training who intend to teach in rural schools; and

(2) For young men and women who intend to become instructors in the elements of agriculture and industries and the sciences relating to them, in the academies and consolidated rural schools; these as already referred to under IV (2) and under III.

C. (1) Co-operation with farmers' institutes; as already referred to under IV (3):

(2) Direction of illustration stations throughout the province upon lines somewhat similar to those which have been very useful under the experimental union of the Ontario Agricultural College:

(3) Supervision of research work.

D. A three or four year course for regular students intending to follow occupations connected with agriculture, horticulture or industries, and leading to the degree of Bachelor of Science in Agriculture.

ORGANIZATION.

The work might be carried on in six departments:

- (1) Agriculture and live stock.
- (2) { Nature study.
- (3) { Horticulture.
- (4) Agricultural chemistry and physics.
- (5) English and mathematics.
- (6) Illustration stations and farm.

APPENDIX D.

BEING a suggestive course of nature study, by J. W. Hotson, M.A., Principal of the Macdonald Consolidated School, Guelph, Ont., and Geo. D. Fuller, B.A., Instructor in Nature Study, Macdonald Rural Schools, Knowlton, Que.

A SUGGESTIVE COURSE IN NATURE STUDY.

This course is intended to be merely suggestive. The aim throughout has been to indicate the character and scope of the work to be attempted in the different grades, rather than to specify the exact material to be used. In doing this we have tried to make it sufficiently definite and suggestive to be of use to the inexperienced teacher, yet not so detailed as to interfere with the individuality of a resourceful teacher.

This course may be modified to suit the requirements of any particular locality as the teacher may see fit.

The work prescribed for each grade is more than will probably be accomplished, so that the inexperienced teacher may select his work rather than be compelled to take definitely prescribed topics.

In ungraded or partially graded schools the work set forth may be combined as the teacher may see fit.

It is thought desirable that each class should be encouraged to grow something of merit for exhibition, either at the country fair or at the school.

The books referred to in the course of study and in the appended list are intended merely as guides for the teacher and in no case should they be regarded as text-books for the pupils.

ONTARIO AGRICULTURAL COLLEGE,
GUELPH, ONT., May 11, 1903.

GRADE I.

Autumn work.—Plant crocus bulbs for spring blooming.

General form of a few familiar trees, *e.g.*, maple, elm, spruce; and observations of the forms of the leaves of familiar trees.

General appearance and use of fruits; *e.g.*, apples, plums, grapes, beech-nuts, butter-nuts, &c.

Observe the forms and learn to distinguish a few of the commonest wild flowers, *e.g.*, aster, golden rod, &c.

Observe in a general way the habits of caterpillars in breeding cages, noting feeding and changes.

General study of landscape, representing it in water colours.

Winter work.—Study of pet and domestic animals, *e.g.*, cat, dog, mouse, cow, &c. Observe in a general way their form, color, size, shape of mouth, teeth, tongue, and habits of eating; ears and hearing; eyes and eye-sight; whiskers and feeling; feet and claws; their coverings and their young, and their calls and cries. The care necessary to keep them in comfort.

General study of landscape, representing it in water colours.

Spring work.—Plant and care for some early vegetables, such as pease or radishes. Observe the growth and flowering of crocus.

Observe the forms and learn to distinguish a few of the commonest wild flowers, *e.g.*, trillium, dandelion, &c.

Use of plants and their parts to man:

- (a) Useful roots, as carrots, beets, &c.
- (b) Useful stems, as flax, trees, wheat (straw), &c.
- (c) Useful leaves, as lettuce, cabbage, &c.
- (d) Useful fruits, as strawberries, currants, &c.

Development of tent caterpillar from egg to pupa.

General study of landscape, representing it in water colours.

GRADE II.

Autumn work.—Plant tulips and observe seasonal changes in garden plants.

Dispersal of seeds and fruits. (Seed Dispersal, by W. J. Beal).

