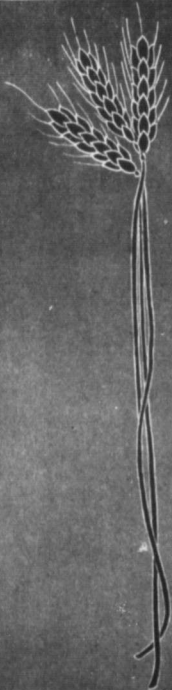
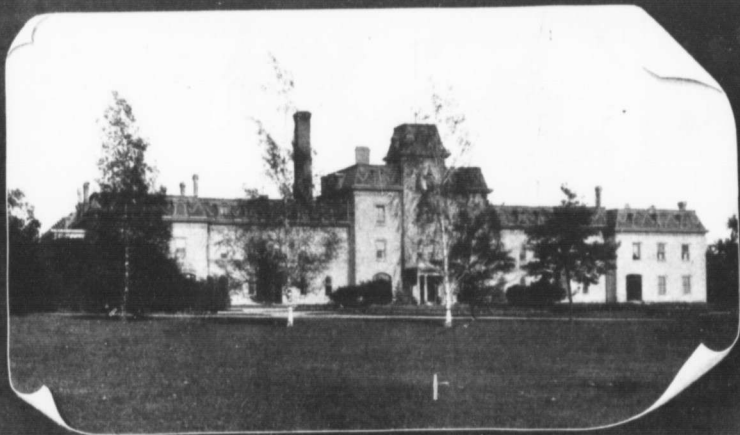


VOLUME XX.



NUMBER 6.



THE
O·A·G·
REVIEW

March
1908

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March:

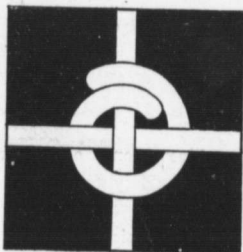
31. Night Schools close (Session 1907-1908). (Close 31st March).

April:

1. Returns by Clerks of Counties, Cities, etc., of population, to Department, due. (On or before 1st April).
13. Annual examination in Applied Science begins. (Subject to appointment).
15. Reports on Night Schools due (Session 1907-1908). (Not later than the 15th April).

16. High Schools, second term, and Public and Separate Schools close. (Thursday before Easter Sunday).
17. Good Friday.
20. Easter Monday.
21. Annual Meeting of the Ontario Educational Association at Toronto (During Easter Vacation).
27. High Schools, third term, and Public and Separate Schools open after Easter Holidays. (Second Monday after Easter Sunday).
30. Notice by candidates for the High School Entrance Examination, to Inspectors, due. (Before 1st May).

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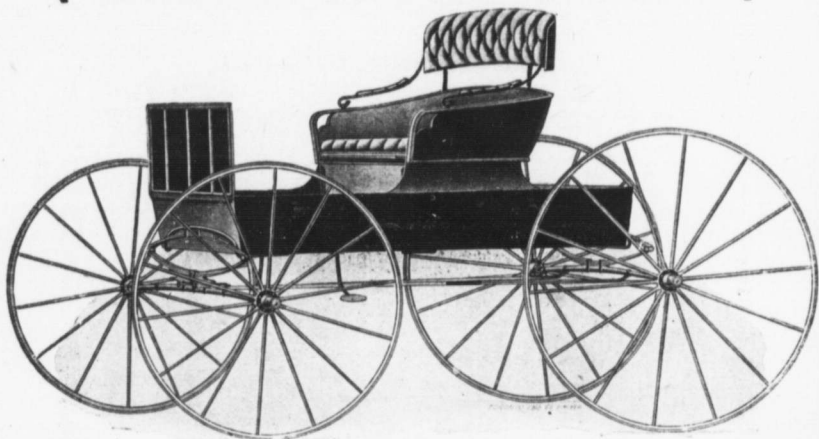
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The O.A.C. Review

THE DIGNITY OF A CALLING IS ITS UTILITY.

VOL. XX.

MARCH, 1908.

No. 6

Protection and the Ontario Farmer.

By HARRY COCKSHUTT.

“THERE be three things which make a nation great and prosperous,” wrote Sir Francis Bacon; “a fertile soil, busy workshop, and easy conveyance for man and goods from place to place.”

Industrial conditions have changed mightily since these words were penned. The sickle, with which the product of the fertile soil was harvested in Bacon's time, has by the process of evolution developed into the self-binder; the primitive workshop of the handicraftsman has assumed the gigantic proportions of the modern factory; the lumbering stage coach as a means of conveyance has been replaced by the mile-a-minute express train. But notwithstanding these changes, the student of economics will freely admit that the principle propounded by the Elizabethan philosopher applies with equal truth to present day conditions. Agriculture, manufacturing and transportation are the basic elements in our national greatness. According as they flourish or

stagnate is the country prosperous or poverty-stricken.

The possession of any one of these elements does not of itself constitute greatness. A nation made up entirely of farmers, each producing the same class of commodities as his neighbor, could not possibly have any internal trade. The surplus grain, cattle and butter, over and above what each farmer required for his own sustenance, would have to be marketed abroad, under heavy transportation charges and in competition with the whole world, which would mean low prices for the producer. Similarly a nation made up entirely of manufacturers, while able perhaps to develop a certain amount of domestic trade, would naturally be dependent to a very large extent upon foreign markets, out of which it might be legislated at a moment's notice.

Such conditions make for industrial instability, whereas greatness in a nation can only rest on a foundation of industrial stability. What is required

is an all-round development, where the various branches of industry are well balanced. That which one department lacks, it should be the aim of some other department to supply so that the nation may be as far as possible self-centered. This desideratum finds its most perfect expression in the co-operation of the agriculturalist and the artisan, the former supplying the latter with food for his bodily sustenance, the latter supplying the former with the clothing, tools and other materials necessary to the pursuit of his avocation, each paying for what he receives from the other in trade.

In the words of Bacon, therefore, Canadians as a nation must rest their claim to greatness on a fertile soil and busy workshops, with adequate transportation facilities to bind the two more closely together. The fertile soil we have as part of the heritage with which Nature has endowed us. Workshops, however, form no part of the inheritance of pioneers. They do not come to us ready-made from the hand of Nature. They must be acquired.

But how? Capitalists as a class are conservative investors. They hesitate to put their money into problematical enterprises. They have a habit of insisting on proof that their enterprises are likely to thrive, and one feature of such proof must be the assurance of a profitable market for the goods they expect to produce. Now the possible markets are restricted to two—the home and the foreign. The latter is uncertain, for the simple reason that there is always a danger of it being surrounded by insurmountable tariff walls, and the former can only be made certain by adopting similar measures of protection.

Fortunately or unfortunately, our course in this matter has been clearly marked out for us by the declared policy of other nations. With the theory of free trade in the abstract we have nothing to do. Whether or not it would be a good thing if universally adopted must be left for newspaper editors and debating societies to decide. Our duty is to face the conditions as we find them, to make the most of our opportunities, to keep Canada for the Canadians, and to build up our country.

That the manufacturer benefits directly as the result of a protective policy no one will attempt to deny. But what is the position of the farmer? Is Protection a tax levied upon him simply for the purpose of enriching the manufacturer? Is he compelled by means of the tariff to assume burdens out of all proportion to the advantages he enjoys? The advocates of free trade say "Yes," and by holding up constantly before his gaze a picture of himself laboring beneath a load which all but breaks him, they seek to instil into his mind the belief that his interests and those of the manufacturer are diametrically opposed. Happily the farmer is too observant a man to allow the wool to be drawn over his eyes in this fashion. He has learned to look at things for himself, to compare the values of farm products to-day with what they were thirty years ago, to compare the standards of living then and now, and to judge results by the length of his purse and by the material comforts with which he has been able to surround himself.

The protection of farm produce is just as much benefit to the farmer as the protection of manufactured goods is to the manufacturer. Protection

attracts industry, industry attracts population, and population creates a market. A customs tariff on farm produce keeps the American farmer from sharing Canada's growing market, thus enabling the Canadian farmer to realize higher prices. It is not so very many years ago when winter eggs were considered dear at twenty cents a dozen, when chickens were plentiful at forty cents a pair, and turkeys at eight cents a pound, when butter sold at fifteen cents a pound and apples at one dollar and a half a barrel. To-day the farmer has no difficulty in obtaining double these prices, on account of the increased demand for his produce in the large centres of population built up by our manufacturing industries.

A contributor to last month's issue of the O. A. C. Review enquires what good is the tariff on hogs, cattle and sheep imported into Canada, since they average a higher price in Buffalo than they do in Toronto. He quotes top cattle as being \$5.00 in Toronto, on Nov. 6th, as against \$6.40 in Buffalo on the same day. When it is remembered that the U. S. tariff on live cattle is \$1.50 per cwt., it will be seen that these figures illustrate in a most striking manner the value of protection to the American farmer, since it enables him to obtain a price virtually equal to the Canadian value plus the duty. When Canada under a policy of protection, acquires as big a population as the United States has acquired, the demand for domestic cattle will enable the local breeder to obtain just as good prices as the American breeder is getting in Buffalo.

But, it may be objected, any slight benefits which the farmer derives from a tariff on his own produce, is more than offset by the increased prices he

has to pay for manufactured goods, by virtue of the protection accorded the manufacturer. "If anyone is of opinion," says last month's contributor, "that this protection does not make the protected article dearer to the Canadian consumer, let him get an up-to-date United States implement catalogue and compare prices." Here again the criticism answers itself for, presuming that the comparison reveals what the writer evidently expects, it furnishes an interesting example of the manufacturers in a country where mowers and harvesters are protected to the extent of 20 per cent., selling to the farmers at prices lower than do the manufacturers in another country where the same articles are protected only 17½ per cent.

To understand how such a situation is not only possible but probable, it is necessary to take a glance at the cost accounts of a manufacturing establishment. In every industry there are certain items of expenditure, such as materials and productive labor, which vary in direct proportion to the output, while there are other expenditures of a more general character, such as rent, taxes, power, light, heat, insurance, superintendence, travelling and office expenses which do not so vary. The latter are more or less fixed from year to year; they are charges that have to be met whether the factory is operating or not, whether it is running half time or overtime. Obviously it is desirable, in order to bring down the average cost of production per article, to spread the fixed expenses over as large an output as possible. For example, the productive labor and materials in a harvester cost say, \$80.00, and the general expense of the plant amounts to \$20,000.

On an output of 1,000 this leaves \$20.00 of general expense to be borne by each machine; so that its final cost to the manufacturer is \$100. If, however, the yearly output could be increased to 1,250 on the same general expense, the proportion to be borne by each machine would be only \$16.00, bringing the final cost to \$96 instead of \$100. According as his market enlarges therefore, enabling him to increase his output, the manufacturer's cost of production automatically decreases, and competition from his fellow-manufacturers compels him to share the saving with the consumer.

Paradoxical as it may seem, quality in agricultural implements, and manufactured goods generally, improves as prices diminish. The same principle which works for a lower cost of production works for a higher degree of efficiency in the individual article. The manufacturer who makes 2,000 harvesters a year and can offer steady employment to his men will surround himself with a better class of workers than the manufacturer who only runs part time making 200 harvesters. Moreover he can afford to spend more money in experimenting with new ideas looking to the betterment of his machine.

Twenty-five years ago a self-binder sold for \$300. It was as weighty and clumsy as a threshing machine and required four horses to draw it. The modern harvester costs but \$125, is pulled easily by two horses does three times the work of its predecessor and lasts twice as long. By giving the manufacturer the assurance of a permanent market, the farmer has encouraged him to build on a large scale the industries which have produced such satisfactory results. Had the assurance of the market been denied the incentive would have been removed, and it is doubtful if anything like the same progress would have been made.

When the Tariff Commission were holding sittings in different parts of Ontario some two years ago, a deputation of beet growers waited upon them at Berlin to call attention to the importance, from the farmer's point of view of the industrial centres which a protective tariff had caused to spring up all over the Province, their contention being that the factory town was the farmer's best market town. The following comparison, taken at random from newspaper quotations on the dates mentioned, will furnish an up-to-date illustration of the significance of their remarks.

	EGGS		BUTTER		HAY	
	Sept. 1, 1907.	Jan. 15, 1908.	Sept. 1, 1907.	Jan. 15, 1908.	Sept. 1, 1907.	Jan. 15, 1908.
Cayuga, Haldimand Advocate....	18	26	20	27	13.00	14.00
Hamilton, Herald.....	25	45	27	32	17.00	18.00
Parkhill, Post	17	20	18	22	15.00	13.00
London, Free Press	18	35	23	28	16.00	15.50

Cayuga and Parkhill are typical of the small town that is practically devoid of manufacturing, while Hamilton and London are typical of the near-by city

where industries operate on a large scale. The figures tell their own story.

The comment of the beet-growers in their memorial to the Commission

sums up the situation admirably. "These towns about us," they stated, "are prospering to-day as they never did before, and with their increasing prosperity our local markets have substantially improved. We feel convinced, through the development of our splendid local markets in this and other surrounding and industrious towns, that in like manner Canada's greatest prosperity is coming when the farm and manufactory join hands, grow up together, the one finding the food and the other finding the market."

A MID-WINTER NIGHT'S DREAM.

The snows outside are white and white;
 The gusty flue shouts through the night;
 And by the lonely chimney light
 I sit and dream of Summer.

The orchard bough creaks in the blast,
 That like a ghost goes shrieking past,
 And coals are dying fast and fast,
 But still I dream of Summer.

'Tis not the voice of falling rain
 Or dream wind-blow through latticed pane,
 When earth will laugh in green again,
 That makes me dream of Summer.

But hopes will then have backward flown,
 Like fleets of promise, long outblown,
 And Love once more will greet his own;
 This is my dream of Summer.

—William Wilfred Campbell.

A Week in Holland.

By H. S. ARKELL, B.S.A., M.A.

WE left Harwich Harbor in the steamer Harwich-Amsterdam, almost at midnight. A fast express had brought us from London, and immediately upon embarking the steamer got under way. It was a pitch-dark night, but the innumerable lights lit up the glassy surface of the water, and the many craft about us, and produced a weird, strange scene. As the lights began to recede, the shore to grow more and more distant, the channel lights to single themselves out on either side, appearing as tiny points of flame in a vast expanse of darkness, and the beautiful electric sheen, running back in converging lines from the bows of the vessel, shot out more clearly in contrast with the dark water about, an indescribable feeling brought back in memory the tales of the old Norse, Saxon and Viking rovers, for upon these waters had they plied their trade. The dark night formed a mystic link between Britain and all the North Coast countries, and recalled a past when Saxon and Dane and Norseman had striven for the mastery upon sea and land. It was my first trip abroad.

We landed next morning at the "Hoek van Holland," and the appearance about the station of the quaintly uniformed porters and officials talking quietly in an unknown lingo, was our first introduction into Dutch life. It was too prosaic a scene to be interesting, although costumes and countenances might have been amusing if I had had a companion. We could get

no breakfast until the train started, and it was a long half hour.

I was en route to Hamburg, Germany, and the road lay through Rotterdam, Utrecht and thence through South Holland. It was an uneventful day, and I have little recollection of that journey, except of an unwelcome feeling of disappointment, of a passing vista of a rather monotonous country, crossed and criss-crossed by weedy ditches full of water, of glimpses here and there of a few wind-mills, a few peasants, a few gardens and of the frequent sight of herds of black and white cattle. These latter had merit. The charm of Holland lies not in what may be seen from the train. Had it not been for the appearance of a couple of stocks rising up from a field, I should almost have counted that journey lost.

Coming back from Germany, my way led to Leeuwarden, in Friesland. Remaining here for two days I learned something of Dutch life. Early in the morning I was awakened by the clatter, clatter, clatter of wooden shoes upon the pavement, and after a while I looked out to find the early morning milk delivery in progress. It was worth being awakened at five o'clock to see a team of dogs harnessed and pulling away at a milk cart, with the man in attendance aiding them by pushing from behind. Thus they deliver their milk in the Netherlands.

After breakfast I strolled about the streets for a couple of hours, watched the people unload their vegetables and



Hoorn, Holland.

cheese from the canal boats, saw them manipulate a big barge through a street bridge, went into a church where I found many old people at worship, and then wandered about, looking into the shop windows and taking note of everything I could see, from the quaint head dresses of the old ladies to the wooden "Klumpfen" of the little folks.

About ten o'clock the waiter at the hotel, who spoke English, found me a horse and trap, and with a driver, who knew nothing but Dutch, I set out to see some cattle. It was a beautiful day, and over a good road we made good time. The monotony of the countryside is relieved by the avenues of trees which everywhere line the roadsides and the regular outline of the horizon is intercepted at intervals by the distant view of hamlets, while a high church spire invariably rises up from their midst and overtops all else. These church spires spoke eloquently of the life of the people about, and told of an atmosphere within that was not yet invaded by the bargains of the market place. The citizens of Holland yet preserve unsullied in a marked degree their domestic and religious life.

After an hour's driving, the boy brought me to a farm whose owner had moved away a year ago. We went then to a farm of a man who spoke some German, and I gathered a little information from him, and had a look at some cattle. But I saw little that morning but the curious faces of some children and of some who were older than children, all wondering who this stranger was. There was nothing for it but to turn back to town.

After dinner we had a more successful journey, and some of the best cattle of Holland were shown to me. I was offered a cup of tea as well in a Holland household and enjoyed the hospitality of a hale and well-to-do Dutch farmer, whose substantial figure and honest countenance reminded me of paintings of worthy Holland burghers of medieval time. The scrupulous cleanliness of house and barn was something that could not pass unnoticed. One young man had been in England and spoke English well, and was very kind in taking me about to the neighboring farms. Large, fine creatures these cattle are, and distinctly of a utility sort. The people in this district have done a large business in

exporting, and many are the countries to which their stock have gone. At Hoorn, in North Holland, I saw many more such cattle, and moved about amongst the people in a way to give me a pleasurable insight into the quaintness and simplicity of the life in the rural districts. The customs and habits seemed to have continued much the same for centuries, and in a wholesome frugal way the families of the country live as becomes the birthright of their independence.

I want to add a word about the cities. Amsterdam is a business town, but distinctively Dutch, nevertheless. Customs are less quaint and fashions more conventional than in the country districts, but the figures of the people, the canals, and canal boats, the architecture of the houses, the traffic in the streets, give generous proof of the nationhood of Holland. Of my stay in Amsterdam three things stand out most clearly in my memory, the inspection of the diamond polishing factory with the necessary walk through the Jewish quarter, an examination of the exquisite Delft ware displayed so tempt-

ingly in the windows, and a visit to the Art Museum. In the pictures and portraits here and in those at the Museum at the Hague one may read in unmistakable detail the history, the romance, the poetry, the art, the honest thrift and integrity and the sturdy patriotism and citizenship of the whole Dutch race, as it has been known to the world for hundreds of years. One may learn almost in a day here a greater admiration and respect for all that Holland has done and been than in a year's travel or reading. The heart of the nation is here portrayed not less in Gerard Dou's "Young Housekeeper" and "Evening School" than in Rembrandt's "Wacht am Rhein." Add to this the Siege of Leyden, at Leyden and the historic is added to the domestic and the picture is complete. Every Hollander must be proud of what his picture galleries represent in art, in allegory and in honest truth. In the public buildings of the Hague, about the Binnenhof, with their time-honored relics and portraits of the kings there is much to inspire a grateful loyalty and patriotism within him, but in the story that these portraits



Leeuwarden, Holland.

and paintings tell, the soul of him must be touched into homage at the unthralled and free-born citizenship to which he is heir in the heritage of his birth, and at the high and noble conception of art and human virtue that

inspired the greatest pictures in these halls.

May Holland never be overshadowed in the liberty of her independence! She is yet a nation among nations with a history that challenges our praise.

A SUNSET.

A perfect artist hath been here; the scene
 Is grandly imaged; with what breadth of hand,
 What noble grace of freedom, all is planned!
 The woods, the water and the lakelet's sheen;
 The magic hues—gold-pink, rose-pearl, sea-green,
 And now the western gateway, see, is spanned!
 A nameless glory gilds the favored land,
 And still the spirit-artist works unseen.

Belike upon the chamber of a king
 My erring steps have stumbled; yet me seems,
 These, like myself, are common men, who spring
 From rock to rock where the mid-splendor gleams.
 Perchance the king's sons we, and I, who sing,
 Co-heir to wealth beyond yon realm of dreams.

