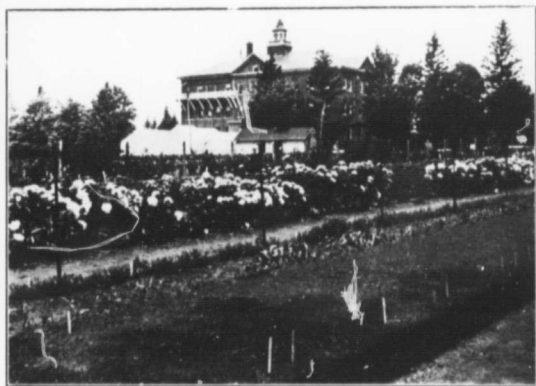


Volume XXVI

Number 10

# O.A.C REVIEW

JULY  
1914



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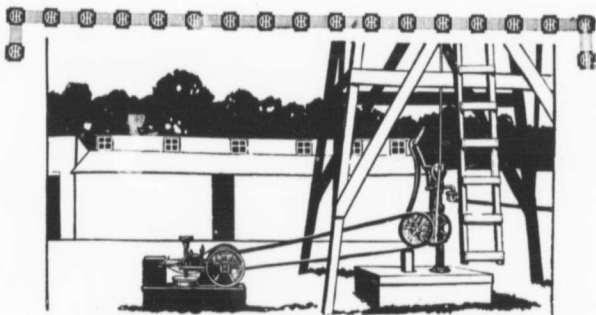
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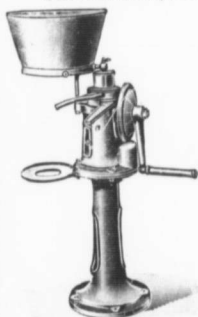
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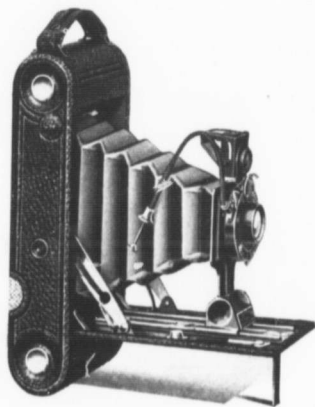
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# THE O. A. C. REVIEW

THE DIGNITY OF A CALLING IS ITS UTILITY

VOL. XXVI.

JULY, 1914

No. 10

## Rural Depopulation

BY R. L. VINING, B.S.A.

**ONE** of the striking revelations of the last census was the extent to which the population of rural Ontario had decreased. In 1901, that population was 1,246,969. In 1911, it had fallen to 1,194,785, a decrease in ten years of 52,184, or 4.2 per cent. On going back to 1891, when the rural population numbered 1,295,323, we have a decrease of 100,358 or 7.7 per cent.

There are seventy-three rural districts as classified in the last census. Thirteen of these, East and West Algoma, Brant, North Essex, Halton, Lincoln, East Middlesex, Muskoka, Nipissing, Thunder Bay, and Rainy River, Welland, Wentworth, South and Centre York, show an increase in population during the past decade.

These localities owe their increase in most part to one or two causes. Cheap land, an influx of population to the recently opened districts in the northern part of the Province account for the greater increase.

In the older settled districts where an increase is noted it may be due, as in East Middlesex, which is reported to have gained 586 in population in ten years, to the growth of villages in close proximity to the urban centres. There are three such villages near London—Pottersburg, Chelsea Green, and Lambeth—which have been taken into the City since 1911. Undoubtedly the population of East Middlesex would show a decrease now.

Again, certain districts like Welland owe their increase to specialized farming, as gardening and fruit-growing. On the other hand some districts show a very much greater decline in population than others. South Bruce lost 16.9 per cent. of its rural population. Both Grenville and North Middlesex suffered a loss of one-sixth of their population in the period mentioned. The rural population of Dufferin in 1901 was 16,586 and this had fallen to 13,512 in 1911, a loss of 3,074. Examples such as these might be multiplied, but the reader is referred to the complete list on page 32.

By way of contrast, let us look for a moment at the different figures given for urban population. In 1901, Ontario's urban population was 935,978, while in 1911 it stood at 1,328,489, which means a gain of 392,511 or 41.9 per cent. Evidently if increase of population is any criterion by which to judge, conditions in Ontario are decidedly in favor of the cities.

Decrease in rural population is far reaching in its effects. The situation is tersely stated in a question asked by Professor Carver: "Is it the most or the least capable individuals who leave the farms and migrate to the cities?"

This question is not easily answered; perhaps it can never be definitely answered.

It may be noted in passing that the average number of persons per family

in Ontario according to the last census was 4.6, while the average for Canada was 4.8 as compared with 5.0 per family in 1901.

The reader may recall that in the localities with which he is familiar, there has been more or less complete change of ownership of farms within the past thirty years. The writer knows more than one locality where there is not left one individual who bears the name of the families who owned the land when his father was a boy. They have all gone. This change is true of many sections.

We can only answer Professor Carver's question from our own personal observations. It is not difficult to recall many instances where the "most capable" farmers have bought out their less capable neighbours who have gone to the city or to regions where land is cheaper.

Only the thrifty hardworking family can afford to hold the land in the face of rising values and increased taxes. The shiftless and the ne'er-do-well are inevitably crowded out. And in so far as this force has been at work, and there is reason to believe that it is a powerful factor in the sorting of Ontario's rural population, the rural communities are better off than formerly.

Again it must be remembered that rural Ontario has been paying "blood tribute" to the cities for years in the persons of her brightest and most ambitious sons and daughters. It is one of the penalties the "national policy" has exacted. The loss of this best blood cannot but weaken and detract from the quality of life in rural places. It is the inevitable result of a natural law.

The decline in rural population grows out of economic conditions. Men move to the centres where they can make the best living for themselves and their

families. This consideration suggests one of the most puzzling phases of the problem that presents itself to the student of modern conditions. In face of the fact that the prices for Agricultural products have been steadily rising, many farmers and others are claiming that the business of farming does not yield profitable returns on labour and investment. What is the explanation?

The decline of rural population has been due in part to the inducements of permanent employment offered by the city industries. This fact, perhaps, more than any other, is responsible for the acuteness of the farm help problem; and it suggests the solution of that problem.

Again the decline in population means the abandonment of certain lands that are incapable from the very poverty of the soil of supporting a population. Such areas should be taken over by the people and planted with the right sort of trees, thus putting the land to a productive use.

In part, this decline is due to the removal of well-to-do farmers to cheaper lands. This has been a potent influence in the changing of the rural population all through the history of American Agriculture.

This decline in the rural population is not to be interpreted as a decline in agriculture. While the ratio of the rural population to the whole population has decreased very considerably, it is encouraging to note that the decrease in the number of occupiers of land is not material. A glance over the following table taken from the Census Bulletin No. VII is quite illuminating:

	OCCUPIERS OF	1911	1901
Under 1 acre	.....	14,570	20,073
1 to 5 acres	.....	18,414	18,639
5 to 10 acres	.....	8,614	7,474
11 to 50 acres	.....	35,382	34,912
51 to 100 acres	.....	77,171	76,164

101 to 200 acres.....	54,344	52,534
201 acres and over.....	14,765	14,331

It will be observed that the number of people on small areas, that is to say, from one acre up to five acres, decreased by a very considerable percentage between 1901 and 1911; and that on the larger farms there was a material increase all the way down the line. Probably the settlement of new areas is responsible in part for the increase, but it is a healthy sign nevertheless.

From the same bulletin we glean further that the number of owners increased from 179,791 in 1901 to 183,843 in 1911, and that the number of renters decreased from 32,360 to 30,634 in the same period. As regards owners and tenants, the number decreased from 11,976 in 1901 to 8,783 in 1911.

These facts are very encouraging in that they show that more farmers are holding in their own names the land which they work. The system of tenantry that is so pernicious in its effects on agriculture in some countries is not increasing in Ontario. On the contrary there has been a marked increase of owners with a corresponding decrease of renters during the decade just passed.

As has already been pointed out the number of occupiers of land farms has not decreased materially. According to the census families are not so large as formerly. The minister of Education reports that the rural school population in 1911 was 228,617 or 49.7 per cent. of the total school population; a marked decrease from a rural school population in 1903 of 260,617 or 57.8 per cent. of the total.

The depopulation of rural districts can be explained in part by the loss of the craftsmen from the villages. The woodmaker and carriage maker, the tanner, the tailor, the shoemaker and

the harness maker are all but forgotten in many Ontario villages where once they plied their trade and added to the variety and interest of the community life.

This loss finds its cause in the spirit of organization and combination that has distinguished this century. Local production for local use has largely ceased. Much of the work that was formerly done in rural communities has been transferred to the cities.

It has been claimed that his change is an economic gain, and we believe this claim is open to question. Certainly it has proved a very serious social loss.

Another tendency that is yearly becoming more and more a menace to the country villages is the growth of the mail order system of shopping. It is becoming the habit of many families to ask for credit for certain perishable or bulky necessities at the village store while sending their cash to the mail order house for those commodities that can be conveniently purchased in this way.

This, too, is claimed as an economic gain. We doubt it. In the first place it must force up the prices of those commodities which the dealer is permitted to handle. He must make his living, and if sales are smaller profits must be larger. In the second place, if credit is asked for, the dealer's profit must include interest on the money he has invested.

Still further the money sent to the city mail order house does not readily return to the community. The dealer pays his taxes, he helps support the school, the church and the social activities of the community. He has a right to a legitimate reward for the services he renders. More loyalty to local enterprise is sadly needed in many of our rural communities.

To go still further into the question,

the attractive catalogue advertising induces the purchase of many articles that are of little use. The habit grows on people. The mail order business prospers and the family accumulate an increasing quantity of more or less useless "junk" and it is very questionable if better value is given by the mail order houses for the money paid than could be obtained at the local stores. The experience of many people has often proven that such is not the case.

### Some Problems in Farm Practice

Broadly speaking agriculture in Ontario is prosperous. This prosperity is due in part to improved methods of farming; but largely to good prices for farm products. The general advance in the price of farm lands may also be a factor.

There has been improvement more or less marked in the character of the farm home and its surroundings. Many of the farms are equipped with windmills for pumping water, and the barns and houses are equipped with a more or less complete system of waterworks. Other districts again show a lamentable lack of conveniences both in houses and barns.

Up to the present time practically all the brains and energies of the agencies working in the interests of agriculture have been bent forward increasing the yield of the cultivated crops. This has been well and very necessary. Good work has been accomplished but there remains much to be done.

Mr. C. C. James, formerly Deputy Minister of Agriculture for Ontario, once remarked that Ontario had entered upon a great upward movement in its agriculture, and that if the work being done could be extended the crops of Ontario could be doubled in value in ten years.

The Commission of Conservation reports (Vol. III) that only twenty-four per cent. of the farmers who were visited reported an increase in their crop yields during the past ten years. The Commission did not visit all the worst or all the best farmers. Dr. Robertson states, further, that the value of the field crops of Canada could be doubled in ten years if all the farmers would adopt the systems and methods employed on the best ten per cent. of the farms visited in 1911. Evidently there is still large room for improvement in the methods followed on Ontario farms.

Further study of the reports of the Commission reveals some of the causes that are preventing a realization of the possibilities of Agriculture in this Province.

#### ROTATION OF CROPS

In certain parts of the Province farmers were encountered who hardly knew what was meant by the term systematic rotation of crops. A systematic rotation—a rotation that always has the crops in the right sequence for the locality, for fertility and for cleaning the land—was not generally followed. It is stated that the practice of a systematic rotation of crops over the whole Province would bring about Mr. James' anticipation of the farm crops twice as large as they are.

#### SEED SELECTION

It was found that "a good many farmers were selecting their seed by choosing the best part of a crop in the field, storing that by itself, cleaning it thoroughly and sowing it." The importance of good seed cannot be emphasized too strongly. Every year there is a loss hard to estimate from the sowing of seed that will not give a stand of plants sufficient to guarantee even a fair crop.

A few years ago a competition was arranged for boys and girls on 1400

farms in Canada to pick out the big heads from the vigorous plants of wheat and oats on the farms. Applying the percentage of increase, resulting from this system of selection applied three successive crops to the field crops of Canada, Dr. Robertson states that the increase would be sufficient to fill 1500 miles of railway cars. Surely there is need that Ontario farmers pay more attention to the quality of the seed they sow.

#### DISEASES OF PLANTS

Anyone who visits many Ontario grain fields when the oats have headed is always impressed by the prevalence of smut in a large percentage of these fields. The Commission states that the estimated loss per farm due to smut alone ranges between \$75.00 and \$100 per farm. Treatment of seed with formalin is a simple remedy. Experiments have shown it to be absolutely effective in controlling this disease.

#### WEEDS

Weeds are a source of large annual loss to Ontario farmers. The farmer's life has come to be a continual struggle against them, and in many localities the weeds appear to be getting the better of it. Some farms are reported as "now abandoned." The weeds hold undisputed possession. In the better districts however, it is encouraging that crop rotation and after harvest cultivation are found effective in controlling them.

#### CLOVER

In Ontario on the farms surveyed by the Commission it is found that forty-five per cent. of the acreage of the grain crops was sown with clover, and in general the practice is on the increase. As a means of enriching the soil through the storing of nitrogen and of adding humus from the decay of roots, stems and leaves clover is a very effective aid

in maintaining the fertility of the soil.

#### DAIRYING

This is an important industry in Ontario. In the Western part of the Province it is made to fit in with a system of mixed farming, while the Eastern Ontario farmer devotes himself almost exclusively to this industry.

A study of the details gives one cause to wonder where many farmers make money under existing methods and management. The authorities tell us that the average production for the cows of the Province is under 4000 lbs. per annum. When the cost of producing milk is figured on, the present cost of feed, labor and interest on investment, one wonders how some farmers can stay in the business at all.

The writer is indebted to Professor J. B. Reynolds for the following figures for a herd of nine cows comprising three grade Shorthorns and six grade Holsteins.

The winter daily ration for these cows is made up as follows:

#### *For cow in full milk—*

8 pounds of grain.
20 pounds of roots.
40 pounds of ensilage.
10 pounds of hay (clover).

#### *For Cow going dry*

2 pounds of grain.
10 pounds of roots.
40 pounds of ensilage.