- (a) Seeds and fruits carried by the wind, *e.g.*, dandelion, thistle and milkweed.
- (b) Those carried by animals, *e.g.*, burdock, cocklebur, and sticktight (Bidens).
- (c) Those carried by birds, *e.g.*, seeds of cherries, raspberries, &c.
- (d) Those which float on water, *e.g.*, cress, grass and sedges.
- (e) Explosive fruits, *e.g.*, violet, witch-hazel, and jewel-weed (Impatiens).
- (f) Those carried by man, especially seeds of useful plants.

Habits of squirrels. Observe their food and habits of eating, the collecting and storing of nuts, their nests, their alarm calls, their walking, running and climbing, their taming and care as pets.

Observe hibernation of animals, *e.g.*, toad, frog, chipmunk, &c.

Make breeding cages and bring in caterpillars; observe their habits and changes.

Collect cocoons. (Comstock's Insect Life.)

The departure of birds, noting the direction they go and why. Singly or in flocks?

Which leave first? Dates of departure.

General study of landscape, representing the seasonal changes in water colours.

Winter work.—Forms of water at various temperatures, including simple studies of condensation, evaporation, and crystallization.

Effect of heat on various substances, *e.g.*, sealing-wax, iron, &c.

Estimation of distances, weights and measures.

General study of landscape, representing the seasonal changes in water colours.

The use of animals and their parts to man, observing the different uses made of the flesh, hides, fur, hair, bones, hoofs, horns, blood, fat, &c.

Spring work.—Plant and care for two easily-raised vegetables, *e.g.*, beans and squashes.

Growth and flowering of tulips.

Plant beans or pumpkins and study germination and growth.

Observe the life history of two or three insects, *e.g.*, grasshopper, cricket, mosquito, &c.

Note the emergence of moths from cocoons.

Study the feeding, nesting and habits of a familiar bird, such as the robin.

Observe the return of birds.

General study of landscape, representing the seasonal changes in water colours.

GRADE III.

Autumn work.—Plant narcissus and look after garden plot.

Coloration and falling of forest leaves. What trees and what parts of trees colour first? What part of the leaf is coloured first? What colour appears first (red or yellow)? Does colour appear before frost? Is frost the cause of colour?

General study of the autumn aspect of forest trees: deciduous habits, evergreens, &c.

Life history of the potato beetle.

Make a terrarium and observe the habits of such animals as toads, snakes, beetles, &c.

Recognition of ordinary soils, *e.g.*, clay, sand, gravel, loam, leaf-mould, &c.
Study the landscape and represent its changing appearance in water colours.

Winter work.—General study of the winter aspect of forest trees, including types of branching, character of bark, kinds of buds, &c.

Study the habits of the rabbit or hare.

Apparent motion of the sun and moon.

Recognition of the constellations of Orion, Ursa Major, Cassiopeia, &c.

Recognition of common rocks, as granite, limestone, sandstone, &c., noting their uses to man.

Study the landscape and represent its changing appearance in water colours.

Spring work.—Plant and care for garden vegetables, such as potatoes and sun-flower.

Observe the development of narcissus.

General study of the spring aspect of forest and fruit trees, including bursting of buds, flowering, formation of fruit and leaf arrangement.

Habitat of common wild flowers. Flower calendar. (Nature Study and Life, p. 104, by C. F. Hodge.)

Life history of potato beetle.

Work and habits of earthworms. Observe their general external structure, movements, food and home, and notice the burrows and casts and infer their use to the worm and to man.

The observation of the habits of such animals as toads, salamanders, or snakes, in a terrarium.

Action of water on land, erosion and formation of land.

Study the landscape and represent its changing appearance in water colours.

GRADE IV.

Autumn work.—Plant hyacinths and look after garden plot.

Observe the preparation of plants for winter, *e.g.*, defoliation, winter buds, rosette arrangement of leaves, underground stems, &c.