—*J. H. Brown.*

The Short Courses.

The Short Course in Stock and Seed Judging.

ANOTHER short course in live stock and seed judging has passed into history, and upwards of three hundred farmers, ranging in age from sixteen to sixty years, have returned to their homes carrying with them not only feelings of satisfaction, but more definite knowledge concerning their own particular line of endeavor, and a broader outlook on

degree the primary function of their existence.

Despite the fact that most farmers have more or less spare time during the winter months, the majority of them cannot afford to be away from their farms for any extended period, consequently, the course in stock and seed judging is limited to two weeks. It is obvious that the instruction given



College Clydesdales.

Photo by J. W. Jones, '09.

agriculture in general. The educational value of these short courses is inestimable. They give to our farmers a glimpse into those boundless fields of conquest, which are open to the man who not only knows but knows how. They give to our farmers a clearer grasp of what is meant by scientific agriculture, thus bringing them into closer touch with our agricultural colleges and experimental stations and enabling the latter to fulfill in a greater

must be concise, simple and practical. The work covered during these two weeks is not, however, limited to the consideration of live stock and seed only, but information which has been obtained in the several departments of the College, as the result of careful, systematic experiments, is also placed before them, by means of lectures by the various professors, under whose supervision the experiments were conducted.

The work in live stock was conducted by Professor G. E. Day, and J. Hugo Reed, V.S., assisted by the foremost breeders and live stock judges of our Province. As the ultimate end of the farmers' endeavor along certain lines is the butcher's block, there is necessarily a great deal of stress laid on the most desirable types of beef, bacon and mutton animals, but horses of all breeds and dairy cattle are also discussed and judged. The latter class, owing to the importance of the industry, always brings out a lively discussion.

The discussion on bacon, beef and mutton types is materially aided by the fact that the animals are first judged alive and their merits and faults criticised by competent judges, after which they are slaughtered and the carcasses judged by an expert, who, after explaining to the class the requirements of the various markets, and the standard of excellence necessary to bring top prices, points out wherein the various criticisms made on the

animal while alive, were correct and where they were incorrect. Thus the object lesson is indelibly impressed on the student's mind, and if the course consisted in nothing more than this demonstration it would be well worth the time and money spent in coming to take it.

The work in seed judging is conducted by Professor C. A. Zavitz and his able assistants, and consists in an hour's work each morning during the course on the selection of cereal grains, clover and grass seeds. Advice is given as to best methods for making selections, with object lessons from the work of the Experimental Department with different grades of seed. Appliances used by the department in selecting the seed sent out to farmers are exhibited and discussed. Weed seeds are fully discussed and samples of the most common and harmful ones are passed around for examination by the class, with full information as to their life history and best method for eradication.



Photo by E. J. Zavitz.

Short Course Instructors Looking Over Animals Used in Slaughter Test.
On the left are Professor Day, R. W. Wade and John Gosling.



Photo by E. J. Zavitz.

A Winner at the Short Course.

Aside from the instruction in the judging of the market types of the various classes of farm animals, and the judging and discussing of pure bred stock of all kinds, there is every night lectures on subjects of prime importance to the farmer, such as Feeding of Farm Animals, Use of Fertilizers, Dairying, Poultry Raising, Selection of Seed and kindred topics, all of which

are full to overflowing with useful hints to the man who wants to learn.

The short course is, we believe, more appreciated each year, and we hope to see it becoming more and more the Mecca to which the farmers of Ontario shall turn their eyes for information and inspiration in their's, the noblest of all callings, that of the farmer.

D. A. MacKenzie, '08.

The Short Course in Fruit Growing.

The first short course in fruit growing has been a great success. With an enrollment of seventy-eight students, all enthusiastic for the improvement of horticulture in Ontario it could not be a failure. The programme was comprehensive, treating on all subjects of interest to the fruit grower. The speakers were experts in their subjects and broad in their outlook. Above all, the spirit of the whole course was one of desire to learn, and to improve the business. Such a spirit of helpfulness and co-operation enabled every man

to obtain and take away much useful information.

The programme was arranged by Professor Hutt and his assistant, Mr. J. W. Crow, and in its scope, including as it did all the important subjects relating to the work now before the fruit grower, was eminently fitted for its purpose, to aid the practical man. The latest and most modern methods and ideas were brought forward for discussion, and sufficient time was allowed for each. The best cultivation for the

various fruits, the improvement and propagation of fruit plants, the harvesting and marketing of fruits, spraying and pruning, were all subjects which merited the attention of students and speakers.

To review all the addresses of the course would be too great an undertaking, but the impressions received on various general topics can be noted.

In "Improvement and Propagation of Plants" it was urged by Mr. Crow that men should be encouraged to demand from nurserymen pedigreed stock, propagated from trees known to be good yielders. It was also urged that each fruit grower give attention to the individuality of the trees in his orchard, keep careful records, and propagate always from the best trees. If this were done it would mean a great improvement in the orchards of the Province.

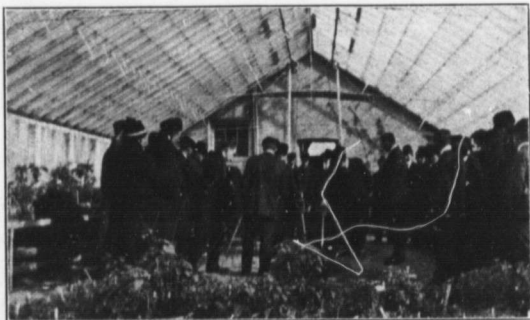
Several sessions were given to discussions of the cultivation of orchards.

From the *physical point of view*, Professor W. H. Day showed how moisture is held in the soil; how a dust mulch is needed on top of the soil to prevent evaporation; how necessary

good drainage is; how a clay soil differs from a sand, and how each should be treated. It was also demonstrated how any farmer could make out drainage plans for himself; such plans are of great value and often effect a saving in the cost of installing drainage systems.

From a *chemical point of view*, Professor Harcourt stated that cultivation, besides retaining the moisture in a soil and keeping down weeds, helps to bring the plant food in the soil into an available condition so that the roots of plants may obtain it.

Practical details of cultivation were given by Mr. W. T. Macoun and Mr. H. S. Peart. For tree fruits it should be thorough, continuous, and, while not necessarily deep, should be well kept up. Sod in an orchard does not give the best results. Applications of barnyard manure or of commercial fertilizer, are needed at intervals, and a green crop, preferably leguminous, plowed under is always advantageous. Mr. Sherrington discussed the cultivation for bush fruits. Shallow cultivation is best; it should be kept up till after the bushes have finished the



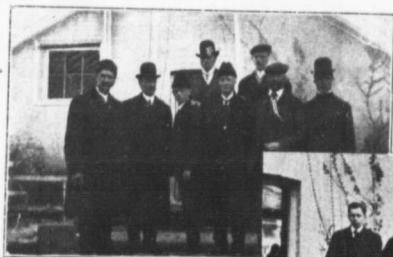
Instruction in Planting Fruit Trees.

season's fruiting. Mr. Stevenson, of Guelph described how to have success in growing strawberries.

Spraying had an important place in the sessions of the course. Its necessity from an entomological point of view was shown by Dr. Bethune and Mr. Jarvis, who described many insects and fungus diseases, which infest fruit

insects with sucking mouth parts; here are included lime sulphur wash and kerosene emulsion. Besides these there is bordeaux mixture, for fungus diseases. It is possible that Paris green will go out of use in a few years for potato beetles, which may be gradually becoming immune to its effects.

A discussion on the application of spraying mixtures was led by Mr. Thompson a practical man and a successful fruit grower, who gave much helpful information drawn from his wide experience.



From left to right—Robt. Thompson, P. J. Carey, F. A. Waugh, A. McMeans, J. E. Johnson, T. B. Rivett, A. E. Sherrington, T. D. Jarvis.



From left to right—J. W. Crow, W. T. Macoun, H. L. Hutt, H. S. Peart, R. Harcourt, W. H. Day.

INSTRUCTORS AT THE SHORT COURSE FRUIT GROWING.

trees, and showed how these might be recognized. The amount of damage done by these pests was also indicated; also the great necessity there was for thorough spraying and clean cultivation. What was known on the methods of avoiding "Bordeaux Injury" was told by Mr. T. B. Rivett.

The Preparation and Application of Spraying Mixtures was taken up by Professor Harcourt and Mr. Robert Thompson. Spray poisons are divided into two classes, food poisons and contact poisons; the former are used for insects with biting mouth parts; Paris green and various arsenicals are included; the contact poisons are for

Pruning.—The most improved methods of pruning were demonstrated by Mr. H. S. Peart. Thinning fruit was discussed by Professor Hutt. As yet this is not much practised in Ontario, but to compete with other fruit districts for the best markets we must thin our fruit. Pruning does much toward thinning fruit, but other methods could be practised to great advantage. On the pruning and training of fruit trees, Professor Waugh gave us the benefit of his extensive experience. In the first place, to manage our orchards so as to bring the trees up to the maximum yield, we should have absolute control of the trees and of conditions

affecting them. Now how can we control a tree which is forty feet high and which has long bare straggling limbs reaching out in a radius of thirty feet? We cannot control it. Far better to have smaller fruit trees, to head our trees low and keep them down where we can get at them. The great advantages of low-headed fruit trees are that they can be sprayed easily, pruned easily, and that the fruit can be easily harvested.

Ten kinds of winter injury to fruit trees were enumerated by Professor Macoin; also the methods of selecting, pruning and cultivating, which were best adapted for overcoming them.

In harvesting fruit the three stages of picking, packing and shipping of fruit should be carefully attended to. Mr. Alex. McNeill, Mr. P. J. Carey and others emphasized the importance of these operations. Summer and fall apples should be gathered in three pickings if the best markets are looked for. Fruit should be handled very carefully, and as little as possible. For

the good of the whole fruit industry all growers should take pains to pack only good apples, and to pack them well. The packages should also be marked correctly.

One of the best parts of the whole short course was the demonstration in grading and packing of apples, given by Mr. McNeill, assisted by Mr. Carey and others.

The advantages of having a vegetable garden on the farm were given by Mr. McMeans, gardener at the College. A plan of a good garden to occupy one quarter acre was exhibited.

A subject emphasized by many speakers was "co-operation." Messrs. McNeill, Carey, Sherrington of Walkerton, and Jas. E. Johnson of Simcoe, all devoted sometime to the discussion of the merits of co-operation among fruit growers, and all strongly favored its adoption by men in every fruit district. Some of its advantages are that a product of uniform quality will be sent out by the co-operative society, and consequently, best prices will be



A Group Taken at the Short Course.

realized; fruit can be shipped to distant markets, and can be distributed judiciously so as to keep all markets evenly supplied; supplies can be obtained at wholesale prices, and spraying and packing can be done more uniformly and more cheaply.

The students attending the short course were a representative class of the foremost and most wide-awake farmers of Ontario. Coming, as they did, from all parts of the Province, and even from other Provinces, they are taking back with them ideas which should mean much to the fruit-growing interests in the future. The wide-awake nature of the students was well exhibited in the enthusiastic and intelligent part they took in all discussions. They showed an earnest desire to learn all they could for the improving of their

business. That they appreciated the opportunity they had here was shown by a hearty vote of congratulation and thanks to Professor Hutt and Mr. Crow, passed at an enjoyable and excellent banquet the students held at the close of the course.

The spirit of the course all through was one of enthusiastic interest and deep desire for improvement. Its complete success augurs well for the future of horticulture in Ontario; and if the spirit of this course is a fair sample of that of the fruit growing population, there is no doubt of the fact that "Forward" will be the keynote of horticultural progress. The success of the course is a credit to Professor Hutt and Mr. Crow, and it is a guarantee that it will be continued in future years. H. A. Wolverton, '08

The Short Course in Poultry.

The annual short course in Poultry Culture, conducted by Professor Graham, at the College, has always been a source of great benefit and pleasure to those who have been privileged to attend it. The class this year consisted of twenty students, of whom two were from England, one from Saskatchewan, one from Quebec, one from Maine and one from Pennsylvania. The remainder, three of whom were ladies, were residents of Ontario.

A great part of the course consists of practical work, and, that is what makes it so valuable to the student. Each member of the class is required to manage a pen of birds, keeping trays nests and feed records, operate an incubator, crate-fatten, kill and dress a number of chickens for market, lectures and demonstrations being given on this work by Professor Graham, and

his assistant, Mr. Terry. Two afternoons a week were spent in the Mechanical Building, where lectures on the uses and care of tools, and instruction in carpenter work were given by Mr. Crawford, the Manager of the Wood-working Department. Practice was given in making trap nests and shipping crates, building colony houses and brooders, and also in filing saws. This training will prove to be of much value to the students in practical poultry culture.

The lectures at the Poultry Department were practically all given by Professor Graham. He started with incubation, described his work on that subject and thoroughly explained every phase of poultry culture up to the marketing of the dressed poultry and the selection of the breeding stock. He devoted considerable time to the

judging of birds from a utility standpoint, duly emphasizing constitution and vigor as factors in the production of market poultry. During the course, three poultry specialists were introduced from outside sources. Mr. Newton Cosh, the Plymouth Rock fancier of Auburn, New York, gave a demonstration in judging, from an exhibition standpoint, the various breeds represented on the plants. Mr. W. J. Bell, of Angus, Ontario, gave a very interesting and instructive address on "Turkey Raising," and Mr. L. H. Baldwin, the well known Wyandotte specialist of Deer Park, Ontario, delivered two lectures on "Incubation and Brooding."

From time to time throughout the

course, Professor Day, of the Physical Department, and Professor Harcourt, of the Chemical Department, lectured to the class on their respective subjects as related to Poultry Culture. An afternoon was spent in the Bacteriological Laboratory, when Mr. Barlow gave the students some practice in dissection and a demonstration on the "Identification of the Infectious Diseases of Poultry." Later in the course Mr. Buchanan gave the class instructions in judging and identifying grains and Mr. Jarvis gave an illustrated lecture on "Poultry Parasites."

The short course in poultry now occupies a place alongside of the other short courses at this college.

Wm. Strong, '09.

The Poultry Institute.

The Poultry Institute has again been held at the Ontario Agricultural College, and again it has been a treat for all those who were privileged to attend. Those taking part in the programme were: Mr. Nix, of the Prairie State Incubator Co., Homer City, Penn.; Professor Rice, of Cornell University; Mr. Curtiss, of Ransomville, N. Y.; Mr. Franklin E. Sewell, of Buchanan, Mich., and Professors Day and Harcourt, of the College staff, while Professor Graham and Mr. Baldwin lead in the discussions. Among the visitors from a distance were Miss Beardmore, of Toronto; Mrs. Dawson, of Niagara and Mr. McNeil, of London.

The Institute opened on Monday afternoon, February 10th, with Mr. Baldwin in the chair.

The first session was devoted to a discussion on the past year's investigations in incubation. Professor W. H.

Day spoke at some length on the various ways and means that had been devised to increase the hatch and produce stronger, more vigorous chickens. He pointed out the relative gains made by the use of buttermilk, zenoleum and lamp fumes in artificial incubation. He gave the proof of air circulation under a hen and the apparent lack of the same in an incubator. Professor Harcourt dealt with the work of the Chemical Department in relation to lime assimilation. He stated that from results obtained, so far, it would appear that the vitality of a chick was in direct ratio to the amount of lime it had been able to assimilate previous to its exclusion from the shell.

Professor Rice, of Cornell University, spoke on Tuesday morning. His topic was, "Observations made during the past year on the strength and vitality of growing stock." Many of

his points were well taken. He duly emphasized, symmetry and substance; graceful carriage and a nicely rounded, compact bodily form; short, nicely curved beak; a clear, shining bead-like eye, and well colored, substantial head appendages. These, he stated, were all excellent indications of vigor. In the afternoon, in an illustrated lecture, Professor Rice supplemented the vivid descriptions of the morning with life-like pictures of the specimens discussed.

Following Professor Rice on Tuesday morning and for two hours on Wednesday morning, Mr. Curtiss, of Ransomville, N. Y., gave two most excellent addresses. These addresses, one on "My Experience in the Production of Eggs, Broilers and Roasters," and the other on "Duck Culture," were really a whole institute in themselves, for they, the last one in particular, literally overflowed with good practical hints and suggestions for those interested in the business.

On Tuesday evening the Institute met in Massey Hall. President Creelman was the first speaker, and in his usual happy manner, congratulated the members of the Institute and poultrymen in general, on the good showing their industry had been making in the last few years. But, he reminded them, to be permanently successful they must keep before them, as it were, three maxims: "Absolute honesty," "absolute knowledge" and "absolute exactness." The same evening, Mr. W. L. Smith, of the Weekly Sun, gave an address on "Co-operation in the Marketing and Selling of Poultry Pro-

ducts." He pointed out the benefits accruing from co-operation in other branches of Canadian agriculture. He cited instances of co-operation among poultrymen in Holland and Denmark, and expressed the wish that such would soon be the case in Ontario. An interesting discussion on the topics took place at the close of Mr. Smith's address.

On Wednesday afternoon, the well-known poultry artist, Mr. Franklin E. Sewell, of Buchanan, Mich. gave a "Chalk Talk on Breed Types." By means of his drawings he illustrated the history of domestic fowls. But when he produced specimens of the popular fancy breeds he repeatedly won the hearty applause of his audience. In the evening, Mr. Sewell gave an illustrated lecture on "Market poultry, including methods of fattening, etc., in Great Britain, France and other countries."

Mr. McNeil, of London, gave an exhibition on the judging and fixing of birds for the show-room on Thursday morning. The Ontario branch of the American Poultry Association met in the afternoon.

Great credit is due Professor Graham for inaugurating and continuing, year after year, these Poultry Institutes. It means much to the Province. Great good comes of it, for not only are those who attend benefitted, but the reports are spread broadcast throughout the land, and thousands obtain, indirectly what a few are privileged to hear, directly.

W. A. Brown, '08.

Short Course at Lindsay.

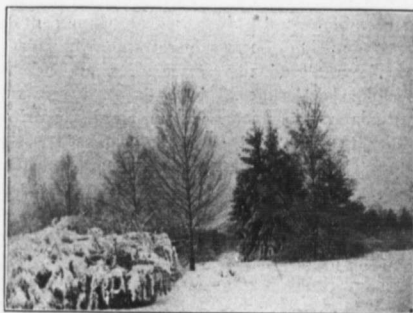
During the last week in January, Mr. F. H. Reed, B.S.A., representative of the Department of Agriculture at Lindsay, conducted the first short course held in connection with his work at Lindsay. Mr. Reed was assisted by Professor C. A. Zavitz, Professor G. E. Day, of this College, and by H. Reed, V.S., of Georgetown. Addresses were given at the evening sessions by Mr.

C. C. James, President Creelman and others. Over three hundred students were in attendance, and at some of the evening meetings more than a thousand people listened to the addresses. The course was a decided success. Mr. Reed began on February 12th a two-months' short course to be held at the Collegiate Institute.

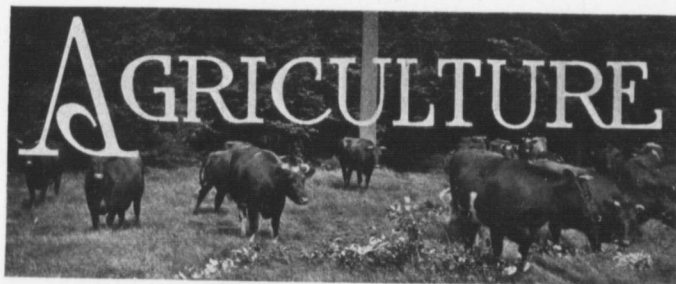
Fruit Institute at Leamington.

A most successful Fruit Institute was held at Leamington on February 10th and 12th. The Institute was organized and conducted by Mr. A. McKenney, B.S.A., representative at Essex, Ontario, of the Department of Agriculture. Mr. McKenney was

assisted by Mr. H. S. Peart, Jordan Harbor; Mr. J. W. Crow, B.S.A., and Mr. McMeans, of the O. A. C.; Mr. J. L. Hilborn and Mr. R. Thompson. A large class was in attendance, and large audiences listened to addresses at the evening meetings.



"Winter on the Campus."