If we take the average of these two rations as a probable average winter ration for the herd the daily cost of feeding the cow would be about as follows:

5 lbs. of grain at \$22.00 per ton	5.5c
15 lbs. of roots at .06 per bu.	1.5c
40 lbs. of ensilage at \$3.00 per ton	6.0c
5 lbs. of hay at \$10.00 per ton	2.5c
Total	15.5c

Cost of feed for six winter months, 182x15.5c, \$28.21.

Figuring that in October and May the cow is fed half the winter ration in addition to her pasture, we must charge her with:

Feed at 8c per day for two months.....	\$ 4.80
Pasture at \$1.50 per month for two months.....	3.00
Total.....	\$ 7.80

Then for four summer months the cow is fed the daily grain allowance in addition to pasture, making the cost:

Grain at 5.5c per day for 4 months.....	\$ 6.60
Pasture at \$1.50 per month for 4 months.....	6.00
Total.....	\$12.60

The total cost for feeding a cow for one year is therefore:

From November to April.....	\$28.61
For October and May.....	7.80
From June to September.....	12.60

Total.....\$49.01

To this we must add, if an estimate of the whole cost of the cow is to be ascertained, the following charges. It is difficult to arrive at these with absolute accuracy, but we think the following fairly approximate average conditions: care of cow, \$10.50; housing, \$8.00; interest on cow, \$5.00; service fee, \$2.00.

This will make the total cost of the cow for one year:

Feed.....	\$49.00
Care of Cow.....	10.50
Housing.....	8.00
Interest on Cow.....	5.00
Service Fee.....	2.00
Total.....	\$74.50

The total production of the nine cows in one year was 86,400 pounds, or an average of 9,600 pounds per cow. This milk was sold at \$1.30 per hundred. Besides the milk the cow must be credited with her calf which should be worth \$4.00. The value of the manure is placed at \$15.00 which seems to be very low. We have then on the credit side:

9,600 lbs. of milk at \$1.30.....	\$124.80
Calf at birth.....	4.00
Manure produced.....	15.00
Total.....	\$143.80

Valuing the milk at \$1.00 per hundred pounds, which is much nearer what the average farmer received, the total value of the production per cow would be \$115.00.

The final statement would be then about as follows:

Yearly value of produce from one cow.....	\$115.00
Yearly cost of cow.....	74.00
Profit on one cow.....	\$ 41.00

We do not think the cost of keeping the cow has been placed too high. Mr. E. S. Archibald of the Central Experimental Farm places the cost of feeding a cow for one year at \$52.00. It has been estimated here at \$49.00.

Evidently, if the average production for the Province is only four thousand pounds per cow, and the price per hundred pounds of milk about \$1.00, some farmers must be losing money by keeping cows. Many cows must fall below this four thousand pound mark.

This we take it is one phase of the rural problem. Farming must yield fair returns for labor and capital and brain invested otherwise men will have to get out of the business. There is much food for thought upon this subject. There is need for an awakening

of the dairy-farmers of this Province to the losses resulting from keeping poor cows, and from poor feeding. There is much need of the weigh scale, and the daily milk chart in more stables. There is much need among the farmers of Ontario of a wider knowledge of the principles that underline successful feeding and breeding.

The fruit industry has been much benefitted in recent years by the better methods in caring for orchards, and in packing and marketing the fruit. There is yet room for far more improvement. The same general statement applies to all branches of farming in this Province.

### The School Factor

"Nothing can be done by legislation to compel people to stay in the country, but much may be done by education to cause them to prefer to stay there. 'Where there is no vision the people perish', was never truer than at present in its application to the movement from the country and the attenuation of 'rural life in Ontario.'" Advance Report of Royal Commission Part I.

There has been during recent times considerable agitation over the conditions prevailing in rural schools. Many theories have been propounded, and many experiments have failed, but in this as in other departments affecting rural life, we find a steady improvement. Progress in all things affecting rural life is slow, for rural people are conservative and do not accept new things readily.

It is perfectly apparent that the fundamental need is to place effectively educated men and women in the open country. This comes before the providing of a better income for the farmer and before organization which has been claimed as the first necessity in better-

ing rural conditions. These two will come of themselves in Ontario as a result of education; that is to say of the right kind of education.

Agriculture is now a school subject, but there is great need for a better understanding of its aims and objects even by those who are doing pioneer work in bringing it into our schools.

In circular 13, issued by the Department of Education we have the meaning of Agriculture as a school subject, defined in these words, "The teaching of Agriculture means more than the mere introduction of a new subject." It means a new method. It means a new purpose. It means a new school. It means Education for Country Life."

The introduction of the subject is not obligatory, because it is realized that the community must feel the need and be prepared to give the subject the support necessary to insure its success.

The scheme provides for the practical work to be conducted in either of the two ways: (1) a home gardening plan; (2) a school-gardening plan.

To encourage the introduction of the work, grants are offered to teachers who fulfil the regulations of the Department. Trustees are allowed to spend a certain sum, depending upon the qualifications of the teacher, for equipment each year, and to receive the same amount back in the form of a grant from the Department.

The regulations require that the subject of Agriculture shall have a place on the curriculum, and that at least one hour a week shall be devoted to instruction on this subject. A course of study is outlined for each month of the year, and a report of the work done must be submitted to the Director of Elementary Agricultural Education.

So much for the plans of the Depart-

ment of Education in partnership with the Department of Agriculture for instruction in elementary Agriculture and Horticulture in the rural and village schools of Ontario "to the end that the needs of the country life may be more adequately met in the education provided for country children."

This is really a new departure. Circular 13 outlining this policy was only issued in September, 1913. There has been criticism on the part of certain individuals and some farm journals. It is much easier to criticise than to construct, but fair criticism is always beneficial. The program outlined has its weaknesses but it constitutes a beginning of the attack on a great problem.

One of the first and greatest difficulties in the way is the lack of teachers who are qualified to take up the work intelligently and in a way that will win the respect of the pupils and parents. Farmers in general are inclined to regard with a large measure of contempt the school teachers' efforts in this department of school work. It will take years before this difficulty is surmounted. How great this problem is can only be appreciated by those who know the conditions. One of the field agents of the Department of Education reports his observations at the Summer Model Schools in part as follows: "In a test for the identification of common field grain seed a great number of teachers were unable to distinguish between barley and oats, "or wheat and rye."

During the past two or three years a new feature, called the School Fair, has been introduced into some districts by the county representatives of the Department of Agriculture. This has been more or less successful, depending upon the locality selected, upon the man in charge, and upon the

amount of money and time expended.

As a means of getting acquainted with the people of the district the School Fair is an effective aid to the district representative.

There can be no doubt that many people are interested in the work of their children, and that the children are helped by the nature of the work done. There is a healthy competition stimulated by the prizes offered.

The introduction of improved varieties of grain and potatoes through the medium of the School Fair is a benefit to the Agriculture of the District. Prizes for the best chickens raised from eggs distributed to the children, or from their own flocks, help to arouse interest in the poultry business.

But no chain is stronger than its weakest link. The question of the direction and management of the School Fair is one of the biggest difficulties in its way. And, in the opinion of the writer, the district representative should devote his energies to organizing the teachers and helping them in the management of the School Fair, rather than in taking the whole load upon his own shoulders.

By so doing it could not be claimed that he was interfering with the plans of the Department of Education, and there is reason to believe that ultimately the work so managed would accomplish the best results. When the School Fair has the teacher and the community behind it, it will survive and grow in influence from year to year. If it has to depend for its existence upon the direction of the district representative, that is to say if it depends upon motive forces from without rather than within, it cannot survive for any length of time. It will lack the germ of permanence.

But this suggests another difficulty. There is a continual change of teachers



in the rural schools, which is detrimental to the best interests of the schools. Trustees should be encouraged to keep their teachers as long a time as possible, and the teachers should be rewarded for staying with one school for year after year. The need for longer-kept teachers is very urgent.

There is need for a further increase of salaries in the rural districts. The average salary in the urban schools for male teachers is \$1,153, while that in the rural schools is only \$536. The cost per pupil (enrolled attendance) in the rural schools of the Province for 1911 was \$17.64, while in the cities it averaged \$37.48; in the towns \$18.22; in the villages \$15.86.

The total expenditures of the Province for all public school purposes in 1911 was \$9,006,394.43, and of this amount \$3,750,644.00 was spent in the rural schools. The attendance for 1911 was in the rural schools 228,617, in urban schools 231,331. That is to say the rural schools with 49.7 per cent. of the total public school attendance for 1911, cost the province 41.6 per cent. of the expenditure for public school purposes. Better paid teachers will mean longer kept and better qualified teachers in the rural schools which will go a very long way in correcting the existing conditions.

Teachers complain that the curriculum of the public schools is too crowded now for them to undertake the further burden of teaching Agriculture. If this condition really exists it is the fault of the system. The textbooks are the same for rural and urban schools. The examinations are the same. The whole scheme of things has been planned to fill the high schools and the universities. The needs of the farm population have not been considered until recently.

The introduction of the continuation

schools (now called High Schools) was the first real recognition of this need. The report of the Minister of Education for 1912, shows that there are now one hundred and twenty-nine of these schools with an average attendance of 3,487. That these schools are meeting the need is evidenced by the fact that forty-five per cent. of the pupils in attendance are the children of Agriculturists. In the High Schools and Collegiate Institutes only twenty-eight per cent. of these pupils are from the farm. The other pupils in the Township High Schools come mainly from the towns and villages where the schools are situated, and many of them would not receive a High School education if the school had not been opened at their doors.

Some of these new High Schools have been established in the face of bitter opposition of the part of certain rate payers. One school in particular has fought its way through several law suits and is now gaining ground daily despite the fact that an unfriendly Township Council, and a Board of Trustees chosen because they were against the school, have done everything they dared to kill it. The opposition to this particular school grew out of a bit of personal spite in municipal politics. It has been a very unfortunate affair and much credit is due those who have stood out for the cause of education and progress. It is one of those cases where the majority of rate payers may not be in the right. Ontario has need of many more such schools.

Agricultural training in the High Schools continues to make progress. The number of agricultural departments connected with continuation and high schools and collegiate institutes is reported as twenty-seven in 1912 by Minister of Education.

All of these twenty-seven departments are not doing actual teaching in the schools. It is not possible for the district representative to do this work satisfactorily in conjunction with all other tasks his office imposes.

To provide teachers competent to teach both the science and agricultural courses in the High Schools the new degree of Bachelor of Science in Agriculture has been established at the Universities of Toronto, Queen's and McMaster. The first two years of the course being taken at one of these Universities and the last two at the Ontario Agricultural College.

Thus we see from the public schools to the universities a systematic plan being worked out to give to Agriculture the place it deserves in our educational system. This plan is yet in its beginning. There will be many changes and improvements ere it reaches anything that approaches perfection. It is encouraging that a beginning has been made. The history of Ontario will justify the faith of the men and women who through disappointments and discouragements, and even open opposition are bringing education that fits for country life to the people on our farms.

The rural problem, the problem of maintaining intelligent, contented civilization with modern ideals of happiness, efficiency and progress upon the farms of this Province, will be solved through the schools of the Province. There is no other way.

### Corrective Forces

#### EDUCATIONAL

Education for country life is the means by which the rural problem must be solved. Our schools and our school system have fostered the impression that the prizes of life lie away from the farm. There is much need for a redirection of the whole scheme,

placiiing more emphasis upon preparation for life upon the farms.

The work of the school needs to be related more intimately with the home life on the farm. Farm problems can and should be woven into the school studies much more than they are at present.

Better equipped schools; longer kept, better qualified and better teachers, are necessary. The beginning has been made at introducing Agriculture as a subject in the rural schools. It must have the support which it deserves from all the people if it is to accomplish its best result.

We must justly include the work of the district representatives under the educational forces for betterment. These graduates of the Agricultural College have an interest in the schools of the counties to which they go, as well as in better crops and better farming. With their scientific and practical knowledge of Agriculture they should be able to give to the public school teachers the assistance and leadership necessary to put this subject in its rightful place in the school and in the estimation of the people on the farms.

Agricultural instruction in the first and second years of the high school courses is very desirable, but we believe that there is a greater field of usefulness in the capacity of adviser and leader of the rural school teachers for the district representatives that is as yet practically unexplored.

#### CO-OPERATION

All successful co-operative enterprises have been born of dire necessity. Co-operation has worked a marvellous transformation in European countries. Co-operation has thus far very few successes and many failures to its credit in Ontario.

Agricultural co-operation seems an exotic plant that does not flourish here. The frost of custom blights it.

The Ontario farmer loves his acres and his independence so well that he is prepared to get on and put up with losses through lack of uniformity in production, through bad marketing, and through excessive cost of distribution if only he may be "independent" and free from the dictation of any society, even though he be a member of that society and stands to gain by its transactions.

There is no use denying that co-operation involves the surrender of a large measure of this independence that makes Agriculture in this country, different from that on any other land. Only a great and powerful necessity will compel the farmers of this province to organize and stand by their organizations through thick and thin.

This loyalty will come from dire necessity, but much is to be done by education that opens the eyes of the people to the losses sustained under the present system and points the way to a better plan of marketing and distributing the products of the farms. Better business is needed.

The cost of living soars but the profits of farming are little, if any, greater than formerly. The solution of this problem lies in co-operation with the consumers for their mutual benefit, and this in order to eliminate the great wastes of the existing distributing system.

But this way is long, and there are many disappointments in store for those who shall try to lead this generation into the promised blessings of agricultural co-operation. All honour to those who try.

#### MORAL FORCES

In recent years there has been a

marked advance of the cause of temperance. Five hundred and two out of eight hundred and thirty-five self-governing communities in the Province have excluded tavern and shop licenses by law. Most of these communities are rural. The fight is bitter all the way, and the liquor influences are powerful. The result of a provincial election with one party for an out-and-out abolish-the-Bar-slogan will be watched with interest.

#### Conclusions

1. The situation in rural Ontario is not so serious as certain magazine writers and amateur social reformers appear to believe.

2. The Ontario farmer lives better today than he did ten, twenty or fifty years ago. It costs him more, but it is worth the price.

3. The extension of the telephone and rural mail has brought the farmers into closer touch with the world outside. The electrical development and extension work promises to effect changes in the methods of farming that will add to its attractiveness and comfort.

4. The tread of education is in the right direction. Public sentiment is changing, as is evidenced by the success which has attended the institution of the district representative scheme, and by the increased numbers of farmers' sons coming to the Ontario Agricultural College.