Simple experiments in plant physiology. (See Atkinson's 'First Studies of Plant Life.')

Habits of wasps, mud daubers, social wasps, &c. (Comstock's 'Insect Life.')

Observe how insects breathe and eat.

Study the breathing pores of such insects as grasshopper, cricket, cabbageworm, &c., and compare the feeding habits of various caterpillars, beetles, &c.

Life histories of two or three injurious insects, *e.g.*, codlin moth, currant caterpillar, cabbage-worms, &c.

Make aquaria and study habits of water animals, such as fish, water beetles, &c.
Observe the effect on animals and insect life of a film of oil on the water.

Winter work.—Special study of forest trees. Observe the appearance and character of wood, the meaning of rings of growth, and medullary rays, the appearance and cause of knots. Compare the strength and elasticity of similar pieces of different woods, testing by weights. Study the more obvious abnormal features of trees attacked by fungous diseases, such as black knot, bracket fungi, witches' brooms, &c.

Simple experiments in plant physiology. (See Atkinson's 'First Studies of Plant Life.')

Observe the adaptation of parts of grass-eating animals to habits, *e.g.*, tongue and teeth of cow, horse, sheep, &c.

Observe the adaptation of parts of flesh-eating animals to habits, *e.g.*, teeth of cat and dog, feet and claws of cat, &c.

Study habits of familiar winter birds, such as crow, chickadee, woodpecker, sparrow, snow-bird, blue-jay, &c.

Recognition of the planets and a few conspicuous stars, such as Polaris, Sirius and Vega.

The movements and phases of the moon.

Spring work.—Plant and care for garden vegetables, such as lettuce and Indian corn.

Observe the development and flowering of hyacinths.

Simple experiments to show the effects of light and water on plants. (See Atkinson's 'First Studies of Plant Life.')

Life histories of two or three injurious insects, *e.g.*, codlin moth, currant caterpillars, cabbage-worm, &c.

Note songs of a few common birds.

In aquaria, study the development of frogs or toads from the egg.

Study also the habits and food of other water animals, *e.g.*, fish, caddis flies, water-beetles, &c.

Flower calendar (continued).

Butterfly calendar.

GRADE V.

Autumn work.—Study the methods of propagation of woody plants by cuttings, using such plants as currant, gooseberry and grape.

Study plant colonies, such as free swimming plants, sphagnum bogs, swamp-forests, cat-tail and reed-grass societies. (See Coulter's 'Plant Relations.')

Study mosses and ferns, noting general characteristics, habits of growth, and methods of reproduction.

Study the habits and characteristics of bees and ants.

Special study of two or three familiar birds, as blackbird, bobolink, or cat-bird, noting home, movements, food, plumage, song, &c.

Winter work.—Physical analysis of soil. Find by experiment the amount of water, humus, clay, gravel, and sand present in different soils.

From these constituents make different soils, such as clay loam, loam, sandy loam, gravelly loam, &c.

Study a few minerals, *e.g.*, quartz, mica, felspar, and calcite, noting colour, form, hardness, &c.

Simple experiments in heat, including co-induction, radiation and absorption.

Gravitation, pendulum and clock.

Simple experiments with light, using prism, mirror and lenses.

Observation of the movements of stars, planets and constellations.

Spring work.—Plant and care for garden vegetables, such as cucumbers and tomatoes. (*Note.*—Flowering or ornamental plants may be substituted for vegetables in this or in the following grades, if thought desirable.)

Study the methods of propagation of herbaceous plants by cuttings, using such plants as petunia, geranium and begonia.

Ecological study of stems, leaves and roots. (See Coulter's 'Plant Relations.')

Mosses, ferns and horse-tails, noting the commoner species, general characteristics, habits of growth and methods of reproduction.

Study the habits and characteristics of bees and ants.

Special study of two or three familiar birds, as blackbird, bobolink, or cat-bird, noting home, movements, food, plumage, eggs, young, &c.