Concentrated Effort in the Dairy Industry.

AS far back as an intelligent and comprehensive knowledge of the industries of man extend, the practice of dairying, although in a crude form, has been included among his many activities of life. Since these early times the practice of dairying has, step by step, evolved itself into the science of dairying, although from its infancy until comparatively recent years, this science has been shrouded by an almost impenetrable cloud* of mystery. However, the untiring efforts of scientific men have gradually rolled away these clouds of darkness, by one discovery after another, which, when applied to dairying, makes possible the enormous and important business of to-day. This same dairying, if scientifically conducted on good business principles, aids in the improvement of agricultural life, by offering a solution to the farm labor problem and promises to become the commercial backbone of Canada.

As the dairy industry is a great and important one, it must, therefore, be judiciously managed to insure its highest success. Whether this management should be under a more concen-

trated form of effort or in the hands of many is a very important question. Within the memory of many still living there remains a recollection of the days when most of the surplus milk was manufactured into butter and cheese on the farms. These days of individual effort now largely belong to history; they have in many places given place to the present day system of co-operation. The question now arises, is this present day system of co-operation in Canada supplying the most ardent and necessary demands of both the producer and the consumer, by placing on the British market goods of the highest possible quality? If this were so, Danish butter would not receive a preference on the English market, in fact could only hold a position there by reason of cheaper transportation, owing to a shorter distance for shipping. Trade relations between the motherland and the colonies are growing stronger year by year. The swift ships of commerce are like great shuttles weaving together the different parts of the Empire into one great industrial life, and if Canada wishes to capture and hold the butter

market of England, she will have to produce a better and more uniform quality of butter, which will necessitate a change of methods.

The present day system of co-operation is a concentrated form of effort, but it fails to give the best results. Undoubtedly it has done a great deal since its birth towards improving the quality of butter, of which we shall speak in particular, but it has reached its climax and falls far short of perfection. What can be the reason for this, and can any improvement be made?

There are a few reasons why the present system of co-operation will never give the desired results. Possibly the chief of these, and out of which most of the others grow, is the spirit of disorganization and distrust, rather than co-operation, which seems to prevail among the farmers. They may get along well enough for a time, but something usually arises which causes them to dissolve partnership or drives the business to the wall. The factory now stands as a monument to failure until bought up by some enterprising individual, who then conducts the business on the private enterprise plan. When a number of such cases occur and when we add to these the large number of other small factories scattered throughout the country and operated by private individuals, we have another force entering which threatens to freeze the butter industry, in fact the whole dairy industry, on the threshold of a glorious future.

This force is competition and competition of the most stinging and hateful nature. The honest man can hardly pursue his business and uphold that, "honesty is the best policy." He gets no thanks from the farmers for

his honesty or care and but a pittance for his labor; while the rogue glories in his victory when an honest man goes down. He who has the best interests of the industry at heart cannot do as he knows he should and ought to do to promote these interests. If he makes sufficient discrimination in the quality of cream and rejects the bad, so as to place a first class article on the market, it will mean inevitable ruin to him in this crazy stream of competition and loss in the mad rush for gold. Good, bad and indifferent cream must all be accepted alike, because if one will not take it in another will. With these conditions in vogue, how can we possibly expect to place a good article on the British market and obtain and hold first place there, when unqualified men are tampering with the very heart strings of the industry? Never will this keen competition, as a result of so many creameries, force the farmer to realize that he has a share in working out the glorious destiny of this country and awaken him to realize that on him rests the responsibility to produce good cream, from which alone good butter can be made. This large number of small creameries must, therefore, as long as they exist, always remain a curse to the industry and crush the hope of ever placing on the English market good butter of uniform quality.

Butter manufactured and shipped under the present system cannot be placed on the British market in a uniform condition. The greater the number of creameries, the greater will be the dissimilarity in the quality of the butter. Creameries may adopt a uniform style of package, but the duty of the box is completed when it reaches its destination. It is impossible for us to expect the highest price for Can-

adian butter when sold in large consignments. These consignments may represent the makings of one hundred different creameries, with perhaps half as many different qualities, and what buyer is going to pay the highest price for a doubtful commodity? Good and bad must go together, and from the very fact that a lot of bad butter comes from Canada, the whole commodity is placed at a disadvantage and gives a corresponding advantage to our rivals.

It therefore appears that peace and harmony are lacking in the dairy industry of Canada to-day. Farmers, in many cases, for some reason, fail to co-operate among themselves. Private individuals maintain the keenest competition, thinking too much of the present and not enough of the future, and bend all their efforts to the base interests of self alone. They will pay as much for bad cream as for good, thereby placing a premium on carelessness and indifference on the part of the farmer, who knows he will receive as much for a bad article as for a good one. They are also content to make a second class article, and receive a second grade price. Therefore, with these feelings of enmity and strife existing between factoryman and factoryman, and being themselves unwilling to do many things that would improve the quality of their product, such as rejecting bad cream, how can we expect to make the farmer realize the importance of his influence in the butter industry and persuade him to do the right thing. The question now is, how are we to improve on the present conditions?

As was mentioned before, numerous small factories are a curse to the industry; consequently this in itself sug-

gests a remedy, namely, that the number of factories should be reduced, or in other words, be located far enough apart to avoid such keen competition. About one-half the present number of factories, well equipped, and well manned and managed, could easily handle the butter manufactured in Canada and produce an article of much superior quality. It would not be necessary to legislate against the number of factories if business men could see it, to their advantage, to form a company and operate one creamery which could do as much business as ten or fifteen of the average creameries of to-day. These creameries, if the company would be successful must be managed and operated by competent and experienced dairymen. It is evident from the industrial life of other countries and industries, that some system of co-operation, such as a concentrated one between the farmer and the business man would give the best results in the dairy industry.

Co-operation is a powerful aid to industry and the reason business men are better able than the farmer to co-operate and produce good results is possibly due to their better acquaintance and nearer relation to other industries and their promoters. Is it not better to have the butter industry in the hands of men who can co-operate among themselves and with the farmers, than to have it in the hands of more poorly qualified men? It is not my object in this article to outline how this phase of co-operation in its concentrated bearing should be managed, but I think that the conditions of the near future in Ontario and the Eastern Provinces point to a more extended concentrated effort and centralization of the butter industry. Why can not

the butter industry take as much advantage of the steam railway, numerous and rapidly increasing electric lines, gasoline lorries and other vehicles of transportation as any other industry? Cream is a comparatively concentrated commodity in comparison with its value, therefore, it can be profitably shipped for long distances. If this system of co-operation between the farmer and the business man could be introduced, the poorly equipped and managed creamery would soon belong largely to the past.

If dairying could be operated on this basis it would offer many advantages to all concerned. From the very fact that creameries would be fewer and farther between, the farmer would find it to his best interests to heed and observe that perpetual cry for good cream. A product of a higher and more uniform quality would be produced as a result of a large system under one management. A higher price would be realized for the finished article, and, as a natural result, the farmer would receive more for his cream. Only skilled labor would be employed, be-

cause a good business man, realizes that "a little knowledge is a dangerous thing," and the employment of unskilled labor or managers' might soon devour all his profits. Better positions with more responsibility would be given to buttermakers, thus promoting a keen competition along the right lines among aspiring dairymen to qualify for these positions, which would demand integrity, knowledge and intelligence. Our dairy schools would receive larger classes of earnest, ambitious men, who could not help realizing that a better education and dairy training would mean more to them than it had ever meant before. Our dairy instructors who have done much to help the dairy industry along would not need to go from factory to factory, but would be free to strike at the farmers direct where much labor needs to be spent. Last but not least, the consumer would be better pleased by always feeling reasonably sure of getting a good article, even though he had to pay a higher price to obtain it.

F. H. Dennis, '08.

DAWN.

With folded wings of dusky light
 Upon the purple hills she stands,
 An angel between day and night,
 With tinted shadows in her hands.

Till suddenly transfigured there,
 With all her dazzling plumes unfurled,
 She climbs the crimson-flooded air,
 And flies in glory o'er the world.

—James M. Carroll.



Fertilization in the Principal Cereal Grains.

(Wheat, Barley, Oats and Rye.)

By WM. J. SQUIRRELL, B.S.A.

ONE of the most important problems which to-day confronts the scientific agriculturist, is the improvement of farm crops. The intelligent farmers of the country now sow the best seed of the best varieties, and it is necessary to adopt some new method to still further improve the existing varieties.

A means of bringing about such desired improvement called artificial cross-fertilization is now practised to some extent. In order to obtain the best results from this new method, it is necessary to fully understand how the natural process of reproduction takes place in the crops concerned.

I have written this article with the hope of being able to throw some light on this subject, to find out whether our principal cereal grains, wheat, barley, oats and rye, self-fertilize or cross-fertilize naturally.

The term, self-fertilization, means that each individual flower fertilizes itself. But a wider range is some-

times given to this term when it is understood to mean the fertilization of female organs within the same plant.

Cross-fertilization means the fertilizing of female organs by male organs of different plants, or different varieties, or different species.

It is astonishing how little work has been done along this line; with one exception there does not appear to be any record of real investigation work. This one exception is the work of Thos. Jamieson, Director of the Agricultural Research Association of Glas-terberry, Scotland. Mr. Jamieson's experiments were principally with oats, and the conclusion he reached was that oats naturally cross-fertilize. All he considered necessary to obtain a cross of two distinct varieties maturing about the same time was to sow them together. Morrow and Hunt, in their book on farm crops, give as their opinion that wheat and other cereals are wind-fertilized or in other words are cross-fertilized. One of the latest

books written, "Percival's Botany of Agricultural Plants," takes the opposite view, and expresses the opinion that most of the cereal grains are self-fertilized.

In order to obtain information that would lead to practical results the writer has conducted four distinct tests with each class of grain. These tests are as follows:

Test No. 1.—Whole heads were enclosed with paper when plants were still green. Any fertilization which took place in the heads so enclosed, must have been self-fertilization. After all danger of fertilization from surrounding plants had passed, the papers were removed and heads so treated were labelled with small tags. On these tags was printed information as to the date and method of conducting the experiment. At time of harvesting they were removed, and all the heads in each of the four crops so treated, put into separate bags. This method of labelling and harvesting was followed in each of the other three tests.

Test No. 2.—Here the work of the first experiment was carried still further; instead of a whole head being enclosed in paper, only a single green flower was enclosed. In this test, as in the first, the flowers must have been self-fertilized. This reduces the work on self-fertilization to a unit, and gives a basis from which to draw conclusions.

Test No. 3.—In this test the spikelets in the centre part of the heads were removed, six flowers being left at the top, and the same number at the bottom. The stamens were left in the six upper flowers but were removed from the lower ones. The flowers were then enclosed in paper, the object being to find whether or not the upper flowers would fertilize the lower. As in former

tests the work was performed when flowers were quite green.

The object of the experiments outlined above, was to find out whether or not, in the case of wheat barley, oats and rye, self-fertilization took place.

In order to be sure that fertilization had not taken place previous to the time that these tests were made, a check test in each case was conducted. In the check tests only three spikelets were left on the heads, and from these the stamens were removed, and the flowers enclosed in paper. If no grains were produced here the tests were made at the proper time.

Test No. 4.—Let us now for a time turn our attention to another phase of the work, namely the cross-fertilization of cereal grains. In order to obtain some definite information upon this question, another test was planned, a description of which is given herewith. Heads of wheat and rye were selected, and all spikelets but three on each head were removed, and from each spikelet the centre flower was taken. In the case of barley and oats, but a single flower was left in each spikelet, and these flowers were emasculated, as also were those of the wheat and rye. The heads so treated were labelled, but were not enclosed in paper; therefore, if fertilization had taken place the flowers must have been cross-fertilized.

With No. 4 test I also conducted a check test. Several heads were treated the same as those in that experiment, except that they were enclosed in paper as soon as the flowers were emasculated. If, therefore, these flowers had shown signs of fertilization it would indicate that the work was not done early enough, but if no fertilization occurred, the work was done in the proper season.

Winter Wheat.

Experiments with winter wheat were commenced on June 5th and continued until June 16th. The flour wheats were selected, and the variety used Dawson's Golden Chaff. This variety

was chosen principally on account of its being easier to work with than the bearded varieties.

The following table gives the results of the four tests conducted with winter wheat:

TABLE No. I

TESTS.	Time of Making Tests.	No. of Heads Tested.	No. of Spikelets Tested.	No of Flowers Tested.	No of Grains Produced.	Per Cent. of Grains Produced.
TEST No. 1 (Whole heads enclosed in paper).	June 5	25	496	1448	1269	87.65
	June 6	25	514	1524	1336	
TEST No. 2 (Single flowers enclosed)	June 7	17	16	84.00
	June 8	..	..	15	13
	June 9	..	..	18	13
TEST No. 3 (Stamens left in upper flowers but removed from lower).	June 10	8	24	48	0	.00
	June 12	7	21	42	0	
	June 13	10	30	60	0	
TEST No. 4 (Stamens removed but flowers not enclosed in paper).	June 14	15	45	90	0	.00
	June 15	18	54	108	0	
	June 16	17	51	102	0	

The results here presented are very suggestive. In tests Nos. 1 and 2 a very large percentage of the flowers experimented with produced grains, while in tests Nos. 3 and 4 no grains were produced. Now, since under the conditions of the first two tests, the only possible fertilization that could have taken place was self-fertilization, and since such a large percentage of grains were produced, the only natural conclusion is that the flowers of this grain will self-fertilize.

The results also show that the upper flowers in the heads did not fertilize the lower.

The most noticeable thing, however, is the fact that of three hundred flowers left open to receive pollen from outside plants not one produced a grain. This result, combined with those of tests Nos. 1, 2 and 3, seems to indicate conclusively that this grain (wheat) self-fertilizes naturally, but does not cross-fertilize. The results of No. 3 test, seems strongly to sup-

port this conclusion, because had cross-fertilization been natural to the plant, the lower flowers would undoubtedly have been fertilized by the upper ones.

That a higher percentage of grains was not produced in the first two tests, is probably due to the fact that the plants were more or less injured by the necessary operations of the tests.

In support of these results I take the liberty of making use of observations made on the Experimental Department during the last six years. Here the different varieties of wheat are grown side by side, five links only separating the plots. During these years I have never observed any evidence of two varieties cross-fertilizing.

Another experiment which illustrates this point still more clearly, was began in the Experimental Department in 1904 when several varieties of winter wheat were sown singly and in mixtures. I have taken special interest in this experiment, because one of the main objects of it was to illustrate this very

point. It is from the results of growing mixtures and not from the single grains, that conclusions were drawn. One of these mixtures consisted of the Dawson's Golden Chaff and the Turkey Red, and it would be difficult to find two varieties more unlike. The Dawson's Golden Chaff is a beardless wheat, has red chaff, and white grain, while the Turkey Red is a bearded wheat, has white chaff and red grain. Under the conditions of the experiment, if cross-fertilization had taken place it would have been readily observed; but the plants produced showed no signs of such fertilization. The distinguishing characteristics of the other mixture are not so marked as in the one given

above, but in these also there was no indication of any cross having been produced.

The results of the check tests conducted with this grain indicates that the experiments were made at the proper time.

Barley.

The experimental work with barley was begun on June 16th and finished on June 27th. Mandscheuri was the variety used in this test. On account of the bearded nature of the head, and the softness of the tissues, this class of grain is much more difficult to work with than wheat.

The following gives the results in tabulated form for barley::

TABLE No. 2.

TESTS.	Time of Making Tests.	No. of Heads Tested.	No. of Spikelets Tested.	No. of Flowers Tested.	No. of Grains Produced.	Per Cent. of Grains Produced.
TEST No. 1. (Whole heads enclosed in paper).	June 16	25	476	476	371	75.48
	June 17	25	452	452	330	
TEST No. 2. (Single flowers enclosed).	June 19	16	13	68.00
	June 20	..	...	16	11
	June 21	...	...	18	10
TEST No. 3. (Stamens left in upper flowers but removed from lower).	June 22	9	54	54	0	.00
	June 23	8	48	48	0	
	June 24	8	48	48	0	
TEST No. 4. (Stamens removed but not enclosed in paper).	June 25	20	60	60	0	.00
	June 26	15	45	45	0	
	June 27	15	45	45	0	

Comparing the data recorded in the above table with those of table No. 1, it will be observed that there is a general similarity in the results.

It will also be observed that there was a smaller percentage of barley grains produced than there was in the experiments with wheat. This decrease is, no doubt, due to the relatively greater injury sustained by the barley plants, in the necessary test operations.

During the past six years, I have fre-

quently observed that when the heads of barley have just emerged from the sheath the stamens of the flowers are quite ripe and shedding pollen. This would seem to indicate that self-fertilization had taken place before they made their appearance, but I am unable to refer to any data in support of this opinion.

A close study of the nature of the barley head, combined with the observations made on the experimental plots, and the results obtained in these tests will convince most of us that this

grain (barley) naturally reproduces by self-fertilization.

As in the wheat experiments, the check tests answered the purpose for which they were used, and conveyed the information that the work was done in the right season.

Oats.

Oats reach maturity at a later date than either wheat or barley, and on

this account the tests were not commenced until June 30th and finished on July 11th.

Each spikelet of oats usually contains two flowers. In the tests with this grain, I have removed one of these flowers that the work on the other might be done with greater certainty of success.

The following table gives the results of the oat tests:

TABLE No. 3.

TESTS.	Time of Making Tests.	No. of Heads Tested.	No. of Spikelets Tested.	No. of Flowers Tested.	No. of Grains Produced.	Per Cent. of Grains Produced.
TEST NO. 1. (Whole heads enclosed in paper).	June 30	27	432	902	475	51.05
	July 3	23	391	863	429	
TEST NO. 2. (Single flowers enclosed)	July 4	..	..	16	6	54.00
	July 5	..	..	18	12	
	July 6	..	..	16	9	
TEST NO. 3. (Stamens left in upper flowers, but removed from lower).	July 7	13	78	78	0	.00
	July 8	12	72	72	0	
TEST NO. 4. (Stamens removed, but flowers not enclosed in paper).	July 10	25	75	75	0	.00
	July 11	25	75	75	0	

The similarity of results as compared with those of the two previous tests, is apparent.

I noticed while working with the crop, that the stamens, as in barley, were quite ripe and shedding pollen as soon as they emerged from the sheath, and I may further say this was one of the observations Mr. Jamieson made in his experiments with oats. His contention was, however, that at this period of the shedding of pollen by the stamens the ovary of the same flower was not in a fit condition to become fertilized, and consequently his conclusion was that self-fertilization did not take place except in rare instances. If his theory is correct, why, when given the most favorable conditions, did not reproduction take place by cross-fertilization? Mr. Jamieson's

theory, therefore, does not appear to be tenable, and we are convinced, as shown by these tests, that oats naturally self-fertilize. And this opinion would seem to be supported by all experiments at the Ontario Agricultural College, where more varieties of oats have been grown, side by side, than any other crop; and there is not a single record of any two varieties having crossed.

The low percentage of grains produced in the above tests, is due to the mutilation of plants in the operation of removing the stamens, etc. Although the tissues of the oat plant are not so tender as those of the barley, yet because the flowers are so tightly enclosed by the glumes, the injury done to it is even greater.

The series of check tests convinced me that the work was done at the proper time, because in these tests not a single grain was produced.

Rye.

Winter rye fertilizes before any of the other grains tested, and on that account the work with rye commenced

as early as May 23rd and was finished on June 5th.

The variety selected was the common winter rye. There seems to be less difference between the several varieties of rye than there is between the varieties of any other grain.

The following table gives the record of work done with rye:

TABLE NO. 4.

TESTS.	Time of Making Tests.	No. of Heads Tested	No. of Spikelets Tested.	No. of Flowers Tested	No. of Grains Produced.	Per Cent. of Grains Produced.
TEST NO. 1. (Whole heads enclosed in paper)	May 23	25	552	1121	0	
	May 25	25	527	1056	0	.00
TEST NO. 2. (Single Flowers enclosed).	May 26	..	..	19	0	
	May 27	..	..	16	0	.00
	May 29	...	...	15	0	
TEST NO. 3 (Stamens left in upper flowers. but removed from lower).	May 30	10	30	60	3	
	May 31	6	18	36	1	5.33
	June 1	9	27	54	4	
TEST NO. 4. (Stamens removed, but flowers not enclosed in paper).	June 2	20	60	120	52	
	June 3	15	45	60	48	47.33
	June 5	15	45	90	42	

The results, as indicated by this table, are very different from those of the preceding tests. Comparing the results of tests 1 and 2 of the above table, with tests 1 and 2 of tables 1, 2 and 3, we observe that none of the flowers of the former tests were fertilized, while in the latter tests a large percentage of the flowers produced grains.