5. The forces that make for moral uplift and better living are aggressive.

6. There is much evidence of a need for "better business" methods among farmers. Too few are keeping any kind of account of the cost and profits of farming.

7. There is no indication of any sweeping or radical changes in the methods of living or in the practices of farming. A gradual evolution is in pro-

gress. The rural population has suffered and at the same time profited by the industrial development of recent years. But it gives ample evidence of

ability to continue to be as it has in the past, a strong and abiding foundation for the prosperity and progress for the whole Province.

Table No. 1

## POPULATION OF RURAL ONTARIO BY CENSUS DISTRICTS

DISTRICTS	1901	1911	Increase in last 10 years
Algoma, East	22,555	36,143	13,588
Algoma, West	10,725	13,143	2,418
Brant	15,044	15,161	117
Bruce, North	18,860	15,439	3,421
Bruce, South	23,764	19,263	4,501
Carleton	19,613	17,052	2,561
Dufferin	16,586	13,512	3,074
Dundas	14,934	13,594	1,340
Durham	19,089	17,057	2,032
Elgin, East	14,292	13,818	474
Elgin, West	13,337	10,409	2,928
Essex, North	12,984	14,053	1,069
Essex, South	22,126	21,143	983
Frontenac	24,504	21,794	2,710
Glengary	18,888	17,553	1,335
Grenville	14,077	11,448	2,629
Grey, East	21,223	17,245	3,978
Grey, North	14,182	11,113	3,069
Grey, South	18,239	14,504	3,735
Haldimand	16,536	15,397	1,139
Halton	12,614	13,048	434
Hastings, East	22,091	20,539	1,552
Hastings, West	16,208	14,622	1,586
Huron, East	14,404	12,079	2,325
Huron, South	17,466	14,701	2,765
Huron, West	13,007	10,410	2,597
Kent, East	16,776	15,258	1,518
Kent, West	20,361	19,178	1,183
Lambton, East	16,935	13,733	3,202
Lambton, West	19,938	17,344	2,594
Lanark, North	9,175	7,814	1,361
Lanark, South	11,253	9,793	1,460
Leeds	15,296	13,146	2,150
Lennox and Addington	19,182	16,767	2,415
Lincoln	14,680	16,040	1,360

Table No. 1—Continued

## POPULATION OF RURAL ONTARIO BY CENSUS DISTRICTS

DISTRICTS	1901	1911	Increase in last 10 years
Middlesex, North	13,397	11,171	2,226
Middlesex, East	20,228	20,814	586
Middlesex, West	13,310	11,933	1,377
Muskoka	13,871	14,097	226
Nipissing	20,934	39,632	18,698
Norfolk	22,741	20,116	2,625
Northumberland, E.	14,800	13,674	1,126
Northumberland, W.	8,816	7,891	925
Ontario, North	14,820	13,745	1,075
Ontario, South	14,049	13,033	1,016
Oxford, North	16,216	14,866	1,350
Oxford, South	14,677	13,661	1,016
Parry Sound	20,846	18,876	1,970
Peel	17,503	17,440	63
Perth, North	15,906	14,174	1,732
Perth, South	15,286	13,226	2,060
Peterborough, E.	13,118	11,855	1,263
Peterborough, W.	7,818	7,791	27
Prescott	20,185	19,644	541
Prince Edward	13,514	12,191	1,323
Renfrew, North	18,127	16,611	1,516
Renfrew, South	19,803	18,595	1,208
Russell	30,173	28,969	1,204
Simcoe, East	19,342	17,970	1,372
Simcoe, North	18,437	15,927	2,510
Simcoe, South	16,965	15,334	1,631
Stormont	20,338	17,766	2,572
Thunder Bay and Rainy River	16,938	26,948	10,010
Victoria	28,430	26,101	2,329
Waterloo, North	12,780	12,282	498
South Waterloo	10,804	10,131	673
Welland	18,085	20,077	1,992
Wellington, North	17,930	14,894	3,036
Wellington, South	14,936	13,783	1,153
Wentworth	23,023	24,682	1,659
York, Centre	18,222	20,632	2,410
York, North	16,389	15,229	1,160
York, South	11,192	13,871	2,679

Table No. 2

POPULATION OF ONTARIO CITIES HAVING OVER 10,000  
INHABITANTS IN 1911

(Adapted from Canda Year Book.)

CITY	POPULATION		Increase
	1901	1911	
Toronto.....	208,040	376,538	168,040
Ottawa.....	59,928	87,062	27,134
Hamilton.....	52,634	81,969	29,335
London.....	37,976	46,300	8,324
Brantford.....	16,619	23,132	6,513
Kingston.....	17,961	18,874	913
Peterborough.....	11,239	18,360	7,121
Windsor.....	12,153	17,829	5,676
Ft. William.....	3,633	16,409	12,866
Berlin.....	9,747	15,186	5,439
Guelph.....	11,496	15,175	3,679
St. Thomas.....	11,485	14,054	2,569
Stratford.....	9,959	12,946	2,987
Owen Sound.....	8,776	12,559	3,783
St. Catharines.....	9,946	12,484	2,538
Pt. Arthur.....	3,214	11,220	8,006
Sault Ste Marie.....	7,169	10,984	3,815
Chatham.....	9,068	10,770	1,702
Galt.....	7,866	10,299	2,433

Table No. 3

## COMPARATIVE TABLE OF VALUES OF ONTARIO FARM PROPERTY

(Compiled from Bureau of Industries Reports.)

	1901	1911
Land.....	\$585,354,294	\$723,902,410
Buildings.....	226,575,228	317,876,963
Implements.....	59,897,513	84,969,426
Live Stock.....	129,496,261	214,720,424
<b>TOTAL.....</b>	<b>\$1,001,323,296</b>	<b>\$1,341,469,232</b>

Table No. 4  
 COMPARATIVE TABLE OF AREAS, AND YIELDS, AND VALUES OF ONTARIO FARM CROPS.  
 (Compiled from Bureau of Industries Reports.)

CROPS—	1901			1911		
	Acres	Bushels	Value	Acres	Bushels	Value
Wheat (Fall)	911,587	15,943,229	\$10,538,474	837,492	17,926,586	\$15,519,411
Wheat (Spring)	358,048	5,498,751	3,673,166	133,711	2,295,534	2,081,580
Barley	637,201	16,761,076	7,542,484	616,977	16,248,129	12,000,154
Oats	2,408,264	78,334,490	28,357,085	2,699,230	84,829,232	37,494,695
Peas	602,724	10,089,173	6,588,230	304,491	4,462,182	4,380,883
Beans	53,688	824,122	1,030,153	51,508	898,212	1,711,089
Rye	158,236	2,545,268	1,254,817	98,652	1,562,971	1,326,510
Buckwheat	88,266	1,757,071	850,422	189,039	3,852,231	2,324,992
Corn (Husking)	323,923	24,838,105	9,438,480	308,350	21,913,290	9,663,994
Corn (Silo)	197,932		4,719,028	335,935		9,410,568
Potatoes	154,155	18,116,637	7,717,687	162,457	13,918,698	11,722,539
Carrots	9,221	3,199,967	399,996	3,207	815,129	101,891
Mangles	61,095	29,683,324	2,374,666	64,855	28,126,313	2,250,105
Turnips	145,909	68,287,467	6,828,747	100,593	39,664,275	3,966,428
Hay and Clover	2,557,263		37,012,317	3,301,468	4,238,362	55,767,671
All Field Crops	8,667,512		128,325,648	9,718,741		179,974,358





The following estimates on the profits of dairying were obtained from Mr. E. S. Archibald, (Dominion Animal Husbandry).

Total estimated expenses based on an Average Good Grade Herd of 24 cows, and producing pure milk (not certified).

1. Cost of feed for 5,727 lb. cow.....	\$ 52.21
2. Barn for housing cows and feed (\$45.00 per cow) Interest, taxes, and depreciation, repairs, insurance, etc., ten per cent.....	4.50
3. Value of cow (\$80.00 per grade cow)— Interest at six per cent.....	4.80
Depreciation at ten per cent.....	8.00
4. Value of tools, dairy implements, etc., (per cow, \$5.00)— Interest and depreciation on same, ten per cent.....	.50
5. Value of brushes, aprons, towels, ice, record sheets, soap, veterinary supplies, etc.....	1.00
6. Cost of pure bred bull per cow (including six per cent. interest of \$150.00 and maintenance.).....	3.00
7. Care of cow and milk for year—Men at 16c per hour.....	30.50
Total Cost per year.....	\$104.51

## CREDIT TO COW

1. Value on her milk at \$2.00 per cwt.....	\$114.54
2. Chemical value of manure, 10 tons in 300 days at \$2.25.....	22.50
3. Humus value of manure (300 days).....	22.50
4. One grade calf yearly.....	5.00
5. Bedding not calculated as it is worth its average estimate as manure.....	
	\$164.54

Profits not considering mortality and other risks, per cow..... \$ 60.03

These estimates can best be applied to your own conditions and remodelled to suit the same, but I would ask that every one of you in making your estimates include all the items previously enumerated, and only by such will you reach an approximate.



One of the most pleasant and profitable crops the farmer can grow is broom corn. The beauty of this crop is that no seed is required. You can plant an old broom which has not been fed through the cream separator and it will sprout a crop which looks like a cane rack at the county fair. We tried this last year with a whisk broom which the hired girl had used to dust the talcum powder out of her ears, and we harvested a ball-bearing carpet sweeper with planetary transmission and a suction that would draw nails out of a dry goods box.

## The Business Side of Farming

BY G. O. MADDEN, B.S.A.

**D**ESPITE the fact that Canada is essentially an agricultural country built up chiefly from her agricultural products and dependent to a large extent on agriculture for her credit among those nations from which she secures her capital for further development—it is a fact that during the ten years ending Nineteen Hundred and Twelve, Canada's population showed an increase in the cities of sixty per cent. as against a growth in the country of only seventeen per cent.

During the year 1912, Canada's imports exceeded her exports by over three hundred million dollars. This vast negative balance is the largest ever recorded by any nation in the world, and is due directly to the fact that Canada is developing at an abnormal rate. This policy of development has called for the investment of about two hundred million dollars annually in Canadian enterprises, which are centred in most cases in the industrial and commercial metropolis of the country. These large investments in manufacturing and merchandizing propositions have called for the employment of many thousands of men and women, who have been drafted, to some extent from the incoming immigrants, but mainly from the farming communities surrounding the industrial centres.

Today the cities of Canada are crowded with mechanics and skilled laborers of every description. Today the farmers of Canada are crying for more men, but cannot secure an adequate supply.

At last the fact has become startlingly apparent, both to the labor unions and the Federal Government, that Canada has such an excess of factory workers

that the country faces a serious crisis, due to financial conditions and the consequent lack of work, which will inevitably follow, this throwing out of work a large proportion of the factory employees.

Definite action has already been taken to stop the immigration into Canada of workers except those who are trained to the business of farming. It would seem therefore, at this time when many city workers will turn their attention to farming and none but farm immigrants will be encouraged to come to Canada, that a simplified statement of the business facts of farming, which can be readily understood by the experienced and inexperienced alike, would be of value to those who will interest themselves in behalf of agriculture.

The following suggestions do not constitute a thorough detailed exposition of the scientific side of farming, but are meant to serve more as an index to those items which are of primary importance in the organization of the business side of farming.

In order that specific details might be entered into in the following pages, fruit farming has been chosen as an example. The details of fruit farming are considered more particularly, and all graphic charts and cost keeping forms are based on this branch of farming. However, these suggestions may be applied to any or all branches of farming.

QUALITY SHOULD BE THE FIRST AIM OF  
EVERY FARMER

If every individual farmer, large or small, in Canada were to make it a point to improve the quality of his

product from year to year, by taking advantage of all suggestions supplied by the government, from the experiments conducted at the experimental stations, besides watching and checking up of his own results carefully, not only would the farmer benefit, but the community, the province, in fact the whole nation would receive a stimulus.

When we consider that an organized movement for better quality is being forwarded among the manufacturers of Canada, is it not reasonable to expect that the same organized movement for better quality among the farmers, the manufacturers of farm products, would reap similar results?

This undoubtedly would be the case and the immediate results would insure to the farmer, higher prices for his product—assured demand both at home and abroad, good reputation because he gives first-class values, and consequently the confidence of the buyers and the buying public.

Finally, the reputation earned by following this policy would increase the borrowing capacity of the farmer and build up for him a credit which would enable him to develop his business as he might see fit.

CAREFUL PRACTICE THE PRINCIPAL  
MEANS TO SECURE QUALITY  
GOODS

Naturally the first precaution to be taken in order to secure the finest crops is the purchasing of the best class of raw material, suitable to the particular conditions of the farm, that is, the nursery stock, machinery and other materials must be chosen only after careful consideration.

Up-to-date machinery is undoubtedly a good investment as it saves the expenditure of money for extra labor, besides doing what work is to be done

more quickly and thoroughly. For these reasons, where possible, the farmer should use every available piece of improved machinery.

The spraying of orchards must not be neglected. Done at the proper time, and done thoroughly, much loss is prevented since the insect pests which attack not only the fruit, but also the foliage and bark, are destroyed. Fungus diseases are also held in check, thus allowing the trees to remain in a healthy condition and the fruit to mature in the best possible form.

Pruning, if correctly done, stimulates the trees. They grow more vigorously. It also allows more sunlight to enter the trees, thereby giving the fruit a high color.

Thinning also is necessary to insure the crop against small fruit. Large superior fruit well repays the farmer for the cost of thinning.

By conscientiously following out a properly balanced plan of cultivation throughout the year, the farmer has always an almost definite knowledge of the amount and quality of the yield. This is the first systematized operation in the "manufacture" of farm products. This is also the first instance where the policy followed out in the best organized manufacturing plants can be advantageously copied by the farmer.

In the factory every piece of raw material is carefully inspected; every operation is watched and checked so that as little waste as possible both of time and material may occur; every improvement in the machinery used in the manufacture of the product of the factory is immediately adopted as soon as it is proven of value.

Only in this manner can either farm or factory succeed in perfecting their products.