Butterfly calendar (continued).

Bird calendar.

GRADE VI.

Autumn work.—Learn to recognize the poisonous plants and trees of the locality. A few of the more conspicuous fungi, noting particularly their manner of growth, colour, &c. Make cultures of moulds and other fungi.

Study the characteristics of two or three great plant groups, *e.g.*, crow-foot and rose families.

Identification of the weeds of the locality, noting their original habitat.

Study of spiders, noting external structure, food, webs, &c.

Special study of a few birds, as in Grade V., considering especially their beneficial and injurious relation to the farmer. ('Birds in Ontario in Relation to Agriculture,' by C. W. Nash.)

Observation and systematic record of the weather.

Winter work.—Simple experiments to show the difference between physical and chemical changes, and between mechanical mixtures and chemical compounds, *e.g.*:—

(a) Physical changes: water, ice, steam.

(b) Chemical changes: heat sugar and it becomes carbon.

(c) Mechanical mixture: sulphur and iron filings.

(d) Chemical compound: heat sulphur and iron filings and produce iron sulphide.

Use of thermometer, barometer and rain-gauge.

Simple experiments in the use of levers.

Tie various knots and splice ropes, applying the knowledge to the making of halters.

Study of winter birds (continuation of autumn work.)

Spring work.—Plant and care for garden vegetables, such as melons and celery.

Learn to recognize the poisonous plants and trees of the locality.

Study the characteristics of two or three great plant groups, *e.g.*, lily and crow-foot families.

Give especial attention to experiments on larger garden plots. These plots may be used for experiments in:—

1. Rotation of crops, *e.g.*, 1st year, hoed crops, as roots and corn; 2nd year, grain; 3rd year, clover.

2. Methods of culture, *e.g.*, flat and hilled culture of potatoes; ensilage corn sowed broadcast and planted in drills and in hills various distances apart.

3. The effect of various fertilizers on different plants.

4. Results from selected seed.

Study of spiders, noting external structure, food webs, &c.

Special study of a few birds as in Grade V, considering especially their beneficial and injurious relation to the farmer.

Bird calendar (continued.)

GRADE VII.

Autumn work.—Give especial attention to experiments on larger plots, as outlined in Grade VI.

Study characteristics of two or three great plant groups; a continuation of the work of Grade VI.

Study of weeds and the most efficient methods for their eradication.

Pruning grapes and small fruits and preparing them for winter.

Relation of insects to pollination of flowers (continued from Spring).

Study slugs and snails, noting external structure and habits.

Study clams or oysters, noting habits, food, &c. Observe shell, mantle, siphon, body, foot and gills. Study habits in aquaria.

Nature calendar, a record of natural phenomena in chronological order.
The use of the rain-gauge and the recording of the amount of rain-fall.

Winter work.—Experiments in plant physiology. (Macdougall's Nature and Work of Plants; Atkinson's First Studies of Plant Life.)

Analysis of plants to determine the amount of water, dry matter, carbon and ash in their composition.

The atmosphere and its composition, showing presence and amount of oxygen, nitrogen, carbon dioxide, organic matter, and other impurities. Simple experiments to show the union of oxygen and carbon in combustion.

A study of minerals and rocks.

Simple experiments in electricity and magnetism. (Brittain's Manual and Outlines for Nature Lessons; or High School Physics, Pt. II.)

The use of rain-gauge and the recording of the amount of rain-fall.

Spring work.—Plant and care for two or three vegetables such as carrots and beets, using different varieties for comparison.

Give particular attention to the experiments on the larger plots, as outlined in Grade VI.

Study of weeds and the most efficient methods for their identification.

Practice in correct methods of pruning fruit trees. Top grafting, apples, pears,

&c.

Study characteristics of two or three great plant groups—a continuation of the work in Grade VI.

A comparative special study of the germination of various seeds such as pine (*Gymnosperm*), Indian corn (*Monocotyledon*), ash, castor oil bean (*Ricinus*), maple and squash (*Dicotyledons*). (See Mrs. Wilson's Nature Study, p. 133.)

