

Vol. XVIII.

No. 7.

The
D. N. G.
Review

APRIL

1906

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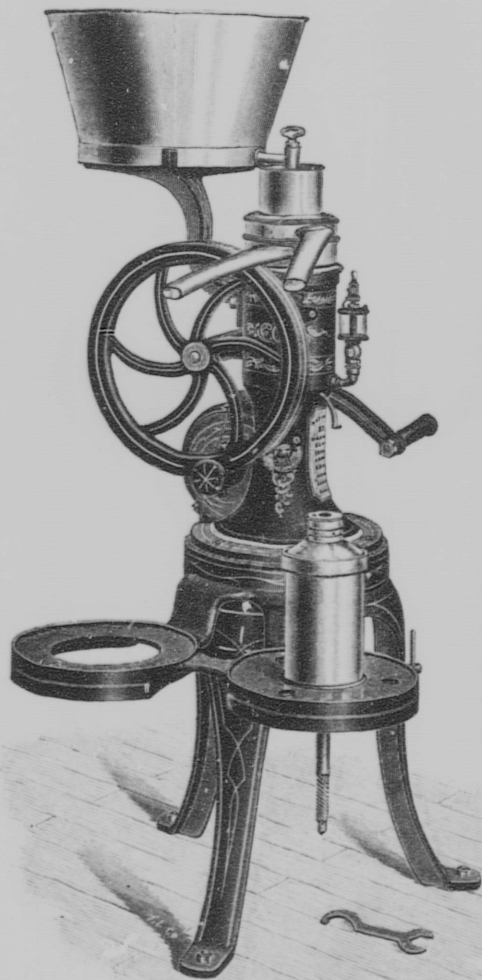
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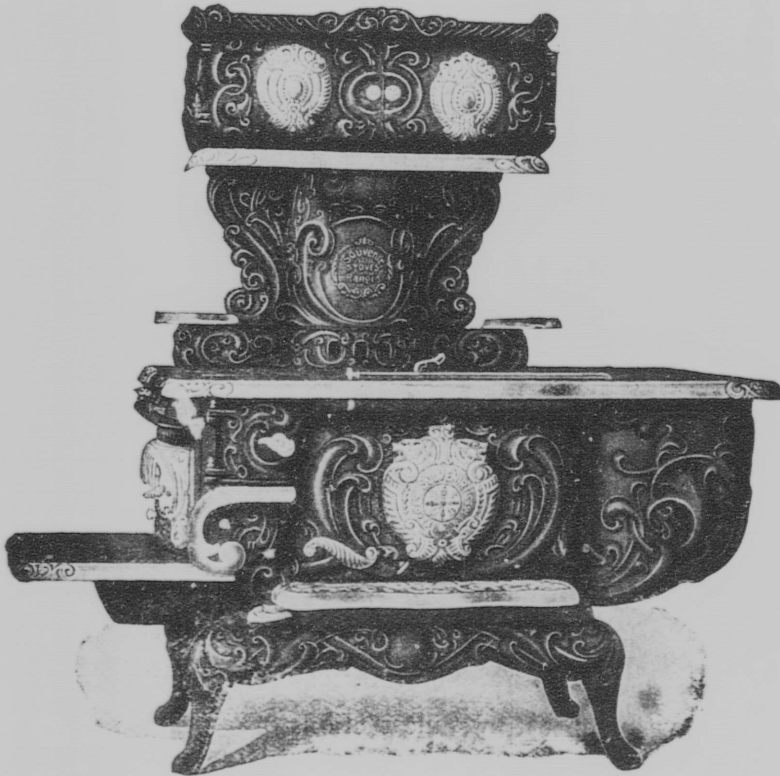
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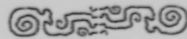
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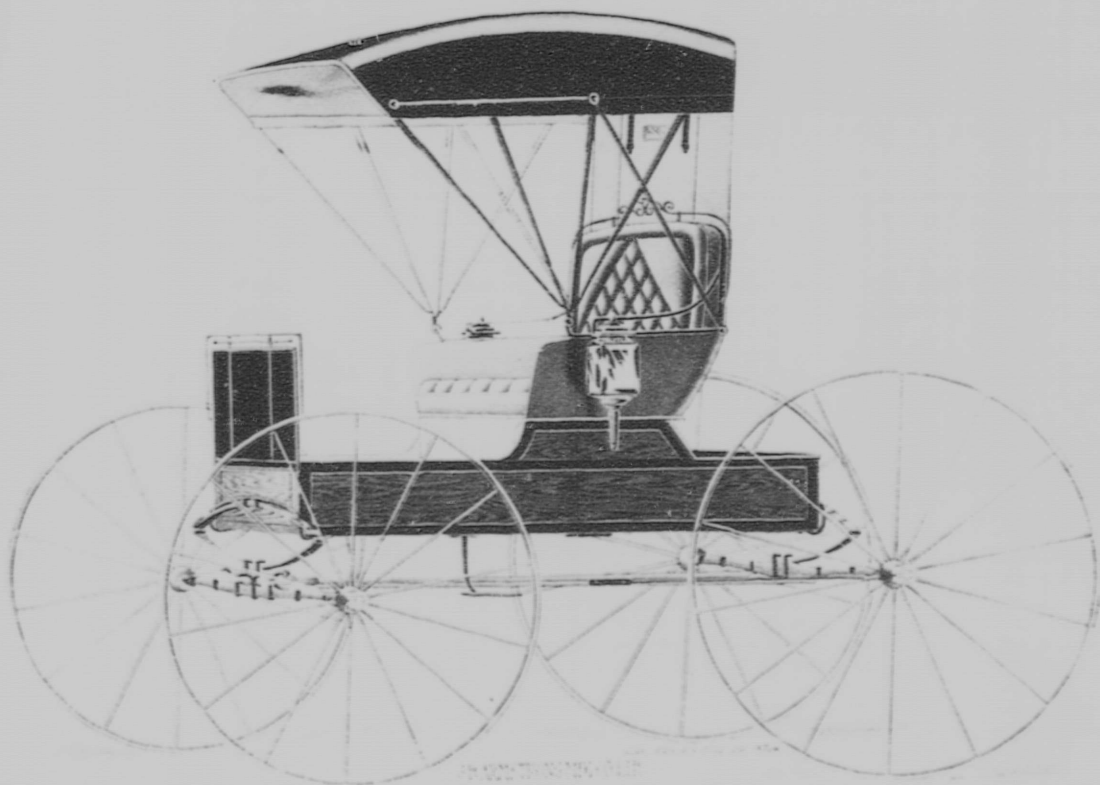