## WHAT ARE THE DUTIES OF THE FARM MANAGER

In perhaps nine cases out of ten the owners and managers of the larger sized farms can be found almost any day at work doing what a laborer at laborer's wages could do. Undoubtedly lack of sufficient farm hands has a great deal to do with this condition and there may be many other contributing causes. But it would seem that if the owners and managers of large sized farms where sufficient machinery and necessary motive power are ready to hand would devote their time to the executive end of the business, much waste time, labor and material could be checked up, closer prices secured in the buying of raw material and bigger returns from properly chosen markets secured from the sale of crops.

This applies only to large well developed farms and not to the smaller ones where only one or two laborers are employed. But in this respect the difference is the same as between small and large business. In large, well organized business establishments the time of the manager is given up to executive duties, such as the close watching of market conditions and the checking up, through his assistants, of all materials received, labor done and finished products turned out. In short, the business of the manager is to calculate, think and watch, and this could not be properly done if the same manager were spending his time doing the detail work of those whom he hires for that purpose. Would not the farm manager or farm owner produce more actual profit by devoting his time to executive work only?

## WATCHING THE COST OF EACH CROP

The following set of charts may be used by any farmer to keep track of the actual cost of each and all of his several

crops. The charts have been simplified so that no possibility of error can creep in—the aim being to evolve a set of charts which will automatically keep books for the farmer and graphically point to him, from day to day, the condition of his business.

## DAILY TIME SHEET

The daily time slip is a small slip of paper given to each man (including the farmer himself, if he is working) each morning. It is to be filled out by each man, showing only the number of hours he has worked on each of the crops attended to during the day of ten hours. The farmer should make these sheets up himself, writing in the name of the man, and the date, also the name of every crop on the farm, as shown in the chart. A space should also be filled out under the caption "Other Work" and each man should note opposite this the time he spent on any work other than the regular crops. The intention being that each crop be charged only with the actual time spent on it, and that miscellaneous work be kept separate as an expense against the whole farm.

These slips are collected each night. Each man's slips are kept together until the end of the month when the total time for each crop is added up and transferred to the individual monthly cost sheet.

## MONTHLY COST SHEET

The monthly cost sheet for each individual worker, is made up by taking the total hours worked on each individual crop for the twenty-six working days of the month. On this chart there is also a column for the money value of the labor. This chart may be ruled up in an ordinary work book and thus always kept ready to hand for references. In figuring the

amount of money to be charged to each crop, it may be necessary in cases where the man is paid a fixed amount per month, to decide how much each hour of his time is worth, placing the amount of his monthly pay at the top of the sheet and making the total of the charges against the crops balance. The reasons for this monthly individual statement is to show the proportion of each man's wages for the month charged against each crop.

The total amount of money paid out for each kind of work is then transferred to the monthly labor and material cost sheet.

#### MONTHLY LABOR AND MATERIAL COSTS SHEET

The monthly labor and material costs sheet may be ruled up in an ordinary note book and entered up monthly. As stated, the many charges for each individual worker against each crop during the month are copied into this form. In this way the total charge for labor per month against each crop is arrived at. In addition to this, however, room is left for the tabulating of the cost of all raw material used during the month on the different crops. By adding the cost of labor and material, the total charge against each crop is arrived at for the month.

This form shows the actual amount of money spent on each crop during the month. The cost of all materials is also included.

The farmer can devise a suitable stock record for himself in order to keep track of the amount of raw material used.

#### RECORD OF MATERIAL

This form may also be ruled out in an ordinary rough note book and in view of the fact that the entries are not numerous, should be kept written up

each night. Each class of material purchased should have a separate page of its own, and at the end of the month each crop should be charged in the monthly time and cost sheet, with the amount of material used.

A separate card is kept for each class of material. Only the materials bought are kept on the cards. Material produced on the farm such as manure, has already been charged against the several crops under the charge "Other Work."

It might be well to explain that in keeping account of the cost of any crop, every expense, both in labor and material, must be kept from the first operation in the field or fields of this crop, that is to say, immediately any crop is harvested, all work or material thereafter given to this field should be charged to the next year's crop. Thus the charges against an apple orchard would be as follows:

#### CHARGES AGAINST ORCHARD

##### FALL—

Ploughing ..... Labor

##### SPRING—

Discing ..... Labor

Harrowing ..... Labor

Pruning ..... Labor

Brush ..... Labor

Scraping ..... Labor

Planting ..... Labor and Material

Spraying ..... Labor and Material

Thinning ..... Labor

##### SUMMER—

Cultivation ..... Labor

Heating ..... Labor and Material

Sowing ..... Labor and Material

Fertilizing ..... Labor and Material

##### FALL—

Picking ..... Labor

Grading ..... Labor

Packing ..... Labor and Material

Marketing ..... Labor

It will be noted that none of these classes of work are mentioned in the daily individual time sheet, being all classed under "Labor" and "Material." The above list is set out to show that a certain portion of labor and material used in the fall should be charged against the following year's crop, and that all material, including the young trees, boxes, barrels, etc., should be charged to raw material.

To prevent confusion in charging up labor and material against the important crops, the space under the caption "Other Work" is meant to cover all such operations as the following: Time taken working inside, improvements on farm, feeding animals, repairing machinery or buildings and hauling crops to market, etc. All these operations, which do not affect any one crop, and all material used in the completion of these operations should be charged up against "Other Work," which is really "the farm expense account."

#### YEARLY LABOR AND MATERIAL COSTS SHEET

The yearly labor and material cost sheet is the financial barometer of the farm. It tells a plain story of success or failure of any crop and shows in cold figures where the farmer's money may be leaking quietly away. The yearly report is a summing up of the year's business. It is a very valuable chart to keep before the farmer, as it shows actually what his crops are costing him from month to month in labor and material. From it he can estimate his gross profits after he has marketed his crops. This report is also invaluable to the farmer for comparisons from year to year, besides being an unflinching signal of the continued success or failure of any one crop. This yearly chart is the most im-

portant report and the one which really shows the total labor, total material and the grand total expense of each crop for the year.

#### SHOULD THE FARMER FINANCE THE MANUFACTURER

It is a significant fact that when the manufacturer has made a success of his business, he immediately makes arrangements to enlarge this business and to improve it to the highest point of efficiency. In order to do this he mortgages his plant, taking advantage of the increased value its success has given it. He then issues bonds and stocks which are in many cases taken to the farmer, who gives his hard earned cash in exchange, thus securing to himself a share in the business and insuring to the manufacturer increased production and increased profits. This transaction nets the farmer at most seven per cent. It nets the manufacturer sometimes double that per cent. often more.

On the other hand the farmer devotes his time and energy to developing his business—"the manufacture of farm products," from which he draws an annual profit, which he turns into the bank awaiting an opportunity such as cited above. If the farm under ordinary circumstances can produce a livelihood for the farmer, in addition to a net cash balance, would it not produce a better livelihood and a larger cash balance were the farmer to reinvest his surplus funds in his own manufacturing plant, the farm? Here he has an opportunity with which he is thoroughly familiar, under a management, the capabilities of which he is perfectly aware, and secured by actual property, the value of which has not been inflated by the issuance of surplus stock certificates. Every dollar invested by the farmer in additional machinery,

better buildings or improvements of any kind would bring an increased yield and definite increased profit at the end of each year.

#### PRINCIPLES OF PROPER MERCHANDISING

The points dealt with in the previous paragraphs have to do more particularly with the careful manufacture or growth of farm products. This, however, is but the first step in the business of farming. The most important end of this business and the end which has probably received the smallest amount of concentrated study by the majority of farmers is the merchandising of farm products.

Contrary to the general idea among agriculturists, the merchandising of a product starts with the careful grading of the product after its manufacture. Any well regulated business would not permit their products to be shipped out in a hit or miss fashion—mixing first, second and third grade articles in the same package. This would kill the sale of their first grade articles and utterly ruin the business reputation of the firm. Careful picking and grading is therefore a factor which means much to the farmer, both in price and reputation.

Proper packing of all commodities is today recognized as another strong factor regulating price. Advertising has educated the buying public to a preference for attractively packed goods and this preference is substantiated by the willing payment of from five to ten per cent. more for package goods. It is reasonable to expect therefore that better prices could be secured for such farm produce as can be packed, if it were put on the market in clean, attractive packages.

Of course every farmer knows thoroughly well that early shipment of certain commodities means better prices. There is no need therefore to elaborate here on the value of taking advantage of this early demand. There is, however, one outstanding feature in connection with the sale of farm crops which is worthy of individual or collective study by the farmer. That is, that when the total production of any one crop per annum is large, invariably the price secured per bushel is relatively reduced.

This is exemplified in the "Annual Returns for the United States" during the years 1911, 1912 and 1913, as follows:

### ANNUAL RETURNS FOR THE UNITED STATES

#### CORN

Year	Crop	Million Bushels	Price to Farmer	Total Value
1911	CORN	2,658,000	62c	\$ 1,647,000 00
1912	CORN	3,124,000	49c	1,530,000 00
1913	CORN	2,300,000	70c	1,610,000 00

#### OATS

1911	OATS	797,000,000	45c	358,000,000 00
1912	OATS	1,418,000,000	32c	452,000,000 00
1913	OATS	1,060,000,000	43c	455,000,000 00

## ANNUAL RETURNS FOR THE UNITED STATES

Year	Crop	Million Bushels	Price to Farmer	Total Value
HAY				
1911	HAY	55,000,000	\$14.29	785,000,000 00
1912	HAY	73,000,000	11.79	857,000,000 00
1913	HAY	55,000,000	15.00	825,000,000 00
POTATOES				
1911	POTATOES	279,000,000	80c	216,000,000 00
1912	POTATOES	363,000,000	50c	187,000,000 00
1913	POTATOES	289,000,000	80c	224,000,000 00

By these tables it may be seen that in 1912, when all four of the crops mentioned were large, the prices secured by the farmer were proportionately reduced. On the other hand, the year showing the smallest crop gives the highest price to the farmer.

These figures have been compiled by agricultural experts familiar with conditions in the United States, and although they show the average price for the whole year without showing the fluctuations from week to week, it is evident that the farmer as a class is to a great extent the victim of circumstance.

Under these conditions almost every other class of industry has completed its organization to such an extent that the fluctuation of prices is under control of the industry, instead of the industry being swayed by the fluctuation of prices.

The problem is too gigantic to be undertaken in connection with the farming industry as a whole, considering the present conditions under which it is being conducted.

On the other hand, however, by proper organization, the farmers of any given community could establish

storage plants where their perishable products might be held for better prices. This price maintenance coupled with co-operative merchandising, which will be referred to in a later paragraph, would tend to give the farmer a better grip on the markets.

## KEEPING TRACK OF THE MARKETS

Absolute knowledge of past market conditions is a powerful instrument in the hands of any farmer who exercises foresight. Government reports and financial and commercial statistics are daily being used by the cleverest brains in their several lines to check up the future. Graphic charts have proven their worth in every permanent institution where hind sight has been made to work for foresight, that is where past experience teaches future discretion.

By making use of graphic charts such as shown here under, the material for which can be secured from any weekly farm paper, the farmer can keep before him an easily understood record of prices, which will help him to solve the problem: what shall I sell and when and where can I sell to the best advantage.



## CO-OPERATIVE BUYING AND SELLING

Many volumes have been written on the subject of co-operation by experts who are thoroughly versed in this end of the business. I will therefore not attempt to set down the rules for the actual organization and conducting of co-operative societies, but will endeavor to deal with the general principles, which to my mind, are essential to its success.

From the bare nature of co-operative dealings it is evident that the biggest obstacle to be combatted is the human nature of each individual member of the organization. By his training in the course of competitive business, man has developed to a surprising degree such characteristics as ambition, greed, suspicion and the sense of self-preservation. It would thus seem obvious that in order to successfully conduct co-operative business, these characteristics must be carefully taken into consideration and amply appeased or subdued by an organization which is founded on the confidence of its members and conducted on a very equitable basis.

To demonstrate my meaning, I would cite the cases of many manufacturing industries in Canada, which endeavored to form and keep satisfactorily operating mutual selling arrangements, mutual buying arrangements and mutual manufacturing and labor arrangements. In almost every case these efforts proved useless, due to the natural ambition or greed of one or more of the members of these combinations.

As a result of this breach of faith, keen price cutting campaigns were entered into, which in some cases completely demoralized the industry and ruined a large number of manufacturers.

Eventually these industries were formed into large consolidations wherein each plant was run as a separate unit,

but the whole industry was under a general management and one capitalization, with the result that manufacturing methods are today standardized and prices are maintained at a level which insures successful operation.

At the outset, I venture the remark that the farmer who has not incorporated co-operation into his dealings with his family and his help on the farm, will not be satisfied at any time to co-operate properly with a large organization. The farmers' son in most cases would not leave the farm for the city if he were to be made a partner in the business with his father. Neither would the laborer be inclined to curse his employer if the farmer adopted the far-sighted policy today in use among the best manufacturers, of giving him a bonus or a small percentage in the increased results for the year, which would naturally be due to the added interest which he would take in his work under such a system.

## ESSENTIALS TO SUCCESSFUL CO-OPERATION

Proper management has more to do with the success of any business than any other feature. It is a well known fact among financial men that thousands upon thousands of legitimate businesses which would have shown profits in some cases better than in gold mining, have never seen the light of day for just one reason—no man competent enough could be secured to manage them. Likewise, the majority of the thousands of failures in business annually are known to be due to improper management. Co-operation in agriculture is no exception to the rule.

The first and most difficult problem to be solved in the formation of a co-operative society is the securing of a competent manager, who combines the

necessary qualities of executive ability, initiative, foresight, judgment, energy and enthusiasm to take hold and successfully work the business, which is now to be built with him as a foundation. When this manager is secured, he should be given complete charge of operations, making his reports to the board of directors.

In order that the new organization may have a proper standing financially as well as commercially, great care should be taken in the selection of a board of directors, who are the most representative, enterprising and successful farmers in the community.

The details of the organization and financial arrangements for co-operative societies have been expounded very thoroughly by numerous writers who have had an intimate connection with this business. I will therefore not go over this ground again, but will deal only with the human element which enters into the business.

In the first place it appears that in most co-operative societies the members are not fully enough committed to the organization to give it their unstinted support. This half-hearted policy undermines the moral fibre of the organization and eventually dampens the enthusiasm, which should be keenly maintained in order that the reverses and difficulties which must be met with may be successfully surmounted. The evident solution of this difficulty lies in a policy, which should be followed out by each individual member; that of committing himself irrevocably to the support of his co-operative society, leaving no possible loop-hole by which in a moment of weakness or dissatisfaction he may turn his attentions from it. This is a stern ruling, but an organization built from its inception on this policy need have no fear of deserts from its ranks. Better never

enlist a faltering member than lose him in the midst of difficulties.