In test No. 3 a small percentage of grains were produced. This we would expect to find the case if the grain cross-fertilized, because, after being dislodged by wind or insects, the pollen would naturally fall on the flowers in the lower part of the head. The results of No. 4 test emphasize this, as we find when the flowers are given a chance to cross-fertilize, nearly one-half do so.

Frequently barren flowers are found in the rye crop. The cause of this is

that these flowers have missed the pollen from surrounding plants, and, therefore, do not produce grains.

In the wheat, barley and oat crops, where I have endeavored to show that self-fertilization alone takes place, this sterility of flowers is not observed.

Summary.

1. The check tests proved that the operations were carried on at the proper time, that is, before there was any danger of the plants having been fertilized from outside sources.

2. In the case of wheat, barley and oats, the tests in every case indicate that these plants reproduce by self-fertilization and not by cross-fertilization.

3. More than 2,000 flowers of rye plants were enclosed in paper sacks in order to prevent cross-fertilization. This operation would not prevent the

flowers from reproducing by self-fertilization, but in not a single instance was there the slightest evidence of reproduction, although the conditions were the same as those under which the tests were conducted with wheat, barley and oats. We must, therefore, conclude that the flowers of the rye plant do not self-fertilize.

4. Since in the case of rye the grain is not reproduced by self-fertilization, and since there is an abundance of rye grains produced under normal conditions, we must conclude that the

flowers of the rye plant cross-fertilize.

5. That the method of reproduction in these grains is singular; plants do not reproduce by both self-fertilization and cross-fertilization.

6. Artificial cross-fertilization, and selection, are of paramount importance in the improvement of at least three of our leading classes of grains, wheat, oats and barley.

7. Careful selection of seed is of great importance in the improvement of our varieties of rye.

Incubation.

Chickens have been hatched by artificial methods for ages, by the Chinese and by the Egyptians. The Chinese used a small rectangular room. The eggs were placed, several tiers deep, in barrels, and these were heated over a slow charcoal fire. When the heat became too intense, the coals were drawn back from beneath the barrels. No thermometers were used, but the man in charge was accustomed to pick up an egg from the barrel and estimate the temperature by touching it to his eyelid. On or about the tenth day the eggs were taken from the barrels and placed on shelves, which ran around the room. There they were allowed to hatch. The Egyptians used somewhat the same methods as did the Chinese. No provision was made in either case to draw off the fumes of the burning charcoal and there was a decided lack of fresh air circulation.

Artificial incubation has been known in Anglo-Saxon countries for two or three hundred years. It was not until 1829, however, that the first incubator

resembling those that we have at the present time, was made. For years great trouble was encountered in securing a reliable regulator and an even distribution of heat.

The tendency of recent years has been toward the introduction of fresh air into the incubators. Difficulties have arisen, however, and it has seemed for some time, that the more strenuously men labored to perfect incubation, the more difficult it became to hatch strong chickens. At first the trouble was supposed to exist in the methods of brooding and feeding, but experimenters now believe the trouble to be located elsewhere.

Incubation was next investigated, and it was soon apparent that chicks hatched artificially were not so strong as those hatched naturally. This led to a comparative study of methods of incubation. Quite exhaustive experiments in the manipulation of the eggs, i. e., in the cooling and turning of the same, and in the amount of heat required, had been conducted previously.

Recent experiments, however, would lead one to believe that possibly a somewhat higher temperature is required at the beginning of the batch in order to produce normal growth in the embryo.

Operators have been accustomed in the past, to judge the vitality of the embryo by the size of the air cell. This air cell forms at the large end of the egg and is the result of the evaporation of the egg content. Evaporation, therefore, formed the first basis of comparison between methods of natural and artificial incubation. The eggs were weighed and it was found that the evaporation from eggs in a dry incubator was nearly twice as much as from those incubated by the hen.

In order to counteract this excessive evaporation, moisture pans, filled with sand, were placed in the bottom of the incubators. Although evaporation has been reduced to normal, no means have as yet been devised whereby the percentage of humidity of the air in the incubator can be raised to that under the hen. It is a fact that the air in the first instance is only about half as humid as in the second. This gives proof to a rather curious fact which one might not be inclined at first to credit. The three factors influencing evaporation are temperature, humidity and circulation. From the fact that in both methods of incubation, the temperature

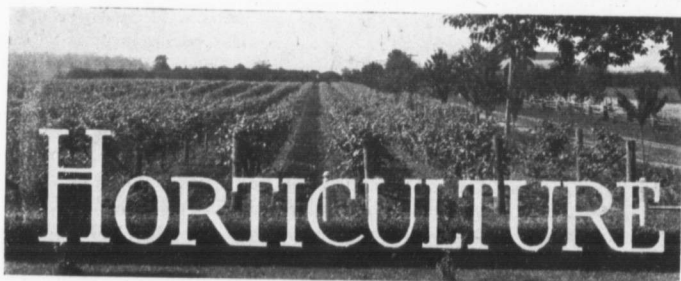
is the same, and the evaporation the same, but the humidity nearly twice as great in the one instance, as in the other, it may be deduced that the only means whereby equal evaporation is obtained, in the presence of such high humidity, is through the medium of greater circulation. There is, then, a vastly greater circulation of the air beneath the hen than in an incubator.

Certain gases affect incubation. The only one which has been experimented with is carbon dioxide. Its presence under the hen has been known since 1888 or 1889, but only recently has it been decided that its presence there performed an important role in the process of incubation. It is supposed that carbon dioxide in the presence of moisture aids in the disintegration of the shell. From 26 to 27 parts in 10,000 have been found under the hen, as compared with 6 or 7 parts in an incubator. Many ways and means have been invented to facilitate its introduction into incubators, but none have been deemed successful as yet.

In conclusion, I would point out that one of the most important problems that incubator men have to deal with to-day is the question of devising some means of first securing the normal amount of humidity and carbon dioxide in an incubator, and second of retaining the same in the presence of freer circulation.

W. A. Brown, '08.





Co-operation in Ontario.

By P. W. HODGETTS, Department of Agriculture, Toronto.

THE movement for co-operation among farmers in this country is widespread. The 20th century has already shown evidences of progress in this trend of agriculture, and Canada will undoubtedly hold her own among the nations of the world. With such advancement comes its attendant train of strong corporations holding the reins of power over rail and boat transportation, express and freight service and other public utilities upon which the agriculturist is so largely dependent for the prompt dispatch of his produce to the markets of the world. Despite the golden rule, these corporations still believe in making the last cent out of the weaker classes, and it is largely in self-defence that the farmer is being driven to unite with his fellows in various co-operative organizations, societies and associations.

Too often, and with some truth, is it stated, that the farming classes are the least disposed to unite and work harmoniously together for the attaining of some common and desirable aim.

This may be due partly to distrust one of another. The city folk living door to door and in constant communication become perhaps more sociable, learn each others' manners and capabilities and are ready to join hands for any and all purposes. On the other hand, distances in the country prevent such constant intercourse, and as a result men become more independent, but at the same time less trustful of their fellows. However, as a class we are waking up to the exceeding great value of having more faith in our fellow beings, in their views and opinions, and in their fellowship. In union we are finding strength, and what has proven even more attractive, in many cases—dollars. Perhaps this sordid aim may yet lead to something higher and better.

But co-operation has been with us for many years. In the dairy industry, the first co-operative cheese factory was started by an American at Norwich, in Oxford County, in 1864, and was closely followed both in the eastern and western counties by other and similar organizations. Though



St. Catharines Cold Storage Company.

the idea here came from the United States, it has been so improved upon that Ontario has far outstripped any of the States of the Union in the excellence of our cheese products. Could we state that the results of the manufacture of butter were as excellent we might well boast of our greatness, but the production of creamery butter is yet such a small proportion of that placed on our home markets, that we can find here great need for further co-operation in dairying.

In fruit-growing, the movement dates back only twenty-five years or more. In the report of the Agricultural Commission, sent out in 1881 by the Ontario Government, appear two references to the work of an apple ship-

ping association at Belleville. I quote here from the evidence given by a pioneer fruit grower, Mr. John Graham of Wallbridge, before the Commission. He states as follows:

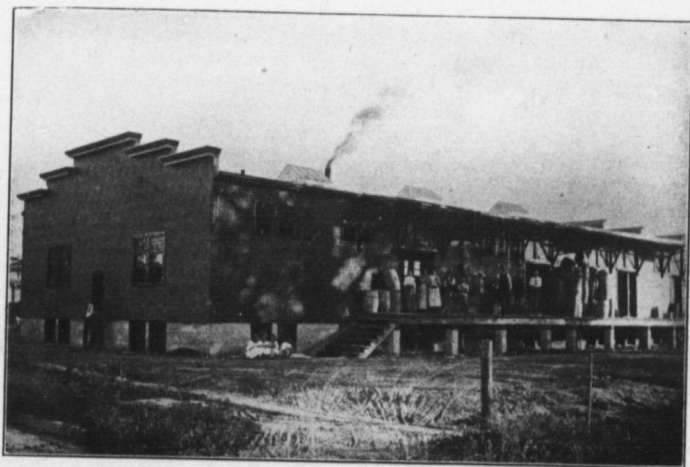
"With respect to the objects which we had in view in forming a Fruit Shipping Company; in the first place, we expect to reap the benefit of each other's experience in growing and shipping fruit, and as all of us have young orchards beginning to bear more fruit than we can profitably dispose of in our local markets, we expect, by careful picking, selecting, and packing to establish a character as fruit growers that will enable us to compete in the foreign markets with the best fruit growers of the continent.

"We have already had the advantage of cheap freight by combining and shipping by car-loads instead of small quantities, which enables us to forward them to English markets, which we would not do if we shipped them in small quantities. Again, we have reaped fully fifty per cent. in Montreal markets above what the same fruit would have brought in our local markets, just by careful selecting and packing while other apples with less care in packing, brought, as was admitted, almost nothing.

"I might say that our company has not existed long enough for me to say much from experience, but I consider we have gained fifty per cent. from what few transactions we have had in shipping fruit. In shipping it is required of each member that he put his initials on the head of each barrel and his card inside. By careful selection and careful, honest packing, I do not

see why we should not anticipate a bright future."

These apple growers were thus starting along much the same lines as we are advocating again to-day. I have been unable to follow the history of this association, but evidently its rules were not stringent enough to hold the members together, as the association now having its headquarters in Belleville, while one of the best in the Province, is comparatively young, having been organized since 1904 only. About the same time that the apple growers united at Belleville, there came into existence at Burlington a similar association, which has had an increasingly successful career ever since. This association owes its existence largely to the efforts of Geo. E. Fisher Esq., of Burlington, one of the largest fruit growers in that district, and the man, who, in later years, perhaps more than any other, awakened the fruit growers



Packing House of Chatham Fruit Growers' Association.

of the Niagara Peninsula to the seriousness of the San Jose Scale situation.

For perhaps fifteen years nothing further was done, but about ten years ago the growers at two other points, Chatham and St. Catharines, organized themselves into shipping associations. These have since made wonderful growth, and are perhaps the strongest fruit growers' associations in the Province. Another, but shorter period of inactivity set in, and it was not until the Ontario Fruit Growers' Association took the matter up at their Leamington meeting in 1903, that the present active agitation set in. There a splendid, practical address was delivered by Mr. Owen, the manager of a large fruit shipping association, of Catawba Island, Ohio. The following year at Toronto, a standing committee of the association was appointed to assist in organizing co-operative associations in as many parts of the Province as possible. The results of this committee's work, aided by the Department of Agriculture, have been very gratifying. To-day some thirty-five associations are shipping and, with very few exceptions, have been quite successful.

To bind these scattered bodies together, a central organization, known as the Co-operative Fruit Growers of Ontario, was organized in 1905. This body, which is composed of representatives from all associations paying certain fixed fees, issues weekly crop reports during the fruit season, giving information as to buyers' prices offered and accepted, probable crops, surplus, if any, etc. This part of the work is certain to expand, and, in the near future, selling agents will likely be placed in the West and in Great Britain. The season of 1906, thirteen associations representing 65,000 barrels of apples.

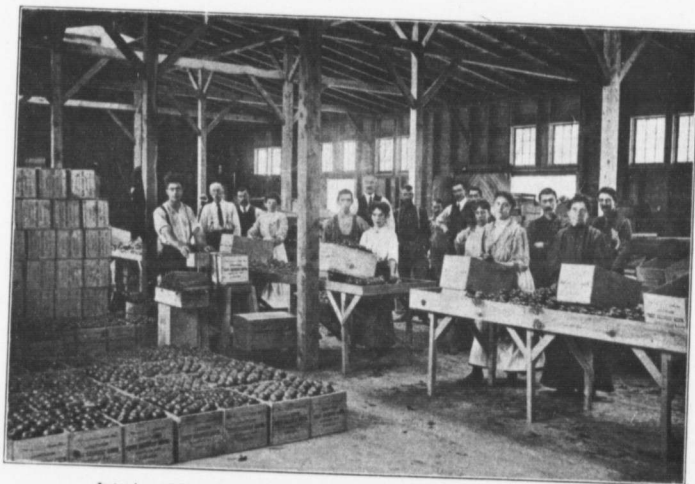
united in this manner, while in 1907 the number was increased to twenty-four, with an output of 100,000 barrels of apples besides large quantities of other fruits.

Advantages of Co-operation.

One of the first advantages is, that in all dealings with transportation companies, and other large corporations, the association receives far more attention than the poor lone individual. Complaints from a shipper of five, ten or twenty thousand barrels are apt to be listened to and a remedy devised. Such corporations look upon a well-organized fruit association in the same manner as any other company with which they do business, and to get their trade are willing to make concessions and give them better treatment than would otherwise be the case.

Again, an organization with so many members and handling so much produce requires large quantities of packages, spraying machinery, and chemicals, various kinds of orchard tools, etc. The manufacturer or wholesale agents of these goods will come to your doors after your business; and prices for goods in quantity will be much lower than when every grower is compelled to buy for himself. For instance, the St. Catharines Cold Storage Company previously mentioned, will handle four carloads of sulphur alone the coming season, in addition to immense quantities of other materials. The saving in these items would probably be sufficient to pay the running expenses of this association, and has alone amply justified the farmers here and in other places in organizing.

Perhaps the greatest advantage is where the central packing-house system is adopted. Here is secured what all should strive for, a uniform grade



Interior of Packing House of Chatham Fruit Growers' Association.

and pack. The fruit is packed and hauled by the grower to the packing house where it is carefully sorted and packed by one or more gangs of expert packers, who are constantly under the oversight of the manager. The grower, relieved from this responsibility gives more attention to the proper picking of his fruit, while the packers, having no incentive to increase the quantities of any one grade, are enabled to grade honestly and pack carefully. All tends toward the securing of even grades of fruit which soon give the brand of the association the highest place and prices in the markets to which the fruit may be sent.

Not only this, but the fact that a uniform grade can be obtained in large quantities brings the buyer to you, enables your manager to make cash sales, or if sent on consignment, acts as a check on the commission merchant. He knows that he has more at stake

and consequently gives your fruit better attention and is careful not to err in his returns. He can also afford to handle such large business as an association can offer him at less percentage and yet net better returns for both himself and your members. So too, as the cash buyers become acquainted with your pack, they get sufficient confidence to order from your manager by mail, or 'phone, without the necessity of sending a man to look after their interests.

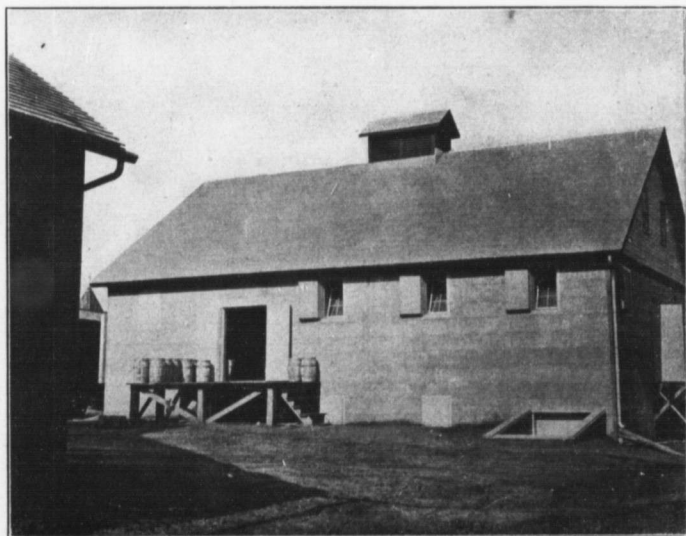
As the most of our export business in fruit is carried on by dealers in Ontario, of necessity these men expect and receive a big slice of the profits. This share, under co-operative selling, passes to the producers, where it properly belongs. Of course, the cost of packing and selling must be allowed for, but even this is greatly reduced through association management, and the net returns to the growers are

greatly in excess of the prices commonly paid in Ontario. Last year, for instance, one association made returns of \$1.60 per barrel for all No. 1 and 2 apples, after all expenses, except picking, had been paid. This was not, by any means, the highest averages. This year another association sold everything for \$3.00 per barrel for No. 2; and \$3.50 for No. 1, F. O. B. station, 5c more all round than the best individual farmers in the same place were receiving.

Another feature is specially prominent in the western part of the Province where the old orchards are small and of many varieties. Few individual growers could offer carloads of any one or even two varieties, to suit the purchaser; summer and fall varieties especially being allowed to waste from

this cause. Frequent requests from our larger markets for straight carloads of certain classes and varieties of fruit were refused simply because neither commission houses nor growers were in a position to supply such demand. To-day any of our associations can fill orders in quantities for all fruits that are grown by their members.

One of the great bugbears of the fruit grower is the question of markets and marketing. In the tender fruit districts, the freer use of the telephone and the daily paper has aided the individual in his desire to avoid gluts and to send the products of his orchards only to those markets where he can obtain a fair price. Yet, even there, he is more or less at the mercy of his neighbors, many of whom, by ill luck, may ship the same day, to the same point.



Plant of Chatham Fruit Growers' Association.

The apple shippers are even more at a loss in such matters. Generally more scattered, and thousands of miles from their best markets they are dependent upon cable reports from, in too many cases, interested parties, and are sure to suffer in such a fight. But with one man as selling agent or manager in a district, the danger of gluts and low prices in the local markets is diminished according to the importance of that district as a shipping unit. Such an official would, of necessity, be in close touch with the markets, would receive constant advice from commission houses, sales agents, and wholesale firms, who would naturally be anxious to obtain the trade. In the case of all shipments, the manager is in a position to look closely after the financial end of the business, to see that proper security is given, and that firms dealt with are thoroughly reliable points which are often neglected by the individual grower.

The economical handling of the lower grades of fruit from the orchard and the packing house should not be overlooked here. These fruits can only be so treated in large quantities, and the profits which may be obtained therefrom are often sufficient to pay all the cost of management, office expenses, charge for labor, etc., of the ordinary co-operative association in Ontario. Several of the associations now run their own evaporators very successfully. The manufacture of cider and vinegar might also be added with advantage in many cases.

Lastly, the fruit grower relieved of the cares of packing and marketing his fruits, and yet realizing larger profits therefrom, can and does give more attention to the care of his orchards, the condition of his trees, and the

picking of his fruits. In many cases in Western Ontario, where these co-operative associations have only been in operation two or three years, the value of orchard lands has doubled and trebled, where formerly these parts of the farm were considered fit only for hog pasture. The comparison between the orchards of members of such organizations as at Simcoe Norfolk County, and those of non-members in the same county, is so striking that even the passer-by on the roadside can notice it.

Results in Ontario.

Those fruit growers who have been far-sighted enough to cast in their lot with their fellows here in Ontario have certainly had little cause for regret. Forty associations have been organized throughout the Province, and only one has fallen by the wayside. Some have succeeded beyond the wildest hopes of their originators, while all have given better returns to the growers than they had ever received before. I give herewith some facts relating to the most prominent.