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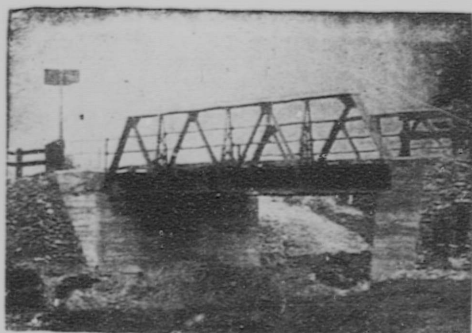
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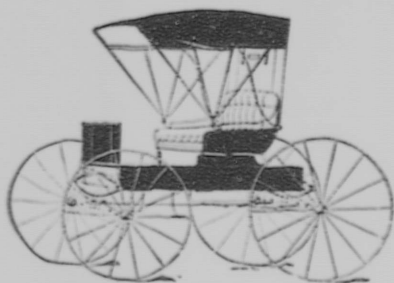
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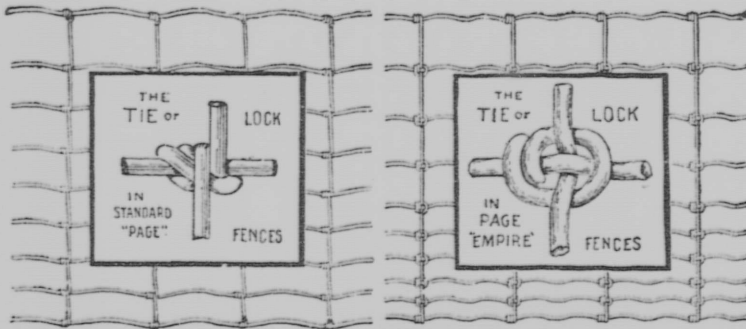
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Published Monthly during the College Year
by the Students of the Ontario Agricultural College, Guelph, Canada.

THE DIGNITY OF A CALLING IS ITS UTILITY

VOL. XVIII.