All details of the organization should be thoroughly threshed out and agreed to by all members, so that no misgivings may arise which would cause internal discord. The personal equation must be deleted and every member should consider himself a part of the society with all the interests of the society always in mind. This is what really constitutes co-operation.

Once formed, the co-operative society should be developed at a normal rate. Too much should not be attempted or expected in the first year and elaborate plans for rapid development should not be considered until the first step taken has proven a success. There are many developments which can be installed from time to time but these should follow logically as conditions warrant their introduction.

In connection with the selling of farm products, facilities should be afforded at a central station for the proper storage of all kinds of goods produced for sale, so that those not turned over immediately at a good price may be held for better prices or for export to foreign markets.

Where possible, the duties of the association can be extended to dairying, in connection with which a cold storage plant can be used. This of course is an expensive investment, but at such time as the association is able to afford it, its installation would open a very wide field for business.

By adhering to the policy of doing all business through the association, the buying of all machinery and farm or household requirements would form a large revenue producing department, which would keep a staff busy throughout the season when agricultural pursuits were quiet. This department could include the purchase of such mer-

chandise as clothing, food, farm supplies and machinery which could not only be retailed to the local farmers but which might be sold by the salesman of the association over a large territory during the seasons when they were not busy with the sale of farm products.

In order to keep the farm laborers of the members of the association continually occupied, some form of manufacture suitable to the particular locality could be developed. This would be a revenue producer, besides giving the members of the association a labor organization upon which they could depend.

By holding frequent meetings of all members of the association and forming committees to give their time to specified investigations, such as irriga-

tion problems in the district or special study of the best methods of packing goods for market and any other matters of importance which require supervision, great benefit could be derived from the association. Records should be kept of all these investigations and should include any suggestions made by individuals who have discovered new ways of advancing the business of farming. Government reports and bulletins, besides the best books on farming should be kept at the headquarters of the association, where all its members might have access to them. Meetings should be held in the spring so that a supervision might be maintained over the planting operations of the association. In this way a well balanced output of farm products could be produced throughout the districts.



What is the reason that so few people eat onions nowadays. The onion used to be a stand-by in this country, but it is getting to be about as popular as a divorced husband at the wedding feast. There is nothing that will bring tears of repentance to a hardened sinner's eyes quicker than a stout, wide-hipped Bermuda onion with teeth like a rip saw and a grip like an entered apprentice. One of these onions, sprinkled with tasco sauce and inhaled slowly before each meal, will cause a man to perspire at high speed when the thermometer is 40 degrees below zero. Physicians tell us that if people would eat more onions they would have fewer microbes roosting about in their systems, as onions are death to germs of all kinds. The onion is also death to the course of true love—after marriage, but not before.

## Secondary Agricultural Education in Ontario, Canada

BY G. L. WOLTZ, B.S.A.

### INTRODUCTION

THE attitude of the thinking public toward agricultural education is rapidly assuming a decidedly friendly aspect. There is no longer any failure to realize that farming, at least in certain branches, has become a technical and scientific profession. This means that there must be open to farmers the chance for technical and scientific training, not merely theoretical, but of the most severely practical type. The farmer represents a peculiarly high type of Canadian citizenship, and he must have the same chance to rise and develop as other Canadian citizens.

Several factors must co-operate in the improvement of the farmers' condition. He must have the chance to be educated in the widest possible sense—in the sense that keeps ever in view the intimate relationship between the theory of education and the facts of life. In all education we should widen our aims. It is a good thing to produce a certain number of trained scholars and students, but the education superintended by the province must seek rather to produce a hundred good citizens than merely one scholar, and it must be turned now and then from the class book to the study of the great book of Nature itself. This is especially true of the farmers as has been pointed out again and again by all observers most competent to pass practical judgment on the problem of our country life. All students now realize that the education must seek to train the executive powers of young people and to confer more real significance upon the phrase "dignity of labour," and to

prepare the pupils so that in addition to each developing in the highest degree his individual capacity for work, they may altogether help to create a right public opinion, and to show in many ways, social and co-operative spirit.

### CHAPTER I.

#### AGRICULTURAL EDUCATION

Agriculture, as well as a household industry, has been called a "belated industry." Many partial explanations may be given to account for this fact. Agriculture as a science is dependent upon many other more fundamental sciences, such as chemistry, physics, botany; it could not develop or reach a scientific basis until the latter were also placed upon a firm foundation. Agriculture is something near at hand, it is familiar to all; scientific investigation invariably begins with the far off and the unusual. Again, as long as large quantities of free and fertile land were to be found, there was little demand for increased fertility; the economic motive, which prompts investigation and improves efficiency, was not strong. As a consequence the entire development of agricultural education may be said to have occurred during the last forty years, and the last twenty years have encompassed the major proportion of that development.

*A Brief Historical Sketch:*—The history of agricultural education in Ontario dates back to 1847, sixty seven years ago, when our first Normal School for the training of teachers was established at Toronto, and arrangements were made to give the subject

a place of importance. Daily lectures were given on Agricultural chemistry by the science master, written and oral examinations were held, practical experiments in field crops and fertilizers were conducted on the grounds, and Lord Elgin, the Governor-General, gave remunerative prizes to the candidates taking first and second places in the examinations.

Twenty-three years later than this, Dr. Ryerson wrote, "*First Lessons in Agriculture*." This was the first book on agriculture issued, and authorized by the Council of Public Instruction.

Progress in the work was very slow, and the promoters had every reason to become discouraged. A little pressure was brought to bear upon the rural people to hire the teachers that had taken instruction in Agriculture at the Toronto Normal School, but the responses invariably were in the negative. It seemed to be the will of the people to hire teachers that had emigrated from the British Isles, partly because of the minimum salary most of the teachers hired for and partly because they deemed it an act of charity.

During the '90's two more agricultural text books were published. The first Mills' and Shaw's "*Public School Agriculture*" was authorized by the Minister of Education for use in the public schools of Ontario, and the second was James' "*Agriculture*." The latter was authorized for use as a text-book in any high school or public school in Ontario, if so ordered by resolution of the Trustees.

In 1893, the first Summer School for teachers was held at the Ontario Agricultural College. Thirty-four teachers attended and received four weeks instruction in Agriculture. Owing to changes in the regulations regarding the teaching of the subject in the

schools, only seven teachers attended next year, and the classes were discontinued thereafter. Six years later, regulations amending the public school course of study made Agriculture obligatory in rural schools in Forms IV and V. In Form V the text-book was to be used and in Form IV the subject was to be taught by conversation.

A few years later, the Macdonald Institute was established at the Ontario Agricultural College, having as one of its purposes the special training of teachers in Agriculture. At this time five so-called Macdonald School Gardens were commenced in Carlton county.

In 1904, the first Summer School for teachers was held at the Macdonald Institute and in the Fall Term the first Inter-Provincial Teachers' Class was held under the Macdonald Scholarship Scheme.

At this date another important step was taken in the direction of agricultural education by the incorporation of nature study into the public school course of study.

At the same time the work in elementary science in the first two years in the high schools was rearranged, giving the affairs of agriculture, though not using the name, considerable prominence.

Shortly after this the first Normal teachers' class in elementary agriculture was held at the Ontario Agricultural College, and as a result of this we find considerable interest taken in the development of school gardens. This scheme met with more or less success, the Government rendering material aid, and in 1911, we find thirty-three schools qualified for grants for school gardens, and a director of elementary agricultural education appointed to oversee and promote the work.

A year later, regulations made the

teaching of Agriculture the basis for special Government grants, in place of the school garden merely, and over one hundred schools signified their intention of teaching Agriculture; this meant that practical work was to be carried on in gardens and systematic instruction given in the school.

And so we trace the progress of agricultural education from the earliest records to the time of the writing of this work. In its early history there were many disheartening obstacles to be met and overcome, but the advocates of an agricultural educational policy fought valiantly for a realization of their ideals, and now we begin to see the materialization of many of those ideals. The progress of the work now is unprecedented, having gained an impetus never felt before.

*Present Agencies of Agricultural Education:*—No less wonderful than the development of agricultural education in the past has been the rapid growth within the present decade in the elementary and secondary schools of our public school system, as well as a number of other organizations which will be referred to at a later date in this Chapter.

*The Ontario Agricultural College:*—To this educational institution should be given the credit for supplying the stimulus in lower forms of educational institutions. Since 1904, special courses of instruction have been given in Spring and Summer Terms. The teachers taking the Spring course came for ten weeks from the Normal schools after their graduation at Easter. In the summer holidays, five weeks courses are held for teachers engaged in teaching during the regular school term. It takes two summer terms to cover the work of the Spring Term. In both cases certificates are awarded to successful students.

More than eight hundred teachers have received instruction here during the past nine years, and all the district agricultural representatives are trained at this College as well.

*In the Public Schools:*—As yet, agricultural education in the public schools is mostly taught as nature study. This nature study, is essentially agricultural; for its materials, it uses natural objects or phenomena that concern the farmer—soils, weather, plants and animals. Thus, the rural school teacher, in teaching her pupils to grow plants, to care for animals, and to observe the phenomena of their environment, is teaching elementary agriculture.

Besides this general work, many schools are giving special attention to agriculture in school gardens, home gardens, corn clubs, or poultry clubs. This phase of the work is apparently growing rapidly.

There are no prescribed text-books for this study, but the use of books for reference is strongly encouraged.

*In the High Schools:*—A prescribed course in agriculture has not, until very recently, been undertaken in the high schools. Previously the so-called elementary science taken in the two first years had a decidedly agricultural bias, and included such topics as economic insects, farm plants, plant diseases, plant propagation, and weed seed impurities. Moreover liberal options were allowed, so that teachers might substitute for some of the out door work special agricultural topics such as poultry, bee-keeping, live-stock, dairying, soils, experiments in grain-growing, fertilizers, etc. A great many of the schools are following up this work at present, and the science teachers are adapting themselves to the work very well, but a more complete system is being tested at present with the two

first forms of the schools under the direction of the district agricultural representatives. A report of this work will appear later.

*In the Normal Schools:*—Emphasis is laid on agricultural studies suitable for rural schools in the study and science work taken up with the teachers in training at the Normal schools. Teachers having taken agriculture in the high school, as well as the Normal, will be eligible for a certificate in elementary agriculture upon completing a one Summer session at the Ontario Agricultural College.

*The District Representative:* — This movement, dating back to about 1907, has been a boon to agricultural extension work. At the present time there are many graduates of the Agricultural College established in as many of Ontario's counties. Among the many duties they have found for themselves as agricultural propagandists, many of them co-operate with the schools in teaching agriculture through the distribution of seed for home gardening, through the organization of school fairs and various clubs.

In the high schools, many of them conduct four or six weeks' short courses for farmers, and farmers' sons, during the Winter months. At some centres, as mentioned in a previous paragraph, the representatives have taken up the agricultural part of the science course throughout the year with the first and second year pupils in the high schools and collegiate institutes.

These, along with other minor agencies as "*The Schools Division of the Experimental Union*," are endeavoring to promote the cause of agriculture as far as possible, also to establish a dignity in connection with the work hitherto unfelt.

## CHAPTER II.

### RURAL SECONDARY SCHOOLS

*Importance of Agricultural Instruction in Rural Secondary Schools:*—It is now universally accepted that agriculture should be taught in our elementary schools. Accepting this statement, then it is of the utmost importance that prospective elementary school teachers receive a proper grounding in scientific and practical agriculture in the secondary schools. Several considerations point to the importance of this. Canada, during the last decennial census period, increased in population by 1,833,523, yet her rural growth was only 574,878. In Ontario the proportion of rural to total population fell from fifty seven per cent. to forty seven per cent. and many other provinces suffered similar losses.

This depopulation of rural communities and rapid growth of our already congested centres of population should give us serious concern. It is inevitable that the greatest need of the country today is an educational policy built from the ground up rather than "up to the ground down" as has been generally true for the last fifty years.

If, then, the adoption of a syllabus in our secondary schools containing spaces for agricultural education would tend to arrest rural depletion, should we attempt to withhold it? The demand for a redirected education is not a local matter, but a demand which is being made by a large percentage of men and women in charge of educational work in Canada. Everywhere the questions are being asked, what shall we teach? How shall we teach it? Can it be done without loss to other primary subjects?

To the first question I would answer, teach all the subjects of farm and home life that can be studied in connection with the daily school studies and all

substitutes for the non-essentials which may exist there.

Instead of the months of hard work outlined in the grammar text book (a boy's natural enemy) in technical and formal analysis, substitute practice and drill that will help the child to express his or her ideas in clear and cultured English.

Instead of the great amount of technical physiology, substitute some of the home economic subjects, including ventilation, food values, laws of home and personal hygiene, balanced rations, composition of foods as related to human needs and other subjects related to the elementary science of living.

Instead of the large amount of meaningless copy work usually given in penmanship exercises, substitute the practical writing exercises in story and discussion about first-hand subjects such as relate to farm and home interests.

Instead of studying history of wars and bloodshed, take up a systematic study of the history and development of our Great Canadian industries as they are related to man and his economic welfare.

In answer to the second question, I would say in brief, there are three important methods or plans by which agriculture and home economics can be taught in our rural secondary schools, *viz.*—

1. By effective correlation as suggested in the above plan of substitution.

2. By general lessons to be given daily in a systematic and seasonable way on subjects that most concern the community and the home life.

3. By regular class work with text books in the hands of pupils and with available supplies for laboratory experiments in the study of seeds, soils,

plants and chemical actions of soil and plant growth. Of course, it must be understood that the libraries should contain a good list of books and references on farm and home life subjects.

To the third question, I would answer emphatically "yes." In support of this statement, Mr. O. H. Bensen, of the United States Department of Education, says:

" \* \* \* after four years of careful investigation and experience in promoting this work as a county supervisor of schools, I have positive evidence to the effect that without exception, the schools adopting a system of agricultural teaching in correlation with the common system practised, give greater efficiency in the vast majority of subjects than do other schools that persist in following in the old rut."

The schools of today must determine very largely the citizenship of tomorrow, and we cannot hope to secure a citizenship trained in agricultural and industrial tastes unless we give attention to it in our schools.