The Burlington Fruit Growers' Association export largely apples and pears in cases. They have made a specialty of the box packing of these two fruits since 1890, and have won such a reputation for their goods in the markets to which they ship, that very attractive prices are obtained each year. They ship only the fancy grades in boxes, the medium qualities going forward in barrels. They do not adopt the central packing house system, preferring that each member do his packing and retain his own brand on his packages. This system has done well by this association. The members claim that it encourages individual excellence in taking care of orchards and securing better grades

of fruit, that in short, a grower reaps the reward of his own industry and carefulness.

The Chatham Fruit Growers' Association own a fine packing house and evaporating plant and handle chiefly apples, pears and tomatoes. Their largest markets are in the Western Provinces. Their sales average from \$20,000 to \$25,000 yearly from some sixty members. Four power spraying outfits are owned and operated by the association in the orchards of its members. The association is a joint stock concern, as it was found too cumbersome to manage otherwise. They were the first to adopt the central packing house system in Ontario, and unlike the Burlington Association, consider that they have by adopting one pack and one brand, received better returns than under the other system. Careful members benefit as their fruit grades higher, and they receive returns for greater quantities of higher priced fruit than their less careful neighbors.

Perhaps the largest co-operative fruit association in the Province and the one which has had the widest influence in its district is the St. Catharines Cold Storage and Forwarding Association. Organized ten years ago as a company to erect a cold storage plant, it has now become purely an association of farmers co-operating in many ways for the furthering of the interests of its members along many lines of fruit growing, and by aiding others in the district has exerted a wide influence within a distance of 30 miles. It is the only association having a mechanical cold storage plant.

To-day 112 members hold stock in this association, while over 300 com-

bine to ship in the cars sent out all over the country from the Atlantic to the Pacific and to many of the larger cities in the United States. The Prairie Brand is now the best known individual Canadian brand in the country. This association handles over \$20,000 worth of supplies alone in a year, including spraying material of all kinds (four carloads of sulphur alone), spraying machinery and repairs, baskets (400,000 in 1907), boxes imported by car load lots from British Columbia, etc. Almost all fruit is shipped in car load lots in refrigerator cars, iced by the association. Their entire business this past season amounted to close on \$100,000.

The most northern association in the Province is the Georgian Bay Fruit Growers', Limited, of Clarksburg. Their packing house is considered one of the finest in Canada. The concrete building is 100 feet by 40, with a 9-foot basement, 13 foot packing floor, and large loft above for empty packages, giving a storage capacity of 5,000 barrels.

One of the most progressive associations is the Norfolk Fruit Growers' Association, with headquarters at Simcoe, Ontario. All its members are required to spray their orchards thoroughly, and the results this year were remarkable. While in most parts of the Province the codling worm was very prevalent, it was the exception to find a wormy apple among the fruit gathered in the orchards of the members of the association. A splendid new packing house was completed this year. The bulk of the crop goes to the markets of the United States. The membership is about 55, with a promise of wonderful expansion the coming year, owing to the splendid returns of the

past two seasons under the present system.

The prophecy that co-operation could not succeed in the commercial apple districts east of Toronto is refuted by the success attained by the Oshawa Fruit Growers' Association, which has recently completed its fine packing house. The associations at Newcastle and Belleville are now firmly established, while that at Trenton handles probably the largest quantity of apples of any in the Province.

Another of the pioneers in the central packing house system is the association at Walkerton. It has, through the energies of Mr. A. E. Sherrington, its first manager, proved the nucleus of a number of successful associations in the neighborhood, including Paisley, Allenford, Tara and Riverway.

Lack of space will not permit of my detailing the results attained at Forest, Arkona, Grimsby, Parkhill, Georgetown and many other places. The net prices obtained by the growers have averaged at least 50% higher under the co-operative system than before. In many cases, orchards considered valueless, have returned such profits that today, a fabulous figure would be required to tempt the owner to sell. An instance is given of six acres of orchard netting \$2,800 in one year. Many

similar and almost incredulous returns have been reported.

Despite these glowing pictures of co-operative progress, the margins only of our orchards have as yet been touched. Census reports for 1901 show a crop of 13,600,000 bushels, or practically 4,500,000 barrels of apples. Trade returns give our exports as about 1,850,000 barrels to Great Britain, while probably 250,000 barrels might be allowed for the Western Provinces. The home markets are entirely problematical, but estimating an average of three baskets for each person in the Province, there would be a local consumption of 750,000 barrels. The cider presses, evaporators and canneries would dispose of 500,000 barrels more, making a total consumption of 2,750,000 barrels. What becomes of the balance of over 6,000,000 bushels? Undoubtedly wasted, and yet this and much of the evaporator stock could be largely saved by co-operation among the growers, and the returns to the Province would be increased some four or five millions of dollars. Plenty of work is shown here for Federal and Provincial Departments of Agriculture, Experiment Stations, Fruit Growers' Associations, both provincial, district and local, and for all enthusiastic fruit growers everywhere throughout the Province.

The Horticultural Club.

On the invitation of Mr. McMeans and Mr. Crow, twenty students met in the office of the latter on the 27th of January, to consider the formation, at the College, of a club devoted to Horticulture. All were enthusiastic, and Mr. McMeans, the originator of the

idea, was accorded considerable applause when he spoke of the possibilities of such a club, the high aims to which it might strive, and the benefit it would be to the members. Its aim, he stated, should be to encourage interest in and promote the interests of

horticulture here. Organization was proceeded with at once. A reading-room, to be available at all times, is being fitted up in the Horticultural Building, and all the current literature, trade papers, bulletins, periodicals, on fruit, flower and vegetable production will be on file there. Notices of new books, good bulletins, and valuable articles will be posted; this will help greatly in the digestion of the mass of information continually being published along these lines. Meetings of the club will be held in the Horticultural Building every alternate Monday, at 7:30 p.m., and discussions on live topics will be carried on. The officers elected were:

President—A. McMeans.

Vice-President—R. M. Winslow, '08.

Secretary-Treasurer—J. W. Crow.

Committee—Geo. Manton, '09; R. C. Packard, '10; Fisher, '11.

The first regular meeting was held on February 10th, with most of the

charter members, and nine new ones, present. Owing to the unavoidable absence of the president, the vice-president occupied the chair. After a short address, the meeting discussed a suggestion made, that spring short courses in practical work might be arranged. The idea met with much favor, and the club hopes to be in a position to present the feeling of the members on the subject to the department shortly. P. C. Dempsey, '11, gave an interesting address on an unusual subject, "Testing Varieties of Apples." B. Hoy, '09, read a very carefully-prepared paper on the "New Onion Culture," which occasioned much discussion. G. W. Collins, '10, spoke on the work he has been at the past two summers, and showed its practical results, under the heading, "Why Test Varieties of Strawberries?" The members were eager to suggest and to discuss, and the meeting closed with expressions of satisfaction and optimistic predictions of success for the club.—Ed.

DAWN.

The immortal spirit hath no bars
 To circumscribe its dwelling-place;
 My soul hath pastured with the stars
 Upon the meadow-lands of space.

My mind and ear at times have caught,
 From realms beyond our mortal reach,
 The utterance of Eternal Thought,
 Of which all nature is the speech.

And high above the seas and lands,
 On peaks just tipped with morning light,
 My dauntless spirit mutely stands
 With eagle wings outspread for flight.

—George Frederick Scott.

The O. A. C. Review

EDITORIAL STAFF.

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F. C. NUNNICK, '10, Associate Editor.

L. A. BOWES, '08, Agricultural.

MISS K. VAUGHAN, Macdonald.

A. E. SLATER, '08, Experimental.

MISS S. CALDWELL, Asst. Macdonald.

R. M. WINSLOW, '08, Horticultural.

A. G. TURNEY, '09, College.

G. B. CURRAN, '08, Athletics.

G. LeLACHEUR, '10, Locals.

H. SIRETT, '09, Alumni.

J. W. JONES, '09, Staff Photographer.

DAVID M. ROSE, '08, Acting Business Manager.

Editorial.

The Student Labor question is one concerning which much has been said since the opening of the present Collegiate year at the O. A. C. Yet we deem it

Student Labor.

an opportune time to still further discuss this important question before the students of the present First Year, leave the halls of this College to return to their homes for the summer. They will be the men of the Sophomore class next year, and it is principally of the Second Year labor in the fall term that we wish to speak at this time.

We would, by no means, advocate the doing away with student labor in the First Year, as it is an excellent means of getting the men acquainted with the different departments. It also gives them an insight into the work here that they can get in no other way. We believe, however, that men who come back for the Second Year, already

have a good working knowledge of the Institution, and can employ their time more profitably than by doing some of the things students are frequently called upon to do.

We now have a magnificent Machinery Hall which is equipped with a full line of farm implements and farm machinery, and, if we understand aright, lectures are to be given in the future, to Second Year students, on its care and management. We fail to see where it would be the part of wisdom to displace any of the lectures we have at present with the farm machinery lectures. We believe, also, that the best time for lectures of this nature, is in the afternoon, when half of the class can go at one time and thus receive more individual instruction than can possibly be given in a fifty-minute period, when the whole class is present.

Again, if Second Year Student Labor were done away with, it would afford

to men, who wish to get the most they possibly can from their Second Year, an opportunity to do more outside reading.

The argument may be raised that some men need the money they can earn, by working, to help put them through College, but we do not believe that anyone would be kept away on this account. Let our motto be, "The greatest good to the greatest number," and by having the time, now taken up by labor in the fall term, devoted to lectures and reading it will materially aid us in living up to this motto.

This Institution is famous, all over the world, for its Experimental work, and we trust that doing away with Student Labor in the Second Year will be among its most successful experiments for the year 1908.

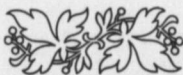
Readers will have seen from the leading article, in this issue, that the

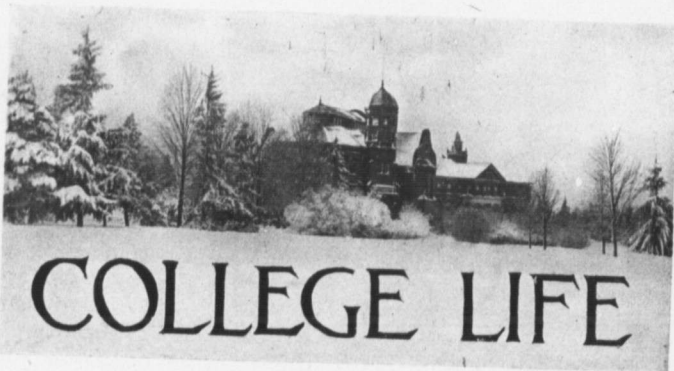
**The Short
Course in
Fruit-Growing.**

first short course in Fruit-Growing was a decided success. The Review takes very much pleasure in congratulating, not only the College and its Horticultural Department, but, also, the fruit interests of the Province. Under the circumstances the students made a very fitting move in celebrating

the event by a banquet; they also did well, we believe, in tendering Professor Hutt and Mr. Crow their thanks and congratulations. The Short Courses are being recognized, at the present time, as the best means of bringing the College and the "man behind" into touch with each other. It is essential to the College, as an Institution of Horticultural education, that it continually receive inspiration and ideas from the Fruit-Growing interests; and it is essential, also, to the Fruit-Grower that he have the best information science and experience can give him. That the students who took the Course were highly satisfied is evident from their expressions of appreciation. We note, also, that the leaders of the Co-operation movement took the opportunity to hold a conference while here. Such meetings can be held here very conveniently, and we hope to see them more and more in the future.

The Short Course and the Three-day Fruit Institutes—which are really reduced short courses—deserve all the success they are obtaining. They are being supported, and will continue to be supported, by the men for whose benefit they are, for they supply a real need. The Review congratulates the authorities who inaugurated them on the success that has attended their operation.





COLLEGE LIFE

Ontario Legislators at the O. A. C.

ON Wednesday, February 10th, our College was honored by a visit from a large number of Provincial M. P.'s. Our visitors consisted of Hon. Nelson Monteith, Minister of Agriculture; Hon. A. G. McKay, Leader of the Opposition; Hon. Dr. Reaume, six Deputy Ministers, some forty-five members of the Provincial House, about half a dozen other distinguished men and a strong representation from the Toronto Press. This truly formidable array of Ontario's elect arrived in the neighborhood of 11 o'clock and proceeded to inspect the various departments. The demands of the inner man necessitated a break in the work of instruction and enlightenment through which our visitors were going, and accordingly the party proceeded to the Macdohald Hall. On passing the College they were greeted with hearty cheers from the students. On arriving at the Hall they were regaled by a substantial and tempting fare and the effects of good food, well-

cooked and served up by pretty waitresses soon began to assert its influence and any depression of spirits caused by the inclemency of the weather was quickly obliterated.

The business of satisfying the inner man being over, a few toasts were proposed and replied to in a brief manner. In replying to the toast to "The Legislature," Hon. A. G. McKay gave an address, eulogistic of the College and its work. The party then returned to their work of inspection with lighter hearts. By about half-past four all the departments had been visited and the professors in charge had explained the nature of the work and the needs of the departments to the visitors. The party then returned to the city in order to reach Toronto in time for another engagement.

This visit will probably prove to be of no small significance to the welfare of the College, as the members of the Legislature who were here to-day were favorably impressed with the work

that is being done and have, during the short time spent here, become awakened to the high place which this institution is filling in promoting Ontario Agriculture. They should now be in a position to consider favorably any motion to increase the annual grant to this institution.

Union Literary Meeting.

The first Union Literary Meeting of the winter term was held in the Massey Hall, on Saturday evening, February 1st, Mr. C. Murray, President, was in the chair and the following programme was rendered:

Violin Solo—Miss Marion Rutherford.
Address—Mr. W. E. Buckingham.

Debate—Resolved: That Great Britain's great poets have accomplished more for their country than have her great statesmen. Affirmative—W. Owen and W. A. Brown. Negative—M. A. Jull and W. M. Waddell.

Vocal Solo—Miss Belle-Perche.

Presentation of the Barton-Hamer Medal, won by R. W. Hodson.

Treue Liebe—College Octette.

Critic's Remarks—Professor R. Harcourt.

In a very concise and logical address Mr. Buckingham dealt with the financial crisis and the factors which lead up to it. This topic, naturally of great interest to a student body, was much appreciated. The debate, an average one, was fairly evenly contested, but the affirmative were adjudged to have handled the matter at their disposal in a superior manner and were, therefore, awarded the decision. The musical items, so essential to a good programme, were admirably rendered and well enjoyed. An important feature of the evening's proceedings was the presentation of the Barton-Hamer medal.

Messrs. Barton and Hamer, both members of the '07 Stock-Judging team, have presented this medal to be donated annually to the member of the judging team who shall rank highest in the International Stock Judging Competition at Chicago. This year the medal has become the property of R. W. Hodson, who ranked third out of forty-five competitors. In presenting the medal, Professor G. E. Day commented suitably on the merit of the achievement, and on returning to his seat, Mr. Hodson, was greeted with prolonged applause. The critic's remarks were then delivered and a very successful meeting was brought to a close.

Fifth Annual Conversazione.

On Friday evening, January 24th, the halls and corridors of Macdonald Hall shone resplendent with fair women and brave men. It was the annual occasion on which the students of the Ontario Agricultural College and Macdonald Institute are at home to their friends, from far and near, and the Junior Year, under whose auspices the *Conversat* is always conducted, had spared no efforts in their endeavors to ensure a successful function.

The decorations throughout the whole building evoked considerable admiration, and were well suited to the importance and nature of the occasion. Considerable taste and work had been bestowed on the decorations in the gymnasium, and the effect was very pretty. The back of the stage and the walls for some three feet above the wainscoting were effectively covered with evergreens and draped above with festoons of the same material. The platform presented a very pretty sight, flowering plants, stately lilies, droop-

ing ferns and lordly palms being so artistically grouped as to form a bank of harmonious colors, and the *tout ensemble* left very little to be desired. Numerous palms and vases containing cut flowers were placed in advantageous positions in the reception and sitting rooms, and at the ends of the halls. The lights in the gymnasium and in the dining-room, and throughout the corridors were masked in tinted papers and shed soft-colored lights on the many beautiful dresses of the gay and brilliant throng. Numerous cosy corners, settees chairs for two, and single chairs were arranged in convenient places throughout the corridors and sitting-rooms. These were for the most part occupied by couples, who evidently did not believe in the motto, "silence is golden," although occasionally a living personification of that motto could be seen.

From half-past seven till nine o'clock was spent in receiving the guests and in securing promenades. Promptly at nine o'clock the bugle rang out for the first promenade and for the next four hours those present, between seven and eight hundred in number, gave themselves up to the enjoyment of the occasion.

An excellent musical programme was rendered in the gymnasium, concert numbers being given every second promenade. As the doors were closed five minutes after the close of the preceding promenade, the artists were freed from interruption and perfect quiet was obtained. Judging by the deep and enthusiastic appreciation shown, the variety and quality of the music furnished left very little to be desired. The Blight Quartette sang, as was announced on the programme,

the three selections, "The Village Choir," "Boys of the Old Brigade," and "Doan' You Cry, Ma Honey," and in response to the prolonged applause they rendered three other selections. Undoubtedly the Blight Quartette is one of the best of its kind in the country, and their work is to be well commended. In the solo, "The Young Royalist," Mr. Arthur Blight showed that he possessed a rich and clear baritone voice, and his rendering of the selection was very pleasing. "The Battle Eve" by Messrs. Fiddes and Milne, created in the audience a desire which was only gratified by another selection. But perhaps the most pleasing part of the musical programme was the singing of Clarence Quarrington, the boy soprano, from Toronto. His beautiful clear voice and pleasing appearance quite captivated the audience. His rendering of "When the Heart is Young," and "Carmena," moved every person in the audience to warm applause, and in response he sang two other selections. The musical tastes of the people engaged in promenading outside of the gymnasium were admirably catered to by the well-known D. A. G. Glionna's Orchestra, Toronto.

Refreshments were served in the dining-hall from 10 to 12 p.m., and credit is due to the young ladies in charge of this work for the very capable and satisfactory manner in which they arranged and carried through the work. The committee in charge consisted of Messrs. Sirett, McLaren, Turney, Treherne, Angle, Lawrence and Miss I. Allan. It would not do to close this description without acknowledging that great credit is due to Miss Allan and her committee for their very able assistance.

Y. M. C. A.

Owing to an oversight the officers of the Y. M. C. A. for 1908 were not reported in our last issue. They were elected by acclamation at the last regular week-night meeting in 1907, and are as follows:

Honorary Pres.—Professor J. B. Reynolds.

Pres.—P. E. Angle.

Vice-Pres.—W. R. Reek.

Secretary—S. H. Gandier.

Treasurer—W. M. Waddell.

Chairman Bible Study—H. C. Duff.

Chairman Mission Study—R. L. Moorhouse.

Chairman Musical Com.—A. McLaren.

Librarian—R. Schuyler.

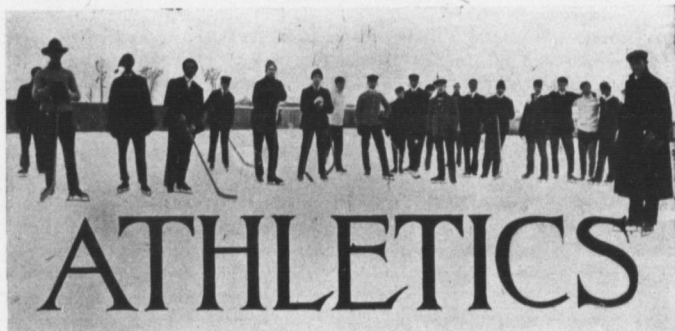
The students have been treated to a number of splendid addresses by the members of the faculty and some outside men at the Thursday evening meetings of the Y. M. C. A. One of the most successful of these meetings was held on the evening of February 13th. Mr. Billings, Canadian representative on the International Y. M. C. A. Committee, and Mr. Wright, of Knox College, Toronto, addressed the meeting. They both dwelt on the subject of the advancement of the Y. M. C. A. work among the army of students in Tokyo. The subject was well presented and much appreciated by an especially large audience.

THE INDIAN'S GRAVE.