ONTARIO AGRICULTURAL COLLEGE
APRIL, 1906.

No. 7

Some Phases of Hardiness in Apples.

By W. T. MACOUN, Horticulturist, Central
Experimental Farm, Ottawa.



It is not many years ago since it was thought that apples could not be grown successfully in Ontario outside the Southwestern peninsula and along Lake Ontario.

To-day commercial apple orchards are quite common as far north as latitudes 45 degrees and 46 degrees, and as settlement advances they will advance with it until orchards will be found wherever the land is suitable right up to the Manitoba boundary, and Manitoba herself will probably produce in the near future large quantities of apples. Many disappointments have come to the settlers in the colder parts of the country who have tried to grow the varieties, especially the winter ones, which do well in the warmer parts of Ontario, but they are fast finding out that there are degrees of hardiness among fruit trees, and are seeking information as to the best kinds to plant. The question of hardiness in

fruit is, then, well worth considering and some phases of it are dealt with in this article.

Nearly all the hardiest apples which have been tested in this country are of Russian origin. They are the hardiest of hundreds of varieties which have originated in Russia during the past centuries, and have shown their ability to withstand the winters there as far north as latitude 55 degrees or further. In Canada the work of originating varieties especially adapted to the colder parts of the country is very recent and until quite lately most of the kinds which could be obtained were those which had been originated in the New England States. These trees required a longer season in which to complete their growth and ripen their wood than they could get in Ontario except in the warmer parts of the Province, and as a result they have time and again been winter killed where planted. As seedlings began to grow up and fruit in the colder yet

comparatively temperate parts of the Province, as for instance along the St. Lawrence River, such good native varieties as McIntosh, Scarlet Pippin, Baxter and others withstood the severest winters and have given us trees which extend the profitable culture of at least early winter apples considerably further north than we were able to go with the varieties which originated in the New England States. Other seedlings have now fruited and withstood the coldest winters at points north of the St. Lawrence, such as Ottawa and Gravenhurst, and if these prove better than some of the hardy Russian varieties, they will extend the culture of apples still further north, and when seedlings are grown from the varieties which are now fruiting in New Ontario and the Rainy River district, there will no doubt be some of them which will extend the culture still further north. In the meantime, as has already been stated, we have to depend almost entirely on the Russian apples for our hardiest varieties with the exception of a few from Minnesota or Wisconsin, where the growing of seedlings has been carried on longer than it has in the colder parts of our country. It will thus be seen that the apples most suited to any locality are those which have either been originated in that locality or where the climate is very similar.

There is an interesting question in regard to hardiness which the writer has given considerable attention to while seeking to obtain a hardy late keeping apple of good quality and a hardy tree where the climate is as severe as it is at Ottawa and further north. An apple which is not ready for use until winter means in the writer's experience, that the tree on which it grew did not ripen its wood early, for we have frequently observed that apples which mature early and are in condition for eating in summer and autumn are grown on trees which

ripen their wood early, and apples which at Ottawa have to be left on the trees until severe frost, in order to have them reach anything like a condition of maturity fit for picking, are grown on trees, the wood of which ripens late and often does not mature sufficiently to withstand the winters. A tree to be safe to plant in a large way for commercial purposes, must be so hardy that it will withstand the coldest winters, or, just when the trees are coming into full bearing, a severe winter may come which will destroy them, and the fruit grower will suffer much loss, hence it will be seen that a tree must ripen its wood early and thoroughly to be safe to plant. Are we then to conclude that it is not possible to get a tree of the first degree of hardiness which will bear fruit of good quality that will keep all winter? We think not. From our observations and experience we believe that it is possible to have a tree which will ripen its wood thoroughly every year and whose fruit will mellow in late fall or early winter and yet will keep until late in the spring. While most of the hardy winter apples which have so far been produced are inferior in quality, we cannot see why apples of the highest dessert quality should not be among them, and to this end we are working at the Central Experimental Farm. Every year seedlings are sent in from different parts of the country for examination, and the best of these are being grown at Ottawa. Of these there are more than one hundred of apples alone. Some of these are of excellent quality and great promise. About 2,000 seedlings of the best varieties of apples which have fruited at Ottawa are under test, and from them something good should be obtained, but work of this kind takes time, as it is not thought desirable to introduce a new variety until after thorough test, it has been found superior to those already on the market.