*Legislation Pertaining to Agricultural Instruction in Rural Secondary Schools:*

—An examination of the school laws of Ontario fail to show many references to the teaching of agriculture in rural secondary schools until a recent date. A few important regulations appeared at an earlier date, but in this Chapter, we will confine ourselves to the regulations existing at the present time.

Although the subject is optional, the department of education for the province of Ontario, co-operating with the Department of Agriculture encourages instruction in agriculture in the high schools and collegiate institutes of the Province, especially in those centres where a considerable portion of the pupils come from rural homes.



The work is to have a practical basis, and will be in charge of the Director of elementary agricultural education. The instruction will be given by teachers of science or by district agricultural representatives.

No texts are prescribed for the work. The instruction is to be based on the pupils' own observations, inquiries and practical undertakings, rather than on prescribed reading from any special book.

Standard works in agriculture, government bulletins and reports shall be provided in the school library for pupils' and teachers' references. To train pupils how to use these should be an important part of the course.

*Regulations and Apportionment of Grants:—*

1. The board of trustees of a secondary school that provides and maintains, satisfactorily to the Minister, a course of instruction in agriculture extending over a period of two years and carried out by means of a pupils' home projects under a competent teacher shall be entitled to a special grant as specified hereunder.

2. A board of trustees, which, in addition to the above provides and maintains experimental and demonstration plots for the practical instruction of the pupils and the benefit of the community at large, shall be entitled to an additional grant.

3. The teacher who carried out this work satisfactorily, on the reports of the inspector and director, shall be entitled to a special grant in addition to the salary paid by the school board.

4. Schools intending to undertake this work thus qualifying for the entire annual grants shall notify the director of elementary agricultural education as early as possible before December 31st. This notice must be signed

by the Secretary as well as the teacher.

5. A year will be understood to mean from January to December, inclusive.

6. The time allotted to the work shall amount to at least two hours a week during the school year.

7. The teacher shall keep an accurate system of records throughout the year, on special forms.

8. Records of instruction given in school and practical work carried on in home projects or school plots shall be kept systematically by the pupils also. These shall be available for inspection along with nature collections.

9. The accounts for the work shall be kept separately from general school expenditure and a statement submitted by the Secretary to the Minister of Education at the end of December. The totals of the expenditures and receipts shall, however, also be included in the general financial statement of the Board to the Department of Education.

10. These grants shall be spent solely for the purpose of promoting the cause of Agriculture in the community through the work of the school.

11. The work shall not be undertaken unless there are at least six pupils in regular attendance in the class of the year.

12. (a) To the School Board, the Minister will pay, on the Director's recommendation, an annual grant not exceeding One Hundred Dollars, when the work is carried on throughout the year. In no case shall the grant exceed the total amount expended by the Board throughout the calendar year for the work.

(b) To the teacher conducting the work satisfactorily throughout the year, the Minister shall pay an annual grant of Seventy-five Dollars. If only conducting the work to the Summer holidays, the grant will be Forty Dollars;

for the remainder of the year, Thirty Dollars.

(c) To the School Board which has provided for experimental and demonstration plots under Regulation 11, an additional grant not to exceed Twenty-five Dollars will be paid; in no case, however, shall the grant exceed the total amount expended by the Board for the calendar year for the work.

(d) To the teacher conducting the experimental and demonstration plots satisfactorily throughout the year for the practical instruction of the pupils as well as the community at large, an additional annual grant of Twenty-five Dollars shall be paid. This work must be carried on throughout the whole year.

13. When an equipment, on which the legislative grant has been paid to its full value, remains unused for two consecutive years, the Minister may direct the transfer of said equipment to one of the other schools of the Province.

14. The grant of One Hundred Dollars made to the School Board may be spent for literature, laboratory equipment, seeds for home project work, printing, expenses of teachers or committee acting with the teacher in the supervision of the work, or other purposes as may be approved by the Minister.

15. The grant of Twenty-five Dollars for experimental and demonstration plots in connection with the school may be spent in preparation of the ground, purchase of equipment, seeds, fertilizers, for expense in care of plots during the Summer, and such other purposes as may be approved by the Minister.

16. The various works to be undertaken by the pupils as home projects should be considered and selected early in the course, so that there

may be plenty of time for preparation.

17. In all the work, pupils are required to keep records and the projects should have a commercial side to them.

18. It is not necessary that the pupil should carry on the work at his own home. It may be done at a neighbor's place or in one of the experimental plots at the school. Neither is it necessary that he perform all the work himself, but where labor is hired, it should be duly acknowledged in his records.

19. While regulations require only six pupils to be enrolled in each class, it is desirable that as many as possible of the pupils of the classes concerned should take up the work. Principals and Boards of Trustees should use their influence to this end.

The suggested home projects for the pupils cover most of the phases of agriculture, the more popular ones being gardening and fruit growing; production of field crops; crop and live stock improvement; farm management and improvement, and farm mechanics and home carpentry. These subjects are subdivided and the pupils may choose what appeals to them most.

*A Survey of Schools Teaching Agriculture:*—No attempt is here made to give a complete account of secondary schools teaching agriculture, but to draw attention to some nineteen schools from which reports were received and which have given the subject a more or less fair trial.

The courses offered in these schools were subject to numerous draw-backs, chief of which was insufficient laboratory equipment to make the work practical through experimentation. In some cases experimental and demonstration plots were used, but the majority of the courses were more or less theoretical.

TABLE I.

*Enrollment of Pupils Taking Agricultural Course*.—Number of Schools in Survey, 19; Enrollment of Scholars: Largest, 54; Smallest, 3; Average, 29.

It must be understood here that there were two courses optional to the var-

ious schools, one a six weeks course, and the other a regular course, compulsory to all the pupils in the low forms. The optional six weeks course reduced the average enrollment of the pupils materially.

Table II. will be found below.

TABLE II.

A Condensed Report of a Survey of Schools Teaching Agriculture.

Number of School	Average Attendance	Sympathy of Pupils	Sympathy of Parents	Sympathy of Principal	Nature of Course	Recommendation of Agricultural Representative
No. 1.	21	For	For	For	6 Weeks	Short Course
No. 2.	....	Indifferent	For	For	6 Weeks	Short Course
No. 3.	19	For	For	Indifferent	6 Weeks	Regular Course
No. 4.	14	For	For	For	Regular	Regular Course
No. 5.	30	For	For	For	6 Weeks	Short Course
No. 6.	38	For	For	Against	6 Weeks	Regular Course
No. 7.	15	Against	Indifferent	For	6 Weeks	Short Course
No. 8.	18	Indifferent	For	For	Regular	Primary Schools
No. 9.	....	Against	Against	Against	None	
No. 10.	11	Against	For	For	Regular	Regular Course
No. 11.	....	For	For	For	6 Weeks	Primary Schools
No. 12.	8	Against	Against	For	6 Weeks	Regular Course
No. 13.	....	Against	For	For	6 Weeks	Regular Course
No. 14.	16	Indifferent	For	Against	6 Weeks	Regular Course
No. 15.	31	Indifferent	For	For	Regular	Regular Course
No. 16.	6	Against	Against	For	6 Weeks	Primary Schools
No. 17.	12	Indifferent	For	For	6 Weeks	Primary Schools
No. 18.	19	For	For	For	Regular	Regular Course
No. 19.	48	For	For	For	Regular	Regular Course

From the table on previous page we may draw the following conclusions. The vast majority of the parents and the principals of the schools are strongly in favor of the adoption of a regular course in agricultural instruction, although the pupils show a more or less marked degree of indifference. While the six weeks course is the most common course existing in the schools at present, the agricultural representatives advise the adoption of a regular and systematic course.

One feature of the reports received, not contained in the foregoing table, showed that the pupils were applying, as far as possible, the principles taught in the course, especially in regard to the horticulture work and the handling of farm stock.

### CHAPTER III.

#### TYPICAL SECONDARY SCHOOLS TEACHING AGRICULTURE

Attention is here drawn to two foreign schools that are accomplishing a great deal of good in their respective countries and are quite typical to many others existing in foreign lands.

*Secondary Instruction in Australia:*—Agricultural instruction in Australia did not advance as rapidly as it did in some of the European Countries. It was not until 1906 that they undertook the organization of agricultural high schools, and that date marks the organization of one at Ballarat, of which I purpose briefly describing here. Ballarat was once famous for the production of gold, and now it is just as famous for high class farming.

The school was organized for the advanced education of boys and girls on the assumption that the majority of girls would proceed to higher institutions for training as teachers. The direct aims of the school, so far as the

boys are concerned, is described as follows:

1. To give boys such education as will direct their interest especially towards the land as an excellent means of gaining a livelihood, and, further, to afford the practical experience and scientific training necessary for success.

2. To magnify agriculture as an occupation and a profession, so that the boy may leave the school an interested laborer, or for further study and practice on an experimental farm, in an agricultural college, or at a university.

3. To provide a central institution for the dissemination of agricultural information by evening lectures, conferences, or literature.

4. To superintend the Government experimental plots and to record and interpret the results.

5. To provide a Summer School in agriculture for primary school teachers.

The following are some of the conditions under which the Minister of Public Instruction established the school.

- (a) At least one-half of the cost of the necessary buildings and equipment was to be controlled by local subscription.

- (b) An area of ground of not less than twenty acres was to be provided in a position convenient to the high school.

- (c) At least fifty students paying prescribed fees were to be guaranteed before a proposal to establish the school was entertained.

- (d) The school was to be under the control of the Minister, who would be assisted in the questions affecting the course of study and general policy by a committee consisting of the Minister of Agriculture, the Director of Education, and the Director of Agriculture.

- (e) A local council consisting of not less than five members to be appointed

by the Governor in council, would be established for the school district. It's duty would be to exercise a general oversight in matters affecting their school, to expend the maintenance allowance allotted to each school, to exercise such supervision, as the Minister may authorize over farm operations, and to advise the Minister in all matters specially pertaining to the school.

The pupils must be fourteen years of age, and show satisfactory evidence that they are qualified to profit by the course of study offered in the school. The local council has the power to nominate a certain number of students for free instruction, the number not to exceed ten per centage of the total number of paying students. None of the pupils are resident; all are boarded in the neighborhood under careful supervision. The fees are about Forty to Fifty Dollars per annum.

The syllabus of instruction includes ordinary school subjects as far as possible, although the contents of the subjects are varied, and one-third of the pupils time is given to agriculture. Farm handicraft and drawing are prominent in the curriculum. The science subjects are chemistry, physical geography and climatology; the agricultural science in the syllabus is elementary botany and zoology. The "principals of agriculture" deal with soils, particularly with their own soils, rotations and cultivation of crops, irrigation, feeding and management of farm livestock, ensilage, first aid to animals, and the general principals of the valuation of fertilizers, milk and cream, farm crops, and animal products.

The farm attached to the school is worked in such a way as to illustrate the principals laid down in each section of the syllabus, it is used as a centre of experimental work, and the boys are supposed to be continually at work on it.

*Secondary Instruction at McNabb, Illinois, U. S. A.*:—The John Swaney School, in north-central Illinois furnishes a good example of what may be done in an intelligent rural community independent of any urban influences. It is merely a cross-roads school with two or three stores and a railroad station as companions. The school has a beautiful campus of twenty-four acres donated by one of the benefactors, Mr. Swaney. The campus includes land under cultivation and a tract of open rolling timber. Besides the school building, there is a dwelling for teachers, a grange hall, and a roomy horse shed. The school building is a three-story one, on the second floor of which is an assembly room, accommodating two hundred or three hundred persons, and one or two recitation rooms. On the first floor are the rooms for the elementary grades, the domestic, natural and physical science laboratories, and the principal's office, while in the basement are the lunch and manual training rooms, and the heating and gas plants. The latter supplies the laboratories and furnishes light.

By corelation and substitution, as mentioned in a previous chapter, agronomy, animal husbandry, and horticulture are taught with the other essential subjects.

For one study, the agronomy class picked weed seeds, and placed them in labelled vials, also grading grass and clover seeds. The object of the work was to gain an ability to detect adulteration in purchased seeds. Corn judging and testing was included as a part of the work.

The class in horticulture planted some trees and did some grafting in a nearby orchard. In response to a question, about three-fourths of the class stated that they had fruit trees at home, and most of them thought

their fruit trees had received different treatment because of the work done in the class.

Upon request, the principal gave the following question in a written test: "What did you do at home as the result of the work done in horticulture this year?" Following is the most pretentious answer given:

"I have pruned several peach trees and shade trees and have shown the hired men how to cut the limbs on the big orchard trees, which were too much for me to do alone. A one year peach tree, which I pruned to a whip is one mass of leaves and twigs. The wounds are all healing nicely."

The type of work done in zoology is of interest as showing how a pure science may be made to minister to the cause of agricultural education. A distinctive feature is shown by the following extract from a report taken from the note book of a pupil. It is a condensed account of six field trips written by one of the girls.

"1. Field trip, September 4th. Purpose was to catch insects for study. Insects found were grasshoppers, potato-bugs, caterpillars, and a spider. Field trip, September 6th. To look for insects on trees. Found tent caterpillars and gall flies. Field trip, September 9th. To watch tent caterpillars work. Also gathered some insects, as well as worms on elm leaves, pyramidal gall, sow bug, cox-comb gall, measure worm, cicada, grasshopper, katydid, black bug, butterfly and spiders. Field trip, September 11th. To gather insects. Found black moths, mosquitoes, green plant lice, larva of lady bird, beetle, leaf-hopper, squash bug, larva of squash-vine borer. Field

trip, October 2nd. To look for insects. Found cottony maple scale, plant lice and ants. Field trip, October 7th. To look for insects in a corn field. Found caterpillars, a corn stalk borer, green plant lice, ants and corn root aphid."

"Certainly such work as indicated by this student notes will not suffer by comparison with that of the high school students spending their time on planarian worms, Campanularion hydroids and holothurians."

I mention the above types of foreign schools not as a matter of comparison with any that we have in Ontario, for as yet, we have no schools that begin to compare with them in efficiency, but as a type or types of schools that are doing a noble work in other countries and as an incentive to us as Ontario citizens.

In the following Chapter, I will endeavor to show what has been done in agricultural instruction in one of our own collegiates and attempt to conclude whether or not the course has been a successful one.