The relation of insects to the pollination of flowers. What insects visit flowers? How do they carry pollen? How does each kind of the insect reach the nectar? Which insects are robbers and which are true pollen carriers? The use of pollen by insects.

Observe the habits of humming-birds, particularly in relation to flowers.

Study of galls, noting their cause and general structure.

Nature calendar, a record of natural phenomena in chronological order.

The use of the rain-gauge and the recording of the amount of rain-fall.

GRADE VIII.

Autumn work.—Give special attention to experiments on larger plots, as outlined in Grade VI.

Budding fruit trees, apples and pears.

The care of small fruits and their propagation by layering and stolons.

Collection of seeds, especially those of economic importance, including grain, seeds of weeds and seeds of forest trees.

Study of plant families represented in the garden, *e.g.*:

(a) Gourd family, including squash, pumpkin, cucumber, melons and gourds.

(b) Cabbage family, including cabbage, cauliflower, kale, Brussel sprouts, Kohl rabi, &c.

(c) Grass family, including the various grasses and grains.

Injurious fungi and the use of fungicides.

Injurious insects and the use of insecticides. (See Weed's Insects and Insecticides, and bulletins available from Department of Agriculture, Ottawa, and Guelph Agricultural College.)

Nature calendar, a record of natural phenomena in chronological order.

Winter work.—Experiments in plant physiology.

Identification of weed seeds in grains by comparison with samples collected in the autumn.

Simple experiments on frictional electricity and magnetism.

Simple experiments in chemistry.

Distinguishing characteristics of the great groups of vertebrates, viz., mammals, birds, reptiles, amphibians and fishes.

Spring work.—Plant and care for some of the rarer garden vegetables, e.g., salsify, egg-plant and pepper.

Give especial attention to experiments on larger plots, as outlined in Grade VI.

The care of small fruits and their propagation by layering, stolons, &c.

Study plant families represented in the garden, e.g. :—

(a) Gourd family, including squash, pumpkin, cucumber, melons and gourds.

(b) Cabbage family, including cabbage, cauliflower, Kale, Brussels sprouts, Kohl rabi, &c.

(c) Grass family, including the various grasses and grains.

Injurious fungi and the use of fungicides.

Injurious insects and the use of insecticides.

Root-grafting of apples, pears, cherries, &c.

Nature calendar, a record of natural phenomena in chronological order.

BOOKS FOR REFERENCE.

Nature-study.

| | |
|------------------------------------------------------------------------------------------|--------|
| Nature-study and Life; C. F. Hodge Ginn & Co., New York | \$1 50 |
| Nature-study in Elementary Schools; Mrs. Wilson G. N. Morang & Co., Toronto | 0 90 |
| Handbook of Nature-study; Lange G. N. Morang & Co., Toronto | 1 00 |
| Nature-study and the Child; C. B. Scott D. C. Heath & Co., Boston | 1 50 |
| Nature-study for Common Schools; W. S. Jackman Henry Holt & Co., New York | 1 20 |
| Guide to Nature-study; M. R. Crawford The Copp Clarke Co., Toronto | 0 90 |
| The Nature-study Idea; L. H. Bailey Doubleday, Page & Co., New York | 1 00 |

Plant Life.

| | |
|-------------------------------------------------------------------------------------------|------|
| Trees of the Northern United States; A. C. Apgar American Book Co., New York | 1 00 |
| Familiar Trees and their Leaves; S. Mathews D. Appleton & Co., New York | 1 75 |
| Corn Plants; F. L. Sargent Houghton, Mifflin & Co., Boston | 0 60 |
| First Studies in Plant Life; Geo. F. Atkinson Ginn & Co., Boston | 0 60 |
| How to Know the Wild Flowers; Mrs. Wm. Starr Dana Seribners, New York | 2 00 |
| Nature's Garden; Neltje Blanchan Doubleday, Page & Co., New York | 3 00 |