Bright are the heavens, the narrow bay serene;
 No sound is heard within the shelter'd plane,
 Save some sweet whisper of the pines,—nor seen
 Of restless man, or of his works a trace;
 I stray, through bushes low, a little space;
 Unlook'd for sight their parted leaves disclose;
 Restless no more, lo! one of Indian race;
 His bones beneath that roof of bark repose.

Poor savage! in such bark through deepening snows
 Once did'st thou dwell—in this through rivers move;
 Frail house, frail skiff, frail man! Of him who knows
 His Master's will, not thine the doom shall prove;
 What will be yours, ye powerful, wealthy, wise,
 By whom the heathen unregarded dies?

—Bishop G. J. Mountain.



Inter-Year Hockey.

THE advantages of inter-year sports are principally these—they bring out and develop the men—it is from these men that the first teams of the College are chosen. They create a spirit of class loyalty and pride. They develop interest in games in particular and athletics in general, by offering an incentive to fullest endeavor in each line of sports.

The inter-year hockey games of this winter can certainly claim a full share of these virtues. Probably in no series since their inauguration has keener interest and competition been aroused. It was early seen that the champions would come from the Freshmen, Sophomore or Senior Class. Their teams, however, were so evenly matched, and played with such determination to win, that to the end of the last game in the series it was uncertain where final victory would rest.

For the second year in succession the Freshmen class has had the honor of being hockey champions. Their play-

ing, though not brilliant, was steady, and their team was exceptionally strong in combination and in checking back. They were on the puck all the time and to this much of their victory can be attributed. They may feel justly proud of their team and title.

Although the Sophomores had lost some of the hockey stars of their Freshmen year, they gave the victors a close heat for first place, and at one stage in the decisive game it seemed as if they would win out themselves. Lack of combination was their weak point.

The Seniors' team was third in standing, putting up a hard fight with the Sophomores for second place. The team contained excellent individual players, but they seemed to lack combination and scoring ability.

The Juniors are handicapped by having fewer men than the other classes, accustomed to the game. Nevertheless they played good strong hockey right through.

The first game was played between

the Second and Third Years, and won by the Second Year, score 4-0. The Fourth Year won the next game from the Third, score 2-0. The Second and Fourth Years then played what proved to be the closest game in the series. No score was made on either side until in the last half minute of time, when a lucky shot won the game for the Sophomores, score 1-0.

The succeeding game was won from the Third Year by First Year, score 7-2. The most exciting game of the series now came off, between the First and Second Years. Victory for the Second year meant hockey championship, and both teams played their hardest. Up to the last ten minutes it was anybody's game. Confusion seemed to strike the Sophomore ranks just then and their play became disorganized. Seizing the opportunity the Freshmen scored three goals in rapid

succession, winning the game by a score of 4-2. They also won the final game from the Fourth Year, in another very close contest, by a score of 3-1, and thereby gained the championship. The standing of the teams is as follows:

Team	Won.	Lost.
Freshmen	3	0
Sophomores	2	1
Seniors	1	2
Juniors	0	3

In closing, we might point out one thing these games have emphasized, and that is, the need of a covered rink. In one game part of the ice was covered by a snow bank, and in another game the ice was almost too soft to skate on. We trust that in the near future this Department of Athletics will have accommodations in keeping with its importance.

RECKONING.

What matter that the sad gray city sleeps,
 Sodden with dull dreams, ill at ease, and snow
 Still falling chokes the swollen drains! I know
 That even with sun and summer not less creeps
 My spirit thro' gloom, nor ever gains the steeps
 Where Peace sits inaccessible, yearned for so.
 Well have I learned that from my breast my woe
 Starts,—that as my own hand hath sown, it reaps.

I have had my measure of achievement, won
 Most I have striven for; and at last remains
 This one thing certain only, that who gains
 Success hath gained it at too sore a cost,
 If in his triumph hour his heart have lost
 Youth, and have found its sorrow of age begun.

—Charles G. D. Roberts.

Our Old Boys.

THE Short Course in Horticulture brought to the College several ex-students of recent, and also of early years. Among those we noted, Mr. F. C. Jones, who entered the College in '80. Mr. Jones is now a prosperous fruit-grower, owning a large orchard and vineyard at Beamsville. Mr. J. G. Honsberger, '89-'91, of Grand Forks, British Columbia, stayed for a few days. He is exceedingly enthusiastic over the outlook for fruit-growing in Kettle River Valley, in which he is located. He has at present seventy-five acres in fruit and intends planting twenty-five more next spring. Apples are his staple crop. Another early student who attended for a few days was Elmer Lick, '85-'87, who came up to attend the discussion and demonstration in apple-packing. T. B. Rivett, '04, of the Agricultural Department, Toronto, was present and delivered an address on the injury to fruit trees from the Bordeaux Mixture. Others were, A. B. Cutting, of the Canadian Horticulturist; G. C. Goulding, Long Lake, Vernon, B. C.; J. Woods, Jordan Harbor, and W. B. Goldie, who was formerly employed in the Bursar's office, now farming at Tisdale, Saskatchewan.

Two of our ex-students who are taking a large part in the up-building of the West, are Hon. W. R. Motherwell, Minister of Agriculture for Saskatchewan, and Geo. Harcourt, Deputy Minister of Agriculture for Alberta. These two gentlemen visited Ottawa

recently, where they were successful in achieving the object of their visit East, viz.: the arrangement for a loan of three million dollars for the purpose of purchasing seed grain for distribution through the North-West. Owing to the early frosts of last fall there is very little unfrosted seed in the two aforementioned provinces; hence the necessity for government aid to the settlers in securing good seed for the coming season. This matter was investigated by the Seed Division, who in so doing, demonstrated the great value of such an organization to the Western Provinces.

H. G. Willows, '03-'05, after securing his diploma, returned to his farm at Phillippsville, Ont., where he is still carrying on a very successful system of mixed farming with dairy produce as a major consideration. Heeding the oft-proven maxim, "It is not well that man should dwell alone," Willows has recently taken unto himself a partner with whom to share his future joys and sorrows. The Review extends congratulations.

The Old Boys who attended the College between the years '84 and '00 will remember Frank McCallum. His home is now in Regina, Saskatchewan, where he has a large business interest. Frank, who is visiting the East this winter, spent some time visiting relatives in Guelph, and took advantage of the opportunity to renew old friendships at the College.

The boys of '05 and '06, and in fact all who knew Tommy Knight, will be pleased to hear of the remarkable and well-merited success that is attending his efforts in farming. Knight and Ransom, those genial, good-hearted



T. M. Knight.

sons of Uncle Sam, came to the O. A. C. not to get degrees, but to obtain all the information and practice possible from the Departments of Agriculture and Horticulture. Two years they spent taking specials, then returned across the border. Ransom went home to his own property. "Tommy" hunted over three states for land and finally, with another companion, as partner, settled on three run-down farms at Ransomville, New York State. The property was over-run with weeds; the fences were either tumble-down or not to be seen; the buildings were only fit for firewood. That was

three years ago. "To-day," says Tommy, "we have a gold mine here." Last year our timothy field yielded us five and a third tons per acre. We have a hundred and fifty acres of newly planted fruit trees, mostly peaches and apples. We have twenty-five registered dairy cows, and a thousand pure-bred hens. We have erected new and commodious barns and stables. We have the plans of a handsome residence, with all modern conveniences, now in the hands of the contractors. The first year we took in \$2,000; the second year the same, and this year we are expecting to handle \$6,000." What, Ho—boys, for American enterprise and O. A. C. training! May Tommy's success continue.

R. L. Ramsay, another old boy who took two years with the '06 class, is making things "hum" out in the West. At Bladworth, Saskatchewan, he is farming four hundred and eighty acres. He has four hundred acres broken two hundred of this is in wheat and one hundred in oats. He is handpicking his seed grain and expects in a few years to sell registered seed at \$1.00 per bushel. Registered Clydes, Holsteins and Yorks have also obtained a footing on his place; no mean record this for a chap scarcely twenty years old. But Ramsay was always level-headed and cool, and possessed plenty of stamina, as those realized who met him in the ring. All honor and credit to Ramsay for it is such as he who brings honor and credit to their Alma Mater.

W. H. Young, one of the class of '08, who dropped out at the end of his second year, is now located at Paynton, Saskatchewan. "Bill" went West in August, '06, and spent the following

twelve months in gaining that intimate experience with the West, the lack of which has so often caused a delayed success among our emigrants from the old lands. With his two years' work at College, supplemented with another of observation and experience he has now secured a homestead in South Saskatchewan. From Paynton he writes, "All I lack is a few ex-students for neighbors; tell some of them that there are still a few good homesteads unclaimed in this section."

H. R. Ross, '98. After graduating Ross was engaged first as editor of the *Maritime Farmer*, at Sussex, N. B., and later as secretary-treasurer of the *Sussex Pork-Packing Company*. Some time ago he resigned this last position to accept the management of the large cold storage plant recently built at St. Johns, New Brunswick. This cold storage plant is designed to be the central one and the shipping station for a system of cold storage plants to be erected throughout the Province. By bringing his executive ability into this work Ross has it in his power to do much for the fruit industry of New Brunswick.

Dr. W. H. Pethick, V. S., is an ex-student, who, after leaving Guelph, continued the pursuit of knowledge in other institutions, and the fact that he received part of his training on College Heights is not generally known. Dr. Pethick entered the College in the fall of '83, but only remained one year. He is now a prominent veterinarian in Prince Edward Island, and is located at Central Bedque. Dr. Pethick has been engaged for investigation work by his Provincial Government to inquire into the possibilities of any form

of poisoning in animals, resulting from consuming rag-weed.

E. G. de Coriolus, '03. Mr. de Coriolus severed his connection with the College in the spring of '06 to accept a tempting position in Cuba. This position he resigned last November and returned again to Canada. He visited Guelph during the winter fair and spent several days renewing old acquaintances in the city and at the College. He now occupies the position of chief of the office staff in the Department of Physiological Chemistry at the Illinois State College, Urbana, Illinois. In this capacity Mr. de Coriolus' work is to see to the proper recording of all data collected in the Department of Chemistry.

Mr. A. G. Acres, '85-'87. "Andy," as he was known when at College, is now a prosperous real estate man in the City of Ottawa, one of those who have made money and who is not enticed into investing it all in mining stock. Mr. Acres also takes an active interest in politics and is secretary of the Liberal-Conservative Association of the capital city.

G. R. Bradley, '85, was one of those who entered the College with the first graduating class. His College course was abandoned, however, after one year. In January last he attended for the second time the Short Courses in Stock Judging. Mr. Bradley's home is at Carsonby, and he is one of the successful farmers of Carleton County. Last year he was selected by the Provincial Superintendent of Fairs to judge at some of the eastern exhibitions. Mr. Bradley was not as pronounced in his political views this year

as when he attended the Short Course and roomed in the old hospital in 1905.

George Carlaw, '85-'87, of Warkworth, Northumberland County. Mr. Carlaw has earned for himself the right to be termed one of the most practical dairymen in his county. He has served his time both in the home dairy and in the factory. This intimate knowledge of the work he brings to the assistance of others in his work on the staff of Institute speakers employed by the Department of Agriculture. Mr. Carlaw, is an experienced Institute worker, having been secretary of his own local organization for many years, and has had several years' experience as a speaker in Ontario and Quebec.

"Jack" Bracken, '06 paid a flying visit to the city about the middle of February. His visit was unfortunate, however, for he got snow-bound in the city and was unable (?) to reach the College.

E. L. Richardson, '95-'97, paid the College a short visit early in February. Mr. Richardson is visiting the east in his capacity as manager of the Dominion Exhibition, which is to be held in Calgary next July. His mission in Ontario was to secure judges and make arrangements for exhibits from Ontario. The fair, under Mr. Richardson's management, is promising to be a huge success.

F. M. Logan, '05, was a recent visitor at the College. He visited the East in connection with the Vancouver Horse Show, which is to take place this month, and of which he is manager. His mission was to secure judges and arrange some other details in connection with the show. F. M. is thor-

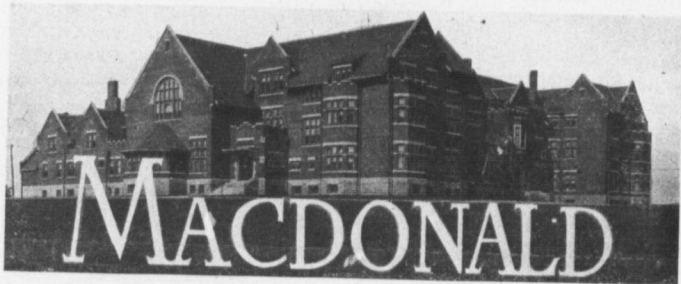
oughly imbued with the western spirit and the old class-mates whom he met at the College found themselves forced to take a second place in the competition for big stories which took place during his visit here.

S. A. Hosmer, '03-'05, was another son of Uncle Sam's to take a two year course with the class of '07. Hosmer left the College in the spring of '05



S. A. Hosmer.

and soon after commenced farming for himself near Batavia, N. Y. In this enterprise Simeon's cheery, genial disposition, in conjunction with the training he received on College Heights, is assisting him in meeting with success. During the winter of '06 he took a partner into his triumphs and troubles, and now, if you wish to see a look of pure paternal pride, congratulate him upon possession of the little daughter who has been left to their care since a few months ago.



Are Modern Conditions Conducive to High Mental and Physical Development?

By LAURA ROSE.

I WAS waiting for a car. The air was keen, for a north wind was lifting the snow in fitful flurries and tossing it with cold indifference in my face. A woman past middle life went by; as she did so my attention was arrested by her unhesitating step. She swerved neither to the left nor to the right. Her face had a calm determined look, accentuated by the smooth black hair drawn tightly over the temples and ending in a soft coil a little above the nape of her neck. Her clear eye—her expression firm, but kind, betokened the strong discipline the mind and body had always been under. I took little heed to her apparel, and can only recollect that it was severely plain and neat. As I looked after her I said to myself, "a type of woman that is fast going from our land—a type of woman who works and saves that her sons and daughters may have educational luxuries, of which her own girlhood had been so void."

In the present generation we look for the results following the added luxury and greater indulgence brought about by this persevering self-sacrificing mother. We come in contact with her children in the schools. In them there is a lack of that determination we would hope to have seen transmitted from the parent. If the task is a little difficult a look of weariness and impatience settles down on the face of the child and the "I can't" is heard.

I wonder if there is any association between this mental attitude toward the task and the conditions at home which make physical effort or bodily endurance unnecessary. Do our warm houses, with all their modern conveniences, tend to lessen the vital energy which seemed to permeate every muscle and sinew of our grandfathers and grandmothers—the pioneers of our country?

With electric and gas light, coal and water at hand, mail delivery, the telephone and all the other labor-saving

devices of this 20th century, there seems no longer "chores" for the boys and girls to perform as their especial task. This tends toward a lack of responsibility, and consequently a growing indifference, and thought becomes more centered in self.

Every one is in possession of two spirits, one which rules the physical and one which rules the mental. It does seem to me—perhaps I am wrong—that the ruling spirit of the body is gaining supremacy by so much thought and consideration being bestowed upon it. The head aches, then the mental activities must cease,—the hand grows weary holding the pen, and the writing stops—the feet in the round of household work grow tired, and one must needs lie down.

Nature will not be imposed upon by injudicious over-taxing of strength and will in the end claim her dues, still she is somewhat of an old fakir and often succeeds in making one believe the case is more serious than conditions warrant.

Where does the headache go when the unexpected welcome visitor drops in? Where the ache in the hands and feet when the stalwart youth suggests the pleasure of a skate or a tramp on snow-shoes? I ask for information, where? It has puzzled me oft, for who of us have not had this experience?

So far as my observations permit me to express an opinion, there is a growing tendency towards a lessening of physical endurance. The mind—

the mental spirit was placed at the very top of our physical structure—the whole body beneath it—to be disciplined and controlled by it. The body must serve the mind and not the mind the body. If we are physically weak, we may be mentally strong, and the very strength of mind makes the body if not a willing servant at least an obedient and often a very enduring one.

It is only reasonable that work should bring fatigue and this fatigue is all the more noticeable if the work be new and the muscles unaccustomed to the strain. To give up at this point and for this cause is failure. It is only by use that either physical or mental development takes place. By keeping at our task we overcome this strain, the body grows stronger, the will power gains supremacy and the power to endure becomes second nature.

Nothing is more lamentable than to see a strong, able body controlled by a weak, vacillating will—the human drone of society—nothing more pitiful, than the frail, delicate body under the masterful control of an iron will which imposes tasks beyond all proportion to the physical strength. Happy the person whose mind and body work harmoniously for the fullest development of both the mental and the physical.

Nothing of worth or weight can be accomplished with half a mind, with a faint heart and with a lame endeavor. It is the surmounting of difficulties which builds a character.



Locals.

A MACDONALD ALPHABET.

- A's for the Alleys, both christened and not—
 "Scratch," "Intellect," "Screech," being some of the lot.
- B's for the Bursar, who visits us thrice
 In the course of a term—but is gone in a trice.
- C's for the Conversat, Coming each year;
 And also the College, Conveniently near.
- D's our Director, who Deals with each one
 In the way best befitting the Deeds she has Done.
- E's for Economy, which, we are taught
 Means using discreetly, not buying for naught.
- F is for "Foods." Oh, most Frabjous of Fun!
 If only you knew what you ate in a bun—
- G is for Gym., lately, three times a week,
 To Grow Gracefully Gaunt, is the object we seek.
- H? Why, House-practice (Here, compounds you see),
 Without which we'd never good House-keepers be.
- I's the Instructors, who bravely endeavor
 To counsel alike both the witless and clever.
- J is the Joy which re-Juvenates all
 In the orderly kindness pervading the Hall.
- K's for the Kitchens in which we are learning
 To KooK without wasting our food-stuffs, or burning.
- L is for Lectures—eight-thirty till four;
 Were they longer we'd fume, were they shorter, want more.
- M is for Massey, the place we all love,
 With its chapel below, and its book-lore above.
- N is for Nonsense. Though deep in it now,
 You can find very little up here you'll allow.
- O's for the Obstacles which we must climb;
 Oysters (!) also, and Oxides, here enter the rhyme.

P means the President—name to be feared,
 As well as most gratefully loved and revered.

Q's for the Queries, propounded to those
 Who answer in chorus with ready "Don't know!"s.

R is for Rumors. No man, were he wise
 As the Sphinx in the desert, could tell how they Rise!

S is for Saturday, Sunday and Soap,
 Snow-Shoeing, Skating, and Skee-ing on a Slope.

T's for the Town where we do all our shopping—
 How Trimly 'Tis Tucked 'neath this hill that we're Topping!

U is for Useful—referring to spades.
 Unaided, each waif through Untrodden ways, wades.

V is for "Veritas"—Truly our aim,
 Which has been, is now, and shall e'er be the same!

W is the Weight We are daily accruing—
 "Let's go to the Dairy and see how We're doing!"

X, Y, and Z, have so little to say,
 That I'll just take this line to bid all a "good-day!"

—Jean M. Casey.

College Life.

Freshman sleeping in his bed,
 Dreaming happy dreams
 'Long there comes a Junior bad—
 What a shame it seems!

Over went the pretty couch—
 Freshie wonders how,
 When he once was right side up,
 Now he's laid so low.

Came a notice in the morn—
 "One-dollar fine," it read;
 Junior says with deepest scorn:
 "I only dumped a bed."

—S. J. Neville, '10.

Before class a mischievous Soph. shut Dr. Reed's little dog in the medicine closet. At a point in the lecture the genial Doctor walked unsuspectingly to the closet to give a practical demonstration: "Now, gentlemen, we shall imagine this is a box-stall;—open the door and the mare walks out."

(The suppressed laughter burst to a roar as the "mare" leaped out into the class-room.)

~ ~
(Two Englishmen): Treherne —
Did you heat your ash?

Coke—Did I eat my hash!!

~ ~
"Once upon a time a man who was too economical to take a college paper sent his little boy to borrow the copy taken by his neighbor. In his haste the boy ran over a \$4 stand of bees and in ten minutes looked like a watery summer squash.

"His cries reached his father, who ran to his assistance, and failing to see a barb wire fence, ran into it, breaking it down, cutting a handful of flesh from his anatomy and ruining a \$4 pair of pants.