The Possibilities of Producing Improved Varieties of Wheat by Hybridization.

By J. BUCHANAN, B.S.A.



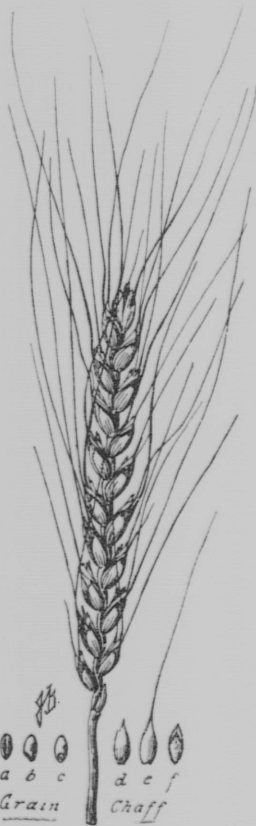
THE object of this article is to direct attention, by means of drawings and descriptions, to the important characteristics of the various species of wheat which have been grown in Ontario; to point out the desirable and undesirable features of these and of some of their varieties; and to show forth in part the possibility of combining the good qualities and eliminating the poor in new varieties which may be produced by judicious inter-breeding.



Beardless Variety of
Common Wheat.
(*Triticum Vulgare*)

Common Wheat or Flour Wheat (*Triticum vulgare*) includes the larger number of the sorts commonly grown for flour production. All of the varieties of this species possess some characters in common, but they differ in so many respects that they are by some authorities classed into two or more sub-species. All produce white flour, which is fairly well suited for bread making, but many of the varieties which furnish flour of the very best quality are poor yielders, and some of those which give heavy yields of grain, possessing high bread making value, have weak straw, and are, therefore, often difficult to harvest. In addition to this, some of the kinds which are most satisfactory in other respects produce bearded heads which are more or less objectionable. All of the winter wheats and a large number of the spring varieties belong to the species *Triticum vulgare*.

Macaroni Wheat (*Triticum durum*) is a less numerous and less varied species than the former. In this, all of the varieties are bearded, and all produce very hard grain, which, however, is not considered suitable for bread-making, owing to the dark color of the flour. These wheats are all sown in the spring, and, almost without exception, yield a much larger crop of grain than any of the spring sown flour wheats in Ontario. In general they have larger and more compact heads than the varieties of *Triticum vulgare*, and the straw is less subject to rust.



Bearded Variety of
Common Wheat.
(*Triticum vulgare*)

Emmer (*Triticum dicoccum*) resembles Spelt in that the heads are simply broken up into spikelets in the process of threshing, but differs in having short, compact, bearded heads, while the varieties of Spelt have long, open heads, which are usually beardless. Emmer is also more productive than Spelt, and is less subject to rust than any of the other wheats. Emmer is, in fact, a rather promising crop, since it usually yields as much grain per acre as the better varieties of oats, and has a lower percentage of hull.

Since the varieties of *Triticum vulgare* are best suited for flour production, and since the greater part of our wheat crop is used for that purpose, it is probable that these will be used most largely as the basis for breeding work.

Polish Wheat (*Triticum polonicum*) is a very distinct species, not extensively grown in America. It has been sold under the names "Corn Wheat" and "Colorado Giant Rye." It differs from all of the other species in having very large heads and unusually long chaff scales (glumes). The grain is of similar texture to that of the Macaroni wheats, but the seeds are very long, and, as a rule, the yield of grain is low.

A fourth species of wheat which may be of use in inter-breeding, although it has not proven of great value in itself, is called Spelt (*Triticum spelta*). The most important difference between this and those previously described is that the chaff scales are thicker and adhere more closely to the seeds, so that in process of threshing the heads simply break up into sections (spikelets), each section containing two seeds enclosed within the chaff. The varieties of Spelt, although possessing good strong straw, have given small yields of grain in most parts of this Province, and the crop is rather susceptible to rust.



Macaroni Wheat.
(*Triticum durum*)

No single variety at present grown combines all of the desirable qualities. The Dawson's Golden Chaff, which is so widely and so favorably known, has many good features to recommend it. It is hardy, possesses strong and fairly clean straw, produces very uniform, plump grain, and, above all, is very productive; but the grain is rather soft, and, although the flour made from it is very white, the millers and bakers object to it because of a lack of strength of gluten. It is evident then, that this variety might be improved by crossing with one of those which produce very hard grain, such as Imperial Amber, Tasmania Red, or Turkey Red.