MACDONALD FUNDS FOR EDUCATION

| | |
|------------------------------------------------------------------------------------------|-------|
| Mushrooms; Geo. F. Atkinson Andrus & Church, Ithaca, New York.. | 3 00 |
| Plant Relations; J. M. Coulter G. N. Morang & Co., Toronto.. | 1 10 |
| Plant Structures; J. M. Coulter G. N. Morang & Co., Toronto.. | 1 20 |
| Ferns and their Haunts; Clute.. | |
| Seed Dispersal; W. J. Beal Ginn & Co.. | 0 40 |
| Ten New England Blossoms; C. M. Weed Houghton, Mifflin & Co.. | 1 25 |
| The Weeds of Ontario; F. C. Harrison Dept. of Agriculture, Toronto.. | free. |
| The Nature and Work of Plants; D. T. Macdougall G. N. Morang & Co., Toronto.. | 0 80 |
| Fungi and Fungicides; C. M. Weed Orange, Judd & Co., New York.. | |

Animals.

| | |
|------------------------------------------------------------------------------------------------|------|
| Animal Life; Jordan and Kellogg D. Appleton & Co., New York.. | 1 25 |
| Squirrels and other Fur Bearers; John Burroughs Houghton, Mifflin & Co., New York | 1 00 |
| Manual of the Vertebrates; D. S. Jordan A. C. McClueg & Co.. | 2 50 |

Birds.

| | |
|--------------------------------------------------------------------------------------------------------|-------|
| Bird Life (coloured plates); F. M. Chapman Appleton & Co., New York.. | 5 00 |
| Bird Neighbours; Neltje Blanchan Doubleday, Page & Co., New York.. | 2 00 |
| Birds of Village and Field; Florence Merriam Houghton, Mifflin & Co., New York.. | 2 00 |
| Our Native Birds; D. Lange G. N. Morang & Co., Toronto.. | 1 00 |
| Birds of Ontario; Thos. McIlwraith Wm. Briggs, Toronto.. | 2 00 |
| Handbook of the Birds of Eastern North America; F. M. Chapman; Appleton & Co., New York.. | 3 00 |
| The Birds of Ontario in Relation to Agriculture; C. W. Nash Dept. of Agriculture, Toronto.. | free. |

Insects

| | |
|---------------------------------------------------------------------------------------------------|------|
| Insect Life; J. H. Comstock G. N. Morang & Co., Toronto.. | 1 25 |
| The Insect Book; L. O. Howard Doubleday, Page & Co., New York.. | 3 00 |
| Manual for the Study of Insects; J. H. Comstock Comstock Publishing Co., Ithaca, N.Y.. | 3 75 |
| Bee People; M. W. Morley A. C. McClueg & Co.. | 1 25 |

| | |
|------------------------------------------------------------------------------------|------|
| The Butterfly Book; W. J. Holland Doubleday, Page & Co., New York. | 3 00 |
| Every Day Butterflies; S. H. Scudder Houghton, Mifflin & Co., New York. | 2 00 |
| Insects and Insecticides; C. M. Weed | |

Physics, Chemistry, &c.

| | |
|--------------------------------------------------------------------------------------------------|------|
| High School Physics (of Ontario), Parts I. and II | |
| High School Chemistry (of Ontario). | |
| Easy Experiments in Physics; P. Smith Morse Co. | 0 60 |
| Simple Experiments for the School-room; J. F. Woodhull E. L. Kellogg & Co., New York. | 0 50 |
| Home-made Apparatus; J. F. Woodhu E. L. Kellogg & Co., New York. | 0 50 |
| Inductive Elementary Physical Science; F. H. Bailey D. C. Heath & Co., Boston. | 0 50 |
| Manual and Outlines of Nature Lessons; J. Brittain J. & A. McMillan, St. John, N.B. | |