"The old cow took advantage of the gap in the fence, got into the cornfield and killed herself eating green corn. Hearing the racket, his wife ran, upsetting a four-gallon churn full of rich cream into a basket of kittens, drowning the whole flock. In her hurry she dropped a \$7 set of teeth."

(A warning to those who have not yet subscribed for their College paper.—Ed.)

~ ~
Student—Why do you wear a veil when you come to Guelph?

Young Lady—Oh, I feel more protected.

(At the Conversat)—A student who discovered that he was standing on a lady's train had the presence of mind to remark:

"Though I may not have the power to draw an angel from the skies, I have pinned one to the earth."

The lady excused him.

~ ~
There was once a bewitching young maid,

Who sat by a stream in the shade;

When asked was she hot,

She replied: "No, I'm not—

I'm just watching a whim that I've made."

—C. A. B.

~ ~
Snyder, for leaping out the dining-room window, and Reek for rushing upstairs—to put out the fire in Light's charcoal iron, are to be presented with leather medals. Ironical, indeed!

~ ~
(Freshmen and Sophomores having a rush in the doorway of Chemistry Building)—Professor rushes in to Mr. Cogan—"Quick, get pails of water; my words have had no more effect than water on a duck's back, but they're not ducks! — — — Now, will you stop!"

Slush! Smack! The first pail has struck its mark—that was sufficient. While the Freshies, wet and bedraggled, were hurrying off to the next lecture the Sophs., equally wet and bedraggled, were greeting the Professor with three rousing cheers.

~ ~
Pupil (enumerating some things which boys should not do)—They shouldn't smoke!

Another Pupil—Oh, Mr. Frier, I saw you coming down street the other day with a pipe in your mouth that (measuring on his arm) long!

A young genty of Guelph,
On the night of the twelf',
Encountered some boys,
Who made a big noise—
When on the Heights by himself.

He fell in a snare.
Was robbed of his hair,
Bewailed his loss,
Yelled—"Tis a frost!"
And he'll ne'er again be there.



(Overheard at Sunday School: D.
R - - e—Do you boys ever play mar-
bles?

Small Boy—Get thee behind me,
Satan!



(At Practical English): Arnold —
Mr. Chairman, Gentlemen, Silos, and
Silage:

After question—Did you ever hear
of anyone putting lime on the silage?

Arnold—No, I never did.

Christie—Neither did I.



One day the girls came to the rink—
Dan Jones, he felt so sorry to think,
While alone he could skate,
Yet when with a mate,
On the ice he was certain to sink.



A Freshman, Mr. Keegan, has a new
method of preparing chlorine. He
simply mixes salt with "hydraulic"
acid.



Owing to some cause (!) Mr. Ald-
winckle now holds the same ideas on
love as does Mike Lewis, while Shaw is
still out in the cold (?).



Janitor—Every evening as I come
around this way I see Mr. Cogan at
the 'phone!

(Can anyone explain?—Ed.)

Bees are often witnessed where far-
mers do most congregate, but the
"kissing bee" at Picton last week, when
the Eastern Dairymen's Association
held its annual convention, is worthy
of special notice. Three tiny tots, with
white dresses, large sashes, and bows
in their hair presented huge bouquets
of roses to the Ontario Deputy Min-
ister of Agriculture, the Dominion Min-
ister of Agriculture, and the Ontario
Minister of Agriculture, in the order
named, and each of the demure little
maids was kissed for her kindness. All
the happy men are graduates of uni-
versities, and each of them uncon-
sciously displayed the style of his col-
lege in the delivery of the salute. Mr.
C. C. James betrayed Victoria in the
gentle, innocent manner peculiar to
the Old Cobourg graduates; Hon.
Sydney Fisher imparted an Oxford
accent to his dignified smack, leaving
an impression that he had had some
Transatlantic practice; while Hon. Nel-
son Monteith's kiss was full of spon-
taneity and bluff heartiness so charac-
teristic of the Guelph Agricultural
College man.

It was an exhibition of experts, and
the Picton girls are still debating as to
who won highest honors.

(The above item, from the Toronto
Saturday Night, is published for the
benefit of the Freshmen—that they
may so mould their "habits" as to up-
hold the high traditions of our College.
—Ed.)



New Third Year Literature—Rays
of Light on a Dark Question, or Ger-
mination Extraordinary—G. H. Cutler.

Seeds I Have Met and Their Viabil-
ity—C. F. Bailey.

How Father Dried the Garden Soil
—P. H. Moore.

There once was a mouse in a room,
 Who for weeks had avoided the broom;
 But alas! one fine day,
 Toasted cheese came his way,
 And he madly rushed forth to his
 doom! —The Hall.

Mr. Hoy is making a reputation for
 fast driving on the college rink. He
 should remember that only individuals
 of poor metal will stand "whip-crack-
 ing."

At the recent apple-packing demon-
 stration some of the boys seemed to
 have trouble with their pockets becom-
 ing suddenly enlarged—so much so
 that the attention of Mr. Crow was
 attracted. Slyly slipping his hand into
 a diseased pocket he brought forth to
 his discomfiture a nice large lemon.

And the laugh was on J. W. Crow.

Young Lady (looking for partner at
 Conversat)—Are you Mr. Kitchen?
 Stranger—No, I'm Mr. Dining-room.

(In Physics Class): King — Mr.
 Thom!

Mr. Thom—Yes!

King—Oh, I've forgotten what I was
 going to say!

Professor—What was I saying, Mr.
 Learmouth?

Larry—I don't know, but I was
 looking at you.

Professor — Questionable compli-
 ment! They say even "Satan hath
 power to charm."

A young lady from Toronto, while
 up at the Conversat, had quite a thrill-
 ing experience in the Dairy Stable.
 After much hesitancy she determined
 that she would pat "the pretty moo-
 moo's head," but just as her finger was
 about to touch the hair she uttered a
 shriek which brought the herdsman
 rushing to the scene.

The beef at the College is chronic;
 To call it cow meat were ironic;

Its original state,

'Tis sad to relate,

Was something with harness upon it.

If it's proof that you want I can give it;
 For my grandfather owned it and driv'
 it;

I'm talking, of course,

Of the College meat-horse,

That ancient, bog-spavined exhibit.

—P. E. L.



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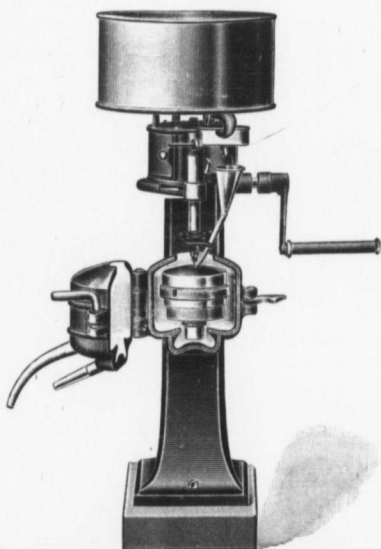
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This is the Splendid Prize offered by the College in the Competition announced on another page of this issue.

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TORONTO.



Leap Year.

Convener of Decoration Committee—
Oh, Mr. Coke, there is just one more
thing I need. Can you get me a heart?

~ ~
A wicked old toper called "Jerry,"
Got a cask of dope to make merry;
Other topers caught on, and the cider's
now gone.
So there's nothing left "Jerry" but
worry.

Stung!

There was a young man named Fair-
head,
Who rang up a maiden and said,
"May I call round to-night?"
But the girl answered bright,
"Oh, I'll be in the laundry instead."

Galbraith (waking up)—Is that sent-
ence from Irving?

Teacher—No, this is from a compo-
sition—I was reading Irving when you
fell asleep.

~ ~
In the reign of "George I." a man,
short of stature and of an inquisitive
turn of mind, peered into the wrong
class-room at the Institute; when lo! a
mighty push from the rear sent him
shooting into the room. Up went his
feet in the direction of the ceiling while
his body took a decidedly opposite
course. On gaining his equilibrium he
turned to his amused spectators and
politely inquired "Didn't I do that
gracefully?" Back came the reply—
"Yes, pretty well for a 'White' man."

(Moral—Don't be nosey when other
people are around).

~ ~
One of the girls seemed to have
great trouble keeping her Hare in order
the night of the snowshoe tramp.

Miss J.—(in basket ball)—Can't
you give me some good tips on how
to play the game?

Coach S - - w—Yes, stick to your
man.

~ ~
(With apologies to Wordsworth)—
I met a little college girl,
She was seventeen, she said;
And when I asked her what she liked,
She said 'twas "Gingerbread."

~ ~
Question—Can curling tongs be
heated on an electric chafing dish?

~ ~
Our efforts in tracing up Jerry's
"cider," which was charged with CO₂,
etc. (but mostly etc.), "for experiment-
al purposes," have been successful. It
is now proved conclusively that it was
stolen by the Third Year Conversat
Committee in order to keep down ex-
penses. We will refrain from publish-
ing the names of the gentlemen.

~ ~
Metcalf (to Soph.)—Talk about your
Second Year banquet! I'll bet it won't
touch the breakfast I had on my arrival
in Chicago last fall.

Soph. (winking at Senior)—Did you
expect to pay for it yourself?

~ ~
Minister—Any man who is looking
for a soft job is not worthy of the name
Canadian.

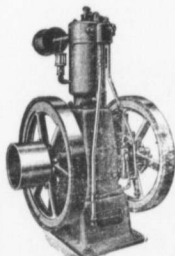
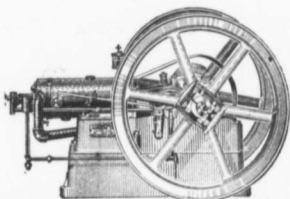
Yankee Student—That means all the
soft jobs are for us.

~ ~
Knauss (judging sheep)—The "hair"
of this fleece is rather inferior in
quality, is it not?

~ ~
Little Willie at the table,
Just as hard as he was able,
Hit his mother with a platter,
And remarked, "That swats the mater."

—Ex.

*Do 10 Hours Work
of 4 or 5 Horses
for 75c to \$1.00*



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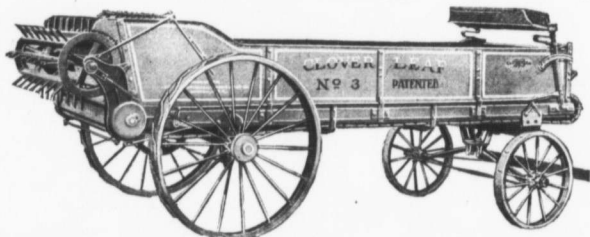
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Keep Your Farm Productive

Have you noticed any decrease in the crop yield of your farm?

Perhaps your farm is still yielding good crops, but if you are not properly fertilizing it, it will soon cease to do this. The removal of each crop takes substance from the soil, and although not noticed to any great extent in the first few crops, it will soon begin to show unless the substance is returned.

Farm manure contains just what the soil needs to maintain or improve the crop yield, but it must be spread in the right way, or the valuable elements which it contains will be wasted.

The proper way is with an I. H. C. manure spreader, for one of these machines so distributes the manure that a particle of manure comes in contact with every particle of the soil.

The I. H. C. spreaders are the Corn King, a return apron machine, and the Clover Leaf, an endless apron machine. Each of these spreaders is made in a number of different sizes. They are durable and substantial and are light in draft, as the simplicity of the power transmission requires but little more of the horses' strength than it takes to turn the wheels.

Call on the local agent for full particulars and catalog, or write nearest branch house for colored hanger and booklet "A Wasteful Farm Practice."

Canadian Branch Houses:

Calgary, Regina, Winnipeg, Hamilton, St. John, Ottawa, London and Montreal.

International Harvester Company of America (Incorporated)

CHICAGO, U. S. A.

Milton Pressed Brick Co., Limited



Manufacturers of strictly high-grade brick fire-places. Our Mantels are not only highly ornamental but are for every-day use. A bright fire in a brick fire-place gives a room an air of solid comfort that is hard to beat.

Write us for Illustrated Catalogue

HEAD OFFICE, MILTON, ONT.

TORONTO OFFICE, 75 YONGE ST.

Please mention the O. A. C. REVIEW when answering advertisements.

LOOK
UP



YES

Look up your lady
friends and buy them
some candy or ice
cream, they'll shake

You If ❄️ ❄️

You Don't



The Kandy Kitchen

Lower Wyndham St.

Guelph - - Ontario



Please mention the O. A. C. REVIEW when answering advertisements.

Massey-Harris Cream Separator

EASY TO FILL.

EASY TO TURN.

EASY TO CLEAN.

SAVES MORE OF THE
CREAM AT ALL TEM-
PERATURES THAN
ANY OTHER.

NO DANGER FROM
EXPOSED GEARS.

CORRECT MECHAN-
ICAL CONSTRUCTION.

WAIST-LOW SUPPLY
CAN.

VERY SIMPLE.

DURABLE.



A handsomely illustrated booklet entitled "GIVE YOUR COWS A SQUARE DEAL," and containing much interesting and valuable information can be had by asking

The Massey-Harris Agent

STUDENTS

We Welcome You

to our city, and when in need of anything in the SHOE and RUBBER line we will appreciate a call. We sell the best makes of shoes, such as the

Geo. A. Slater, Invictus, Beresford,
Sovereign, The Art, and Miss Canada.

Also a full line of sporting shoes.

KNECHTEL'S

Don't mistake the place. First shoe store you come to coming from the college; on Market Square. Bring your repairing to us.

The King Washing Machine

Wholesale and Retail
Dealers in

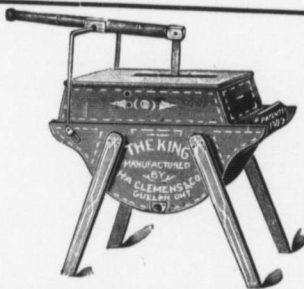
LUMBER

LATH and

SHINGLES

All Kinds

Bill Stuff, Etc.



Manufacturers of

DOORS,
SASH,
FRAMES

All Kinds of
BUILDING
MATERIAL

The H. A. CLEMENS CO., Limited

MANUFACTURERS OF

WASHING MACHINES, STAIR BUILDING and INTERIOR FITTINGS A SPECIALTY

Phone 50.

GUELPH, CANADA.

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A Word With You, Mr. Man!

When you patronize the high-priced exclusive tailor you pay the average price of a suit and then that much more for the name on the label in the inside pocket.

When you buy MACDONALD clothes—tailored to your measure—you pay a fair price and we give you the label—a label which for (14) years has been identified with **honest clothes value**.

We are now showing a wide range of new fabrics in the season's most popular color effects. Your inspection is invited.

In our Furnishings assortments you will find the latest styles and finest qualities. We carry **Christy's English Hats**, and **Fowne's English Gloves**

We have the sole agency in Guelph for the famous **20th Century Brand**, ready-for-service clothing.

One Purchase will Acquaint You with Our Price Lowness!



D. E. MACDONALD & BROS.

If you appreciate GOOD VALUES, you will
be sure to buy your

Shirts, Ties, Collars, Hats and Furnishing Goods

Here. The choicest stock in the city.

My Tailoring Department

Is one of the most reliable in the trade. First-class, stylish clothing made to fit perfectly, and satisfaction always assured.

See My Stock of Fine Up-to-Date Goods. Only
— One Price —

Goods marked in plain figures. Be sure and give me a call.

R. E. NELSON,

Next Traders Bank
Just above the Post Office

Men's Furnishings
Hats and Fine Tailoring

Please mention the O. A. C. REVIEW when answering advertisements.

The Traders Bank of Canada

ASSETS OVER THIRTY MILLIONS (\$30,000,000)

NEXT DOOR TO
The Post Office



NEXT DOOR TO
The Post Office

WYNDHAM STREET

SPECIAL ATTENTION PAID TO FARMERS' BUSINESS

Loans Made.

Deposits Received.

The Most Favorable Rates and Terms Given.

\$1.00 WILL OPEN AN ACCOUNT

A NEW WHITE OAT "BUMPER KING"

Positively the Latest of the Newer Importations

We have imported a large stock of this fine new sort from the North of Ireland, and are now introducing it for the first time to Canadian growers. It is of medium length of straw, stands up well, has a large, full compact head, well filled with large plump grain, which is enclosed in a soft thin hull; shows very little beard. It weighs about forty pounds to the bushel and shows an increase of twenty bushels per acre over the older sorts. Write for prices, and, at the same time, ask for a free copy of the 1908 "Rennie Seed Annual!"

WM. RENNIE CO. LIMITED
TORONTO
And MONTREAL, WINNIPEG, VANCOUVER.

Please mention the O. A. C. REVIEW when answering advertisements.

Beside the Bonnie Winckle Bush—
"Annie, will ye hae me?"

The recent Third Year "Exams." deserve notice in this column. We congratulate the following gentlemen for taking highest standing in the subjects named: McLaren, in "Facial Contortions;" Coke, in "Talking Absolute Rot;" and N. D. McKenzie, in "Length and Flexibility of Arms."

Cameron's Pharmacy

The store for Toilet Articles such as Perfumes, Soaps, Creams, Etc., Brushes, Combs, Manicure Sets, Etc.

121 UPPER WYNDHAM STREET

R. B. Kennedy

Photographer



THE BEST PLACE TO GET
A GOOD GROUP PHOTO-
GRAPH OR A PORTRAIT OF
YOURSELF : : :

PHONE 498.

Men's
Goods

E. R. BOLLERT & CO.

Ladies'
Goods

The Faculty, Students of the O. A. C. and Macdonald Institute will find this store ready to serve their wants to the best advantage. We are pre-eminently a Ladies' and Gentlemen's Outfitting and Furnishing Store. No matter what your needs this store is ready to supply them with good goods at moderate cost. We have always been favored with a large business from the personnel of the College. We shall pay special attention for its continuance and increase.

MEN'S SECTION.

Fine Ordered Clothing at Moderate Prices.
Fit-the-form Ready-to-wear Clothing, very good and very cheap.
Best Styles of Hats and Caps at closest prices.
Up-to-date Shirts, Collars, Ties, Gloves, and Fancy Furnishings, not at fancy prices.
Underwear, Hosiery, etc., grand values.

LADIES' SECTION.

Dressmaking at very reasonable rates. Ready-to-wear Coats, Skirts, Blouses, etc., in great variety of new things.
MILLINERY.—All the Novelties of a first-class Millinery Business constantly received.
The Underwear and Furnishing Stocks are crowded with good goods at low prices.
Belts, Collars, Gloves, Hosiery, Handkerchiefs, etc., etc.

25 and 27
Wyndham St.

E. R. Bollert & Co.

25 and 27
Wyndham S

Please mention the O. A. C. REVIEW when answering advertisements.

Consumption of POTASH Doubled in One Year

Statistics show that during the year ending June 30th, 1907, almost double the amount of Potash was consumed for agricultural purposes in Canada than during the previous year, ending June 30th, 1906, which proves that Farmers are becoming awakened to the fact that **Potash is essential to success in Farming.**

This highly important Plant Food may now be obtained of all leading Fertilizer Dealers in the concentrated forms of

MURIATE OF POTASH

— AND —

SULPHATE OF POTASH

Write us for FREE copies of our publications.

**THE DOMINION AGRICULTURAL OFFICES
OF THE POTASH SYNDICATE**

1102-1105 Temple B'ld'g, Toronto, Can.



Underwood

A counterfeit coin looks very much like the genuine article. There are about a score of typewriters that look like the Underwood, but that does not give them Underwood quality.

United Typewriter Co.

LIMITED

Adelaide St. East

Toronto.

MINERAL WOOL

— FOR —

*Cold Storage Insulation,
Pipe and Boiler Coverings,
Engine Packings,
Roofing, etc., etc.*

**Eureka Mineral Wool &
Asbestos Co.
TORONTO**

GOOD THINGS TO EAT

You can always rely on J. A. McCrea & Son for strictly

FRESH OYSTERS
LOWNEY'S CHOCOLATES
JACOB'S (IRISH) BISCUITS
CHRISTIES' FANCY BISCUITS
CHOICE SWEET ORANGES

In fact anything special you might want as a little extra treat.

J. A. McCrea & Son
Wyndham Street, Guelph

THE AUTONOLA
The Piano everybody can play
and play well.



BELL PIANOS

AUTONOLA
PLAYER PIANOS
AND ORGANS

CANADA'S BEST.

USED THROUGHOUT THE WORLD—BUILT TO LAST A LIFETIME.

Send for our free Catalog,
No. 71.