#### CHAPTER IV.

##### METHOD OF ADMINISTRATION

The greatest problem to be overcome in the administration of agricultural instruction in our schools is the lack of time and space given it in our present curriculum. At one time the supply of a competent teacher gave concern to those interested, but that problem may be solved now. Not only are there special courses offered by our higher educational institutions for the preparation of competent men, but the agricultural representatives now located in nearly all the counties of the Province are ready and willing to give their services.

Another serious problem is the lack

of equipment in the schools necessary to make a course a practical one, but this may be provided by special grants where there is special interest shown by the school Board and staff of the school in the work.

The course is outlined to be taken in the first and second forms of the schools, and where a competent instructor is available, the course may be made compulsory to all the pupils. The time allotted to this subject is generally two hours per week, or what ever time the principal sees fit to grant. It is, however, not advisable to undertake the work on less than two hours per week, considering the fact that at least one hour per week should be given up to the practical end of the work.

*Course of Agricultural Instruction as Approved by the Director*.—The following is the secondary school course of study. Subject to the approval of the Director, modifications may be made therein to suit local conditions:

1. *Field Husbandry*.—History of agriculture; different systems of farming, different kinds of soil rotation of crops, farm crops in relation to drainage; application of manures; green manuring; preparation of the land for the different crops; methods of cleaning, testing and selecting farm seeds; study of cereals, roots, fodder crops, grasses, clovers, and other farm crops; sowing, harvesting, preserving, and marketing.

2. *Animal Husbandry*.—A study of the history and characteristics of the principal breeds of livestock, including light and heavy horses, beef and dairy cattle; sheep and swine; feeding and management; principles of breeding; registration of pedigrees; market requirements; visits to local farms, and practical work in judging stock.

3. *Dairy Husbandry*.—The formation, care, and management of a dairy herd; rearing calves; dairy stables; lighting,

cleaning and ventilation; individual cow records; the care of milk, including an elementary chemical and bacteriological study of it; the home dairy; running of hand separators and care of dairy utensils; manufacture, packing and marketing of butter; visits to local creameries and cheese factories, and a study of factory methods of manufacture, packing and marketing.

4. *Poultry Husbandry*.—The most valuable breeds and varieties of hens, ducks, geese, and turkeys, their characteristic points and peculiarities; various methods of housing poultry; incubation, brooding, rearing of chickens; general methods of feeding and management; market conditions; the fattening and dressing of poultry for home and foreign markets.

5. *Bee-keeping*.—Management, wintering, swarm control; honey production, increase, queen rearing; symptoms and treatment of disease.

6. *Horticulture*.—Treatment of fruit plantations; cultivation; grafting and spraying; value of cover crops; methods of growing and caring for vegetables; selection of varieties; study of insects and fungus diseases affecting fruit and vegetables; care, storing and marketing of fruits.

7. *Forestry*.—Forestry as related to the farm; classification of the common forest trees; the establishment, care and protection of the woodlot; varieties and methods for roadside planting and shelter belts.

8. *Agricultural Botany*.—Identification and extermination of weeds and weed seeds; seed control act and its application; experiments to show seed germination and growth of plants; the relation of plants to soil, air, light, temperature, and moistures; systematic study of the structure of cereals, grasses, legumes, and roots; plant diseases; smut, rust, mildew, etc.; how to com-

bat them; collecting, pressing and mounting of weeds, grasses, and weed seeds.

9. *Agricultural Physics*.—Soil; classification and physical examination, origin and mode of formation; soil forming rocks and minerals, and their behavior towards moisture. Surveying and drainage; measurement of fields and farms with the chain; circulating areas and drawing plans; use of various instruments for determining levels, preparing plans for drainage; methods of digging, laying of tile, and filling of trenches; calculations concerning required size of tile and cost of various systems. Conservation of moisture by drainage, mulching and cultivation; capillarity and its relation to plant growth. Water capacity of different soils. Mechanics; principles of farm machinery; principles of ventilation; lighting and heating.

10. *Entomology*.—A practical course in economic insects, identification, habits and life histories; a close study of the more important insects, by means of breeding and rearing cages; insecticides; collecting of injurious and beneficial insects and samples of their work.

11. *Agricultural Chemistry*.—Chemical composition of soils; elements used by plants; availability and assimilation of plant food in the soil; application of fertilizers; absorption and retention of important constituents, as nitrogen, phosphoric acid, and potash; insecticides and fungicides; their composition and proper mixture.

*Application of the foregoing method of Administration in the Perth Collegiate Institute*.—Perth, the county town of Lanark, has a population of 4,000 inhabitants, and is situated in the centre of a very prosperous farming community. It is a much debated question among the members of the school Board whether or not the Agricultural

Representative could not better employ himself teaching scientific agriculture through the short course than through a systematic course with the first two forms in the collegiate institute. So the course in the collegiate was inaugurated for the purpose of solving this problem and has been in operation now for two years. Last year the course was confined to Form 1, and was extended to Form 2, this year as well as being taken up again in Form 1.

In planning out this course of instruction, the prescribed one was modified slightly to suit the prevailing conditions in that community.

The following table will lend information as to the course that was followed last year in Form 1.

#### TABLE IV.

##### COURSE OF AGRICULTURAL STUDY FOLLOWED IN THE PERTH COLLEGIATE

##### FORM I.

TERM	Subjects and Phases of Subjects Taught.
FALL.	<i>Poultry</i> —
	(a) Methods of Incubation.
	(b) Rearing of Young Chickens to Maturity.
	(c) Various Systems of Housing.
	(d) Feeds and Feeding.
	(e) Markets and Marketing.
	<i>Bees</i> —
	(a) Management and Wintering.
	(b) Increase, Swarm Control and Queen Rearing.
	(c) Honey Production.
	(d) Symptoms and Treatment of Diseases.
WINTER.	<i>Orcharding</i> —
	(a) Pruning, Grafting and Budding.
	(b) Spraying.
	(c) Orchard Insect Pests and Fungus Diseases.



*Agronomy—*

Preparatory work for the Study of Agronomy.

SPRING. *Agronomy—*

(a) A Systematic Study of the Most Important Cereals.

*Grasses—*

(a) A Systematic Study of the Economic Grasses.

*Rotation of Crops—*

(a) Advantages and Disadvantages of Crop Rotation.

The time given to the foregoing table was two hours per week but in addition to this, spare periods were devoted to experimental and demonstration plot work in grounds adjoining those of the Collegiate.

Examinations were held at Christmas, and at the end of the Spring term. The following Christmas examination paper, 1912, is representative.

ONTARIO DEPARTMENT OF AGRICULTURE

Annual Christmas Examination, 1912

FIRST FORM

POULTRY HUSBANDRY AND AGRICULTURE  
Examiner—*G. L. Woltz*

1. Classify fowls into their classes and sub-classes and briefly describe the characteristics of each.
2. Name two systems of housing poultry, stating the advantages and disadvantages of each system.
3. How would you proceed to raise a flock of young chickens to maturity?
4. What are nutritive requirements? And name the nutritive requirements in foods and state the uses of each.
5. Write a note on the development of the young bee.
6. Write a paragraph on "Re-Queening," dealing with it's impor-

tance and the method of procedure.

7. Describe an ideal cellar for wintering bees.

In adopting the course of agricultural instruction, the Principal placed it on a par with the other subjects in as much as each pupil was required to make a pass in the subject before being promoted to a higher form. The success of the undertaking was no doubt determined by this regulation.

TABLE V.

Grading of Pupils' Marks in Agriculture

No. of Form	Percentage, Rank of Student.	
	1st Class	2d Class
	Honors	Honors
Form 1—1912.....	16.8	28.3
Form 1—1913.....	14.3	28.5
Form 2—1913.....	12.9	22.6
	Pass	Failures
	48.2	6.7
	52.4	4.8
	61.3	3.2

In Form 1, 1912, there were forty-four pupils. Form 1, 1913, Forty-two pupils. Form 2, 1913, there were thirty-one. Considering then the small numbers in each form, we must admit that the marks obtained were creditable to both the pupils' attitude towards the work and the method of instruction.

One very noticeable feature was the correlation existing between the students' marks in agriculture as compared with other subjects, neither was there any evidence of pupils living in town showing less interest in the work as compared with those whose homes were in the country. Indeed the two pupils leading the class in Agriculture were both town bred girls.

During a visit from Dr. Spotton, the collegiate inspector for the Eastern Ontario Division, the pupils were re-

quested by him to write an essay on "The Management of Bees." After he had selected several of the best, the following was chosen which represents a fair average of what was written by the whole class:

"In the management of bees, one should disturb the hives as little as possible on dark, dull days and only in the day time. In handling them avoid rapid jerking movements. Do not wear clothes of a black color if other clothes of a lighter color are obtainable as bees dislike black as a rule."

"Upon opening the top of the hive, give the bees two or three puffs of smoke from the smoker. This causes them to gorge themselves with honey and they become stupefied."

"The products of the bees are, honey, wax and propolis. Honey is produced from the nectar obtained from flowers. In the honey stomach of the bee, the nectar undergoes concentration and becomes thickened. Propolis is a thick, sticky substance used for batting up the crevices in the hive. Wax is used in the manufacture of honeycomb in which the honey is stored. It requires about fifteen pounds of honey to produce one pound of wax. In order to get as much honey as possible, beekeepers should supply comb for the bees. A good hive should produce about thirty pounds of honey in the Fall."

"In the Spring it is often necessary to feed bees. You may feed them honey or sugar, but never use a cheap grade of sugar. Boil until all the sugar is dissolved. Be careful and do not let it burn, as this would injure the bees."

"In requeening, the old queen should be destroyed at least 48

hours before the new one is introduced. Never put the new one in with the old one, as they would fight. Never leave the hive without a queen because the bees will stop work."

"When bees begin to swarm, extreme restlessness is noticed. Several bees go out and act as leaders. They buzz around the hive until they get the others to follow them and then they fly away."

The above essay was written by a little girl fourteen years of age, and even though it was strictly impromptu (accounting for its disconnectedness) it contains many facts.

There was a change in the agricultural instructor in the Fall of 1912, but the new instructor took up the work where the former had left off, and also extended it to Form 2.

In Form 2, the work was considerably more advanced. A great deal of the time was devoted to plant and animal chemistry; soil physics; farm management, and the characteristics of the most popular breeds of farm animals.

We have every reason to believe the course has been a success. At all times the Principal and his assistants, the school Board and the Inspector have shown their unmitigated sympathy in the work, nor has the pupils' interest waned at any time. Indeed, it has been the reverse. At the close of the first year's work in Form 1, the pupils voted unanimously for a continuance of the work in Form 2, realizing that it was not an extra subject being "forced" upon them, and that it furnished an agreeable variety to their weekly studies.

#### DIFFICULTIES OF INSTRUCTION

To insure an efficient general system of agricultural education of the second-

ary type, it is necessary to adopt a policy that shall be adequate and far-reaching, and which shall remedy the defects of our schools as they exist today without diminishing their usefulness. If we may judge by the discussion now going on, the determination of such a policy is a matter of considerable difficulty.

But there are immediate difficulties or problems to overcome. The facilities at the command of the instructor are very inadequate; there is a lack of time or suitable season for work; often the lack of a competent teacher; a lack of support from parents and pupils; lack of a suitable text book, and the difficulties of organization or methods.

*The Equipment Problem.*—In the nineteen reports received from secondary schools, each report stated that the chief difficulty to overcome in that particular school was the lack of facilities to make the work as practical as desired.

In the course of study outlined in Chapter IV., it is obvious that an agricultural laboratory is much needed. This should be equipped with apparatus for physical and chemical experiments pertaining to agriculture. Here should be collections of diseases, insects of economic importance, pressed and mounted specimens of grasses, cereals, weeds, and weed seeds for examination and laboratory work, and possibly most urgent of all is the need of a small agricultural museum. This should contain miniature specimens of modern poultry houses and fittings; garden tools; antiquities in the form of agricultural implements and tools, if possible.

There is no need of expensive apparatus. Many schools show much money invested in almost useless air pumps and static electrical machines, at the same time suffering from a dearth of

simple material or of duplicates of common apparatus necessary to carry on individual laboratory work.

One can well sympathize, however, with those teachers who feel the lack of room, who lack window sills to set plants in, and plain tables on which to spread out ears of corn and simple seed testers, or who cannot find a convenient corner in which to keep the soil used for experiments.

*The Time and Method Problems.*—While the majority of high school principals are in sympathy with agricultural instruction, they do not readily apportion it a place in the schedule of classes with the other subjects. This is a common complaint of the teachers attempting the regular course with the first two forms. If the subject is to be taught at all, each form should devote at least two hours per week to the work, and this is meagre enough allowance when one considers that a part of this time must be spent on the plots and in the laboratory. One agricultural instructor in Grey County is attempting to teach agriculture in the high school in weekly periods of one-half hour each. The allotment of this time must, of course, govern the method of instruction to be adopted.

The deficiencies of agricultural instruction, as compared with other sciences, are probably more prominent on account of the greater opportunity afforded to make concrete the principles of the various sciences. The pedagogy of agricultural instruction must take account of the essentially utilitarian aspect of this study. Agriculture as a study may justly claim to have a content of its own that is worth while.

In emphasizing the advisability of concrete examples, it may be cited the common practice of studying the cellular structure of a stem or plant is by

microscopic examination alone, without any attempt to demonstrate the functions of the cambium layer of cells by having the class make grafts. The practice is to demonstrate the mechanical process without the pupils knowing much about the structure upon which the success of the experiment depends. They may be told that the scions must be inserted in the cleft at the bark, but few ever make the trial experiment of putting one scion in the middle or heart-wood portion in order to demonstrate that only at the outer edge of the stem would the knitting together occur.

The demonstration plots attached to schools serve as a medium through which concrete example may be worked. In the study of farm practices it must be demonstrated that there are many factors that influence results. There should be a prevailing idea of good workmanship and a blending of scientific and practical principles. The famous corn plot of the University of Illinois should be commended to all schools teaching agriculture. It was

the writer's privilege to visit these plots in 1913, and although the season was late, the lesson was obvious. This corn plot yielded for the last three years an average of twenty-nine bushels to the acre, while another plot near it yielded, under a different system of farming, at the rate of ninety-six bushels to the acre.

This object lesson will be appreciated when one understands that it has taken over thirty years to get this plot in its present poor condition by keeping it in corn.

It is evident then that, when time affords, an agricultural course may be made practical, and it is also possible to furnish concrete examples of the principles taught in the class room.

*Attitude of Students and Parents.*—A great deal of success of the instruction depends on the attitude of the pupils and the encouragement given the work by the parents, although the degree of interest may reflect upon the quality of the teaching in no small degree.

TABLE VI.

## ATTITUDE OF PUPILS AND PARENTS TOWARD AGRICULTURE

	Regular Course	Short Course	Total
Pupils "enthusiastic," "very much interested," "very favorable," or study "very popular".....	5	3	8
Pupils "like it," "pleased with it," "take kindly to it," or attitude "good," "favorable," "pleasing" ..	1	1	2
Attitude "fairly good," "tolerant," pupils show no marked interest".....	2	0	2
"Indifferent," "backward," "no interest".....	0	4	4
"Unfavorable," or "pupils dislike it".....	0	3	3
"Cannot judge," or "study too new".....	0	0	0
	8	11	19

When one considers that 63.2 per cent. of the schools furnishing the data contained in the above table were conducting the short course rather than the regular, the degree of sympathy existing between the two courses is decidedly in favor of the regular course. Combining the two courses, 80.1 per cent. of the pupils took an amiable attitude towards the work, many of which were eager for it. In nearly every case reporting a dislike for the subject, the returns showed indifference on the part of the local agricultural representative, and did not include class room experiments or demonstration plot work. Under the circumstances no one would expect anything else.

*The Teacher and Text Book Problem.*

—It is quite true that, at present, it is not possible for all secondary schools in rural communities to teach agriculture because of the Board's inability to procure science teachers with sufficient grounding in the scientific principles of agriculture. In centres where district representatives are stationed, material aid may be rendered by them either directly or indirectly; still the supply of teachers from this source is a very meagre one.

The Department of Education has now, however, arranged a course of instruction for prospective science teachers that will in all probabilities alleviate the problem of promoting competent teachers. The course arranged for is a regular two year science course in our universities and followed by a two year course at the Ontario Agricultural College. This prepares one for the degree B.Sc., and qualifies science teachers to teach scientific agriculture.

As yet there are no prescribed texts for the secondary schools, the instructor generally choosing reference books from any available source, as well as

Government bulletins. There are, however, new books appearing continually, which are quite adaptable for High School use, while the older works by Bailey and Jackson will be hard to replace. It is very questionable whether there is much need of a prescribed text as yet, but it is quite obvious that as soon as the demand is made evident, the book will be supplied.

By the solution of these problems, of which the above mentioned are only a few, our high schools will yield more service to the needs of our rural communities than ever before. It would serve in providing for a systematic productive work in connection with the organized studies at the school. When both of these are carried on together and the pupil writes up a record of what he has observed, of what he has planned or reasoned and what he has done, the record itself is both a means toward and an evidence of clear and consecutive thinking on the part of the pupil.

The progress to be expected in the boy himself would be, in the main, along five lines.

1. The development of the habit of observing and learning by trying to accomplish a definite useful piece of work in which his interest was keen.

2. The development of practical ability from trial and the experience in carrying processes necessary to give effect to his plans; the development of skill in work and of power in managing himself with the least waste of time and strength, and in managing tools, machinery, and materials to the greatest advantage.

3. The formation of the habit of seeking information which could be depended on to enable him to understand the principle underlying what he was planning to do and trying to do. That would be fostered by discussion

with his father, teachers and others as how best to accomplish the desired end.

4. The establishment of habits of forming reasoned judgments and opinions upon situations, conditions, theories, principles and methods of farm work and management.

5. The development of will-energy to give effect to his decisions and of desire and ability to co-operate with others in useful undertakings.

*General Conclusions.*—After a more or less extensive study of the secondary schools teaching agriculture at home and abroad, I am led to draw the following conclusions:

Agriculture in the schools is a very unsettled and undetermined thing, but with proper legislation and sympathy, there is scope for the accomplishment of much good.

No system known to me is suitable for adoption in Ontario "en bloc." The instruction must be adapted to the community, as a general course will suit but few places.

The characteristic lack of equipment in teaching agriculture should not dis-

courage teachers as it does. If the need is made known, the deficiency may be overcome, for we have not by any means exhausted present resources.

Of the various courses offering agricultural instruction to students, probably no one is best. All are accomplishing noble work. In any case a school should never lose touch with students who have attended it and still dwell in the community. It should be ever ready to render material assistance and advice.

There should be more emphasis laid on the business side of farming. Book-keeping should be taught; the ability to keep a systematic and accurate record of cash transactions as well as the estimate of costs and profits or loss of each department of work.

The lack of time is a matter of will, management, and public opinion. The sentiment of the community may be responsible for this.

The attitude of the patrons is usually favorable and the interest of the pupils is related about as one would expect, to the amount of laboratory work, *i. e.*, to the quality of instruction.



In Michigan, which is the home of the broom corn industry, the soil is so fertile that a man can plant a feather duster and turn in a crop of corn that will run 90 bushels to the acre, on a good track. A crop of broom corn is not beautiful in face or form, but as a money coiner it makes the United States mint look like taking money from a blind organ grinder. The cheapest way to harvest broom corn is to run a prairie fire through it on the Fourth of July. It won't hurt corn, and it is cheaper than buying fireworks for the children.

## Studies in Home Economics

BY PROFESSOR LUCY H. GILLET, DEAN OF THE DEPARTMENT OF HOME ECONOMICS, ILLINOIS WOMAN'S COLLEGE.

### PURE AIR THROUGHOUT THE HOUSE

It is thought difficult to ventilate a room or a house properly without creating a draught, but with a little time and effort it becomes an easy problem.

We must keep in mind the fact that heated air rises, and so the natural outlet for air which comes from the lungs, loaded with carbon dioxide, is at the top of the room. A window lowered from the top, if only an inch, will cause a circulation of air in the room. Since proper ventilation consists in the removing of air which has been breathed once to make room for pure air which should be admitted, this method of opening the window at the top is the simplest one. Or a window opened in the upper hall of a two or three-story house will help to ventilate, and this may create less of a draught. The doors to rooms below must be opened, however.

If the open window creates a draught which is uncomfortably noticeable, a screen with a piece of cheese cloth fastened over it will prevent this. This cheese cloth (or flannel) screen is also helpful in keeping out dust and dampness, especially from the sleeping room at night, where dampness is an objection.

Another method is the one quite commonly used in public buildings. It consists of a board a few inches high, placed under the lower sash. This admits air between the sashes and a large amount of air will enter a small space. Oftentimes a slide is arranged in the board so that more air may be admitted when desired.

It is even more essential to have fresh

air during the night than during the day because the body is rebuilding and restoring its wasted tissues. The windows should be wide open and if one is susceptible to draughts, or if the atmosphere is damp, a screen covered with flannel or cheese cloth should be put in the window.

Since the windows are the natural means of ventilation in the ordinary dwelling house, they should not be barricaded with heavy draperies, closed blinds, and several pairs of shades.

The windows are not the only means of entrance for air. Quite a large percentage of the air of the house may come up from the cellar.

The cellar is a reservoir of air and the condition of the air as it comes up into the house proper depends to a large extent upon the condition of the cellar. If the cellar is damp, the air from it will be damp. While we know, now, that malaria at least, does not come directly from dampness yet we do know that damp air is depressing, and anything which is depressing lowers vitality, and a lowered vitality offers less resistance to disease. Then one of the first safeguards to health is a care for the cellar.

The cellar should be dry, and the only proper way to accomplish this result, even in part is to have plenty of light and air. The best means of obtaining air in the cellar is a cross ventilation brought about by windows situated opposite to each other.

The suggestion of a cement floor and sides may seem to many an extravagance, but when the cost of sickness is weighed against the cost of a clean, dry cellar, the cost is hardly to be considered.

# THE O. A. C. REVIEW

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**S**CARCITY of farm labor is the bogey that terrorizes not only those already engaged in agriculture, but also those who have considered taking up farming as a pursuit. The reasons for this scarcity are not far to seek. The farmer, the immigration system, and human nature are responsible for the conditions prevailing.

Beginning with the farmer: it would be pertinent to ask how the farmer himself would care to work to the limit of his powers all summer and live on the verge of starvation all winter, with the prospect of so doing for the rest of his career until he got too old to do anything but starve. It is true that there are farmers who succeed in keeping permanent help by using proper methods of work distribution, but how many do little but grumble at the scarcity of help without making an effort to alleviate conditions.

Farming holds but little inducement to labor, even under the very best conditions, for it offers small opportunity for the ambitious minded to rise. The greatest prize dangled before them is the prospect of a tenancy if great thrift has been exercised for years in the saving of their wages. But the average Canadian farmer does not even hold out this inducement. He expects to

obtain men in spring, work them hard, but justly, through summer, feed them well, pay them reasonably, have their services through harvest and dispense with them before the first frost is on the ground. Good board and good pay for five months does not compensate for total unemployment, street tramping and bitter cold in winter.

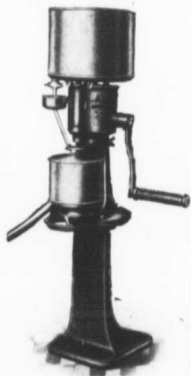
There is no reason why this condition should exist. It is as easy to obtain agricultural labor here as in any other country if some consideration is shown for the laborer.

### SHOULD WORK YEAR ROUND

This system, while unjust, to the laboring man cannot be of benefit to the farmer, who, if efficient as a manager, would find it a profitable investment to so distribute his farm operations that even in winter there would be cows to milk, steers and sheep to feed, cash crops to transport and buildings, machinery and harness to repair and improve.

He would then be in a position to offer sufficient inducement to a thoroughly trained reliable man to stay with him and be at hand both at seed time and at harvest. These permanent men could not alone cope with the sum-





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mer work, but they could handle the major part of it and much transient labor is set free every spring by the cessation of work in the lumber camps and by the school and college vacations, not to name the small percentage of city workers who seek the harvest fields as a temporary change from city conditions.

It is true that even with this ideal distribution of work, the quality of labor obtainable is not by any means as desirable as might be, owing to the second factor mentioned—the faulty immigration policy.

Reams have been written on the subject, and it is trite to detail the wretched quality of labor that has been foisted on this country by unscrupulous agents whose one aim is the commission received from the big transportation companies. Not only is this the case, but the small number of highly trained

countryborn emigrants that used to reach this shore from Great Britain, now seek Australia. The reason why they should do so is evident. Australia has made a bid for agricultural laborers only. She has dissuaded, the clerk, the artisan, and the loafer and given free or aided passages to the genuine agricultural laborer. The governments of her various states have promised this man permanent work the year round and have not ceased with promising—they have fulfilled the promise.

CLIMATE ALSO PREFERRED

Their climate also, from the wage-earning point of view, is considered by many to be infinitely preferable. This is thoroughly realized by the heads of various colonization societies and the British agricultural laborer is no

longer advised by them to seek Canada unless he has sufficient capital to enable him to be independent of conditions for a year or two.

Turning to the third factor, human nature: it is not sufficiently taken into account in speaking of the folly of the unemployed in avoiding farm labor that man is by nature as gregarious as a sheep, the city-bred man being particularly so. The lonely calm of the country does not appeal to him.

Far more fragrant to him than the clover field, humming with bees, is the faint whiffs of fried fish that waft to him from the doorways of the chip-and-fish-five-cent counter, the reek of the automobile exhaust, and the penetrating odors of lodging house cabbage. He loves the hard, hot insecurity of the city streets and sidewalks far more than he does the soft treading in the dust mulch behind the harrows. He wants his sociable glass, the mechanical monotony of an unvarying employment that does not call for thought. He expects a glance at the morning and evening papers, regular hours, the chance to visit the moving picture shows and somebody of like tastes to argue with about politics.

#### NOT IN THE COUNTRY

He cannot get these on the farm. His tastes may be queer and not the farmer's tastes, but they are his own, and he has a perfect right to them in a free country.

To the farmer, the ordinary unemployed object of the philanthropist's solicitude would be nothing more than an unqualified curse. He has neither the taste, the versatility, the mechanical training to serve the farmer efficiently. He would break the Pitman rod of the mower, snarl up the bowels of the binder, lame the team, grumble incessantly, and finally, after distract-



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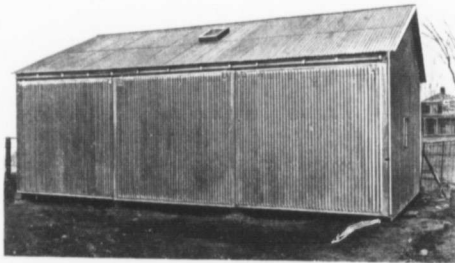
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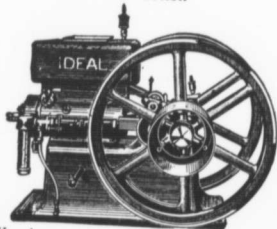
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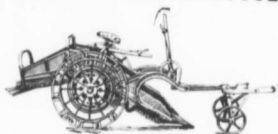


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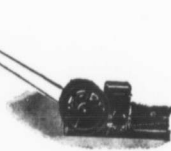
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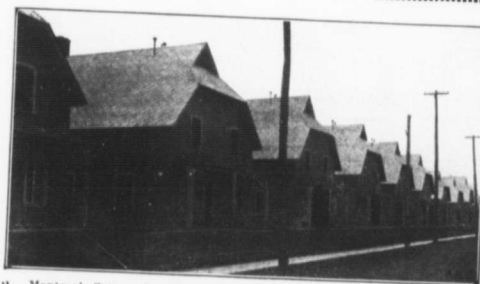
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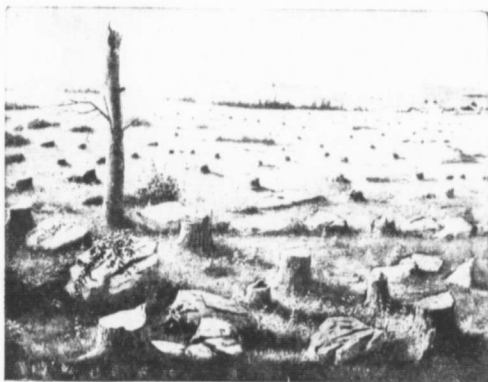
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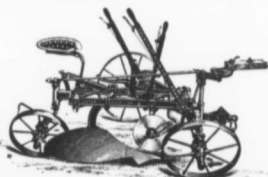
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