STALL No. 3, GUELPH MARKET

ALFRED HALES

Wholesale and Retail Dealer in

Fresh Meats, Pickled Beef and Tongues,
Poultry for the Students a Specialty,

Fresh Pork, Hams, Bacon, Lard, Sausages and Bologna

Shop—Telephone 191

Residence—Telephone 405.

**GUELPH'S
BIG
HARDWARE
STORE
THE
BOND
HARDWARE
CO. LTD.
'PHONE 97**



It is Here

That the students
supply their needs
in Hardware, Cut-
lery and Sporting
Goods.

We keep every-
thing in Hardware
and prices are
always right.

DOMINION BANK**GUELPH****Total Assets - \$49,000,000**

A General Banking Business Transacted.
Savings Bank Department in connection
with all offices of the Bank.
Deposits of \$1.00 and upwards received.

Bankers for the O. A. C.

Manager Guelph Branch

H. C. SCHOLFIELD

**The CANADIAN
OFFICE & SCHOOL
FURNITURE CO.
PRESTON, ONT.**

Manufacturers of
High Grade Bank
& Office Fixtures,
School, Library &
Commercial Fur-
niture, Opera &
Assembly Chairs,
Interior Hardwood
Finish Generally.


**CENTRAL
Book Store**

Opposite where the Street Cars stop.

Text Books, Exercise Books, Foolscap
Writing Pads,
Up-to-Date Note Papers and Envel-
opes, Papetries, Etc., Etc.,
Bibles, Hymn Books
Books by Standard Authors, Poets,
Prayer Books

In fact, everything kept in a well-ordered
Book Store.

C. ANDERSON & CO.**THE LITTLE TAILOR STORE
COLLEGE MEN**

Are usually particular about their appear-
ance. They demand character in their
clothes.

We make the kind of suits and overcoats
that give a man that "well-dressed" appear-
ance so much desired.

We make the clothes to fit the man;
TAILOR individual style and shape into
them.

ABOUT OUR PRICES

Being on a side street, our store rent is
very small compared with main street rentals.

It is this combination—a big business done
in a small store, with very light expenses—
that makes it possible for us to turn out
such high grade work at prices so much less
than other tailors have to charge you.

Tweed and Worsted Suits \$15 to \$25.

Blue and Black Serges \$18 to \$27.

Overcoats \$16 to \$25.

Trousers \$4 to \$7.50.

R. J. STEWART

PHONE 456

Opposite Knox Church, Quebec Street

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IF YOU WANT A FIRST-CLASS JOB
 — IN —
**Plumbing, Gas,
 Steam or Hot Water
 Fitting**
 — GO TO —
FREDERICK SMITH
QUEBEC STREET

Prompt attention to all jobbing.
 'PHONE 337.

Geo. R. Wolcott
Sheet Metal Contractor

EXPERT ON HOT AIR HEATING

— *We make a Specialty of* —
 Copper, Galvanized Iron, Slate, Felt
 and Gravel, Tile, Pariod and
 Turnplate Roofing

*Dealer in Stoves, Ranges and
 House Furnishing Generally*

12 Cork St., GUELPH

**Boxing Gloves
 Fencing Foils
 Guns, Rifles
 Revolvers
 AND AMMUNITION**

WE MAKE A SPECIALTY OF
Razors and Cutlery

McMILLAN BROS.
 30 WYNDHAM ST.
 Phone 31 GUELPH.

**McKEE'S
 Drug and Book Store**

Headquarters for
Xmas and Holiday Goods

MILITARY BRUSHES
 MANICURE SETS
 SHAVING SETS
 WORK BASKETS
 SEWING SETS
 DRESSING CASES
 MUSIC ROLLS
 JEWEL CASES

BRUSH, COMB AND MIRROR SETS
 in Sterling Silver and Ebony
 XMAS POST CARDS, CALENDARS, Etc.
LOWEST PRICES

J. D. McKEE, Phm. B.
 Phone 66
 20 WYNDHAM ST., GUELPH

"Specialists"

We specialize in Men's Clothing devoting our whole attention to it, the result is

**T and D clothes to-day
are the best in Canada**

We Manufacture the Clothes. We Sell. And can give you better value than the dealer who pays a "middleman's" profit. Doesn't take much figuring to reach this conclusion.

We stand ready to prove it, and give you a cordial invitation to come and see for yourself.

**THORNTON & DOUGLAS
LIMITED
CLOTHING MANUFACTURERS**

Stores:

Guelph Stratford Chatham Berlin

We have a very complete
stock of

Entomological

— AND —

Botanical

Supplies

For Students. At Students' Prices.

Alex. Stewart,

— CHEMIST —

NEXT POST OFFICE

Well - Dressed Man

The well-dressed man is the successful man of the day. A good appearance counts for a great deal in these particular times, and a little care about neat and well-fitting garments is one of the best investments a young man can make. Have your clothes made to order by first-class custom tailors.

Talk With

Keleher & Hendley

A Great Stock of FURS to pick from, and we carry the finest. Our maxim is "Straight Goods and Straight Prices," which will win in any market. Fur-lined coats a specialty.

GOLDEN FLEECE

Agents for best makes Hats, Shirts and Ties.

THE Memory of Quality Lingers Pleasantly; so why not buy your

FRUITS AND GROCERIES

where quality is the first consideration?

*OUR PHONE IS 169
We Deliver Promptly.*

BENSON BROS. GROCERS.

IF

You think a furniture store should have what you want, we can fill your order and save you money on every purchase. TRY US.

GRANT & ARMSTRONG

Furniture Dealers and
Upholsterers

GUELPH, - ONTARIO.

Store a few doors above Post Office.



We send Greetings for the fall season
to

THE COLLEGE STUDENTS

We trust that we will have the
pleasure of serving you when ready
for your Fall Shoes.

W. McLaren & Co.

Phone 370 - St. George's Square



Windsor Cheese Salt

is
absolutely
pure.

It gives that smooth, firm, richness and good colour to cheese, only possible with pure full-savoured salt. It dissolves evenly—and is not carried off in the whey. By bag or barrel—at all grocers'.

119



WE GRIND OUR OWN LENSES

This means not only that we give quick and accurate service, but that here you get exactly what you should have—not something picked out of a box, nearly what you want.

When your EYES require attention go to one whose whole time is given to this work.

A. D. SAVAGE Guelph's Only . . .
Exclusive Optician

[ENTRANCE WITH SAVAGE & CO., JEWELERS]
Headquarters for Microscopes, Field Glasses, Etc.

Shall I tell you who makes the greatest noise,

In the College Hall among all the boys!
At study time his tongue ne'er lags,
But ever incessantly makes its brags.

In telling tales he has no match—
I really think he's off the latch.
If you'd like to see this curio,
Just look at Shibley and you've done so.

Since the beginning of instructions
in milking to the Dairy students the
Freshmen all vie with each other in
getting to work on that Department.
Callister especially, hankers to be sent
there.

Clause in First Year Bill—No girl
under eighteen years of age shall be
allowed to go home alone without an
escort.

...The... Metropolitan Bank

Capital Authorized	\$2,000,000
Capital Paid Up	1,000,000
Reserve and Surplus Profits	1,183,713

A general banking business transacted.

Students' Accounts

Receive careful and prompt attention

Guelph Branch:

C. L. NELLES, Manager.

CANADA'S BIG MUTUAL!

The Mutual Life Assurance Co. of Canada

A Sound Company for Sound Policyholders.

Insurance in Force	\$51,000,000
Assets, all first class,	\$12,000,000

GEORGE CHAPMAN, General Agent.

In Printing with Black on White

We can give printing that is as attractive as the
most exacting business man could wish.
Let us demonstrate this on your next order of printing.
Manufacturers' catalogues our specialty.

The Advertiser Job Long Distance Phone 175
London, Ontario.

Please mention the O. A. C. REVIEW when answering advertisements.

Galt "Sure-grip" Shingles

Surprising how easily and rapidly a roof may be covered with Galt "Sure-grip" Shingles. Simple matter to lock the sides together, and just as easy to lock the top shingle to the one below.

The nails are "concealed"—can never pull out. Galt "Sure-grip" Shingles lie so closely to the roof that they really might be said to be cemented on. And they lock together in the tightest kind of a grip. These shingles form a solid armor of galvanized steel, affording not the slightest opening for wind to get under. They can't drop off or blow off; neither can they rust or burn off.

Just as cheap as ordinary shingles. Last a life time. The wisest kind of an investment to make.

Catalogue and further information free on request.

THE GALT ART METAL CO., Limited
GALT, ONT.

—THIS IS THE SHEET METAL AGE.—



"I see you have a
Waterman's
The pen with **Ideal** the Clip-Cap
Fountain Pen
I have one too."
Almost everybody has
The pen with the **Clip-Cap**

W. & L. Waterman Co., of Canada Limited
136 St. James Street, Montreal.

*The Burgess Studio**HIGH-CLASS PORTRAITS**Special Rates to Students*

We are at your service for good
Photographs. Call and see us.

J. W. ROGERS

STUDIO OVER DOMINION BANK

Walter E. Buckingham, B.A., LL.B.

BARRISTER

Solicitor, Notary, Conveyancer, Etc.
Douglas Street, GUELPH.

Office Phone, 175.

House Phone, 404.

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PETRIE'S**DRUG STORE**

For Medicines and
Toilet Articles,
Seed Bottles, Etc.

Headquarters in Guelph for all kinds of
Photographic Supplies.

Films developed and prints made.
Latest designs in Comic and Picture
Post Cards. Remember the place.

Petrie's Drug Store

Lower Wyndham Street.

PRINGLE THE JEWELER

Entomological Supplies,
Magnifying Glasses, all qualities,
Fountain Pens
Rubber Stamps,
O. A. C. and Macdonald Institute
College Pins

The Busy Book Store

O.A.C. and Macdonald Students
cannot do better than come to us for
all College Supplies. A full line
always in stock.

Buy a Sterling Fountain Pen and
stop dipping.

SCOTT & TIERNEY

Phone 72

Lower Wyndham Street

**Economical - -
- - - Clothing**

The best value for your
money is always got at our
Store. We can clothe you for
little money, and we can give
you as high-grade garments as
are made in Canada. In fact,
all our garments have CLASS
about them. A call solicited.

J. A. SCOTT**Designer of Men's Garments**

Phone 72

McHUGH Bros.,
26 Lower Wyndham St.

Are prepared to supply students with the finest range of **Pipes, Tobaccos, Cigars, Cigarettes, Pouches, etc.,** at prices consistent with quality.

The finest assortment of goods shown in the city. Come in and see us.

DID YOU EVER
SEE A PRINTER
PRINT LIKE
THIS PRINTER
PRINTS? . . .

J. J. KELSO

Opposite Post Office, - Guelph

Snowdrift
Peoples
Maple Leaf

Three well-known brands of Flour.
 Ask for them and be sure
 you get them.

The James Goldie Co., Limited
GUELPH

Telephone 499

HEADQUARTERS

FOR HARDWARE AND
 SPORTING GOODS AT
 LOWEST PRICES.

G. A. RICHARDSON

Upper Wyndham Street - Guelph

OAK HALL
Clothing Store

CLOTHES PRESSED AND CLEANED
 We keep a Practical Tailor to do this work.

PHONE 510

PARCELS CALLED FOR AND DELIVERED

Jones & Johnston
INSURANCE
Real Estate and Steamship
Agents

Ask for information about the Dominion Line
 Excursion Party to Edinburgh, Scotland.

PHONE 216

St. George's Square, Guelph, Ont.

— THE —
Dawson Commission Company,
TORONTO

Will be pleased to handle your shipments
 of **Poultry, Butter, Eggs, Apples, Honey,**
Beans, and other farm produce, and they can
 get you as good prices as any other firm in
 Toronto.

Correspondence solicited.

The Dawson Commission Company,
TORONTO.

STAMPS FURNISHED.

H. Occomore & Co.

SHEET METAL WORKERS

Heating and Ventilating Contractors

Dairy Supplies, Kitchen Furnishings

Stoves, Ranges, Granite and Tinware

A complete stock.

126 WYNDHAM ST. GUELPH

Phone 328.

NEW IMPORTATION OF CLYDESDALE STALLIONS

Mares and Fillies, Hackneys and Shetland Ponies

Your choice of 30 Mares and Fillies, including winners in Scotland, at moderate prices.

For particulars apply to G. A. BRODIE, BETHESDA, Ont.

Stations: Stouffville, G. T. R.
Claremont, C. P. R.
Gormley, C. N. R.

Telephone Service from stations to residence

Smith & Richardson

COLUMBUS, ONT

Importers of Clydesdale Horses

This year's importation is by far the best bunch we ever landed, among them the Toronto and Ottawa Winners.

R. R. Stations—G. T. R.—Oshawa.
Brooklin.

C. P. R.—Myrtle

Long Distance 'Phone at Residence.

Pine Grove Stock Farm

Rockland, Ontario, Canada.

BREEDERS OF

SCOTCH SHORTHORNS and SHROPSHIRE

W. C. EDWARDS & CO., Limited

PROPRIETORS

JAMES SMITH, Superintendent.

J. DRYDEN & SON

Maple Shade Farm BROOKLIN, ONT.

Home of the oldest and largest herd of Cruickshank Shorthorns in America.

Shropshire flock founded 1871.

Station—C. P. R., Myrtle, 3 miles.

G. T. R., Brooklin, 1½ miles.



Poultry, Pet Stock, Farm and Garden Books of all kinds.

Fanciers' and Stockmen's
Printing Leg Bands and
Stock Markers.

We have the most complete line of Poultry and Pet Stock supplies in Canada. Catalogue free.

A. J. MORGAN - LONDON

Please mention the O. A. C. REVIEW when answering advertisements.

PHOTOS!

COLLEGE GROUPS

- AND -

INDIVIDUAL SITTINGS

Promptly attended to.

D. H. BOOTH, Photographer

Upper Wyndham St.

Next RYAN'S

THE

ELECTRIC BOILER COMPOUND CO., Ltd

GUELPH, ONT.

Walker's Electric Boiler Compound

High Grade Lubricating Oils, Greases, Packings, Belt Lacings, Flue Scrapers, Etc.

Crystal Cream Separator Oil

A SPECIALTY

Waters Bros.

— Headquarters For —

FRAMES, PICTURES, ETC.

O. A. C.

Note Books, Drawing and Writing Materials, Seed Bottles, Microscopes, Field Glasses, Waterman Fountain Pens, etc.

WYNDHAM STREET

Dunrobin Stock Farm

CLYDESDALES, SHORTHORNS YORKSHIRES

A choice collection of the above line of stock always on hand.

Donald Gunn & Son, Proprietors

Beaverton P. O. and Station

G. T. R. and C. N. O. R.

— GO TO THE —

HUB BARBER SHOP

For a good Shave and Hair Cut

GEO. A. LEADSTON, Prop.

SOCIETY CARDS

Ladies' or Gent's. Printed. 50c per 50; 75c per 100. By mail prepaid. All kinds of Commercial and Society printing.

O. R. WALLACE, Opera House Blk.
GUELPH, ONT.

D. M. FOSTER, L.D.S., D.D.S.,

— DENTIST —

Corner of Wyndham and Macdonnell Streets
Over Dominion Bank
Telephone 14.

CLOTHES

CLEANED, PRESSED AND REPAIRED

Work done right. Prices right.

Quebec St., opposite Chalmers' Church
CHAS. A. KUTT.

R. H. McPHERSON, Barber

HAIR CUT, 15c; SAT., 5c EXTRA

Close 7 p. m.

Upper Wyndham Street, GUELPH.

LEE LEE & CO.,

Opera House Block
HAND LAUNDRY

Goods called for on Monday, and returned on Wednesday. We guarantee best work in Guelph.



REFERENCES

AGRICULTURAL COLLEGES

At Guelph, Truro, St. Anne de Bellevue, Winnipeg, and the trade generally.

BROADFOOT'S

Red Cross — Pharmacy

Phone 381 - St. George's Square.

CITY SHOE STORE

Try us for Sporting Shoes of all kinds. Satisfaction guaranteed.

W. L. KEIL,

Cor. WYNDHAM ST. and MARKET SQUARE.

MARRIOT & CO.

FLORISTS,

Roses, Carnations, Chrysanthemums, Smilax, Asparagus, Etc.

Phone 378. St. George's Square.

NOTICE

The best and most convenient Barber Shop for O. A. C. Students.

WM. COON, St. George's Square

Street Cars every 15 minutes. Three chairs. No waiting.

Stewart McPhie

W. A. Mahoney

McPHIE & MAHONEY

— ARCHITECTS —

Phones: Office, 215; Residence, 237

Telephone Building - Guelph, Canada

Our Groceries

— ARE ALWAYS —

Fresh, Wholesome and Strictly First Class

17 Lower Wyndham.

Telephone 112

Jackson & Son

Guelph and Ontario

Investment and Savings Society

SAVINGS BANK DEPARTMENT.

Deposits of \$1.00 and upwards taken
Highest current rates allowed.

J. E. McELDERRY, Secretary-Treas

How Much Can I Make Out of My Cows ?

Well, now: that can be answered in just one way: "as much as you can use the U. S. Cream Separator." Here's an illustration of the possibilities within reach of any dairymen, for it is not infrequently the case that the U. S. makes double what you could get out of your milk in other ways without a U. S.

We had a _____ separator and from 12 cows we made 86 pounds of butter. The next week we used a No. 6 U. S. Separator and made 74 pounds from the same cows, in the same pasture, without any extra feed. That is certainly a record-breaker. We made \$10.45 the first week after using the machine. We are very much pleased with it and could not get along without it now. We have used our U. S. three years.

Raymond, Nebr., Nov. 9, 1906.

JOHN NEYLON,
Mrs. JOHN NEYLON.

BEFORE



These two
tubs of
butter
were made
from the
same
quantity
of milk from
the same cows



Holds
World's
Record

How?
Because the
U. S.
SEPARATOR
skims out
all the
cream

AFTER



You've got to get ALL the cream out of your milk to get ALL your money out, and the U. S. Cream Separator Skims out ALL the cream. The U. S. holds the World's Record for clean skimming. It makes and saves money for you twice every day in the year.

The U. S. Cream Separator is simplest—has fewest parts—easiest to clean—easy running—lasts longer—AND SKIMS CLEANER.

Write for free copy of large illustrated book telling—and showing—just why the U. S. is such a steady, easy, money-maker for every farmer and dairyman. Ask for No. 143, please.

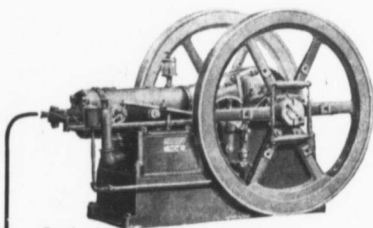
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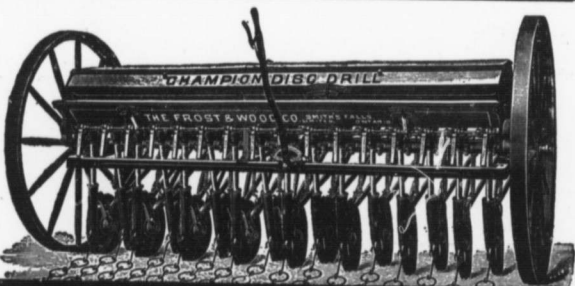
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Here's a test that proves the bearings of our discs in this **Champion Disc Drill** to be dust-proof. We ran a disc surrounded by sand under heavy pressure for many hours and sowed an equivalent of 1,850 acres. In that time we oiled the bearings only **twice**. This test will prove true on every disc-drill ball-bearing we send out. It assures economy in horse-flesh; ease and accuracy in adjustment. We have shown below a right and left view of these bearings, as well as the boxes containing the balls. This valuable feature is one peculiar to the **Champion Disc Drill**. The indexes tell accurately just how much you are sowing; the force feed neither mashes nor cracks the seed; the rows are 6 inches apart.

**IT'S EASY TO KNOW
HOW MUCH YOU SOW**



There's a lasting pleasure about owning a **Champion Disc Drill**—it's satisfactory. You'll always be glad you put your money in it. We make a great variety of Disc, Shoe and Hoe Drills from 10-row to 20-row machines. Catalog "R" and our "Farmer's Ready Reckoner" are both **free**. Our agent will show you these machines, and courteously answer all questions.

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