The Early Genesee Giant is a splendid variety, having many of the same good qualities as the Dawson, and yielding a better quality of grain, but it is quite subject to rust. Very good results might be obtained by crossing this with one of the cleaner-strawed varieties. A slight infusion of Macaroni blood would undoubtedly be useful in this case if we could succeed in getting plants of the latter class to mature at the right time for making the cross. By sowing some of the Macaroni wheat in a sheltered place in the fall, we would probably be able to get a few plants to mature at a suitable time for making this cross the following summer.

Owing to the fact that the spring sown varieties of flour wheat do not now thrive well enough nor produce large enough yields in most parts of the Province to make their growth profitable, we depend largely on winter wheats (combined with wheat imported from the West) for our flour supply; and this, notwithstanding the fact that we constantly run the risk of losing the whole or a great part of the crop through severe winter weather. If we could succeed in

increasing the vigor and productiveness of our spring varieties by crossing with those of the Macaroni class, such as the Wild Goose, which gives excellent yields, a great good would be accomplished; and this is probably quite within the range of possibility.

Most of our spring wheats are susceptible to great injury from rust.

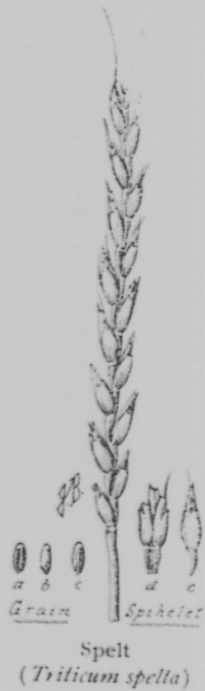


Polish Wheat

(*Triticum polonicum*)

This, no doubt, accounts in a large measure for the deficiency in yield. Crossing with Macaroni wheats would help to overcome this difficulty to some extent, but the desired end might be more quickly and more effectually attained by crossing with Emmer, which is exceptionally free from rust. The introduction of Emmer blood would also likely prove helpful in overcoming the tendency of some varieties to shell out too freely in the process of harvesting.

Emmer, although not useful for flour-making, has proven to be quite a satisfactory grain for stock-feeding purposes. Its freedom from rust, its productiveness, and the fact that it may be sown much later in the spring than the other grains and still give a good yield, makes it worthy of consideration. It might be improved, however, by crossing with Spelt, with a view of producing varieties with



Spelt

(Triticum spelta)

greater length of head and freedom from beards.

Let it be remembered, however, that all of these things are more difficult of accomplishment than they would seem to be at first thought. It is often very difficult to affect a cross between distinct species, but where this is the case, the end may finally be attained by first crossing varieties within each species and then using the resulting plants to get the specific cross. Other difficulties will arise which may at first seem insurmountable, but the reader should bear in mind that some of the possibilities suggested in this article have already become accomplished results in the plant breeding work at this Station and elsewhere, and there is little doubt that by careful, persistent, and systematic experimentation, most if not all, of the others may be realized, and much more besides.



Emmer

(Triticum dicoccum)

Special Instruction Given Through Medium of Farmers' Institutes.

By GEO. A. PUTMAN, B.S.A.

THE instruction afforded at Farmers' Institute meetings in Ontario in the early years of their history was of a general character. The subjects of cultivation, rotation of crops, selection and feeding of the different kinds of live stock, in fact every operation upon the farm was taken up with much enthusiasm and benefit to those concerned. As the years progressed those in charge of the work found it necessary to give more definite and special instruction. We all remember the good work which was done in furthering the interests of the bacon trade by placing before the farmers, by means of lectures supplemented by charts, up-to-date information as to the desired type, methods of feeding, etc. The general discussions and lectures of the past two years have been supplemented in many cases by arranging that live animals be used at a number of the meetings to illustrate the desirable and undesirable characteristics of the various classes of live stock. Illustrative material has also been used in dealing with the questions of pure seed production, the eradication of weeds, etc., and from the reports received from speakers and secretaries throughout the Province, as well as from personal observation, I am convinced that the meetings of the future must partake more and more of a special character. We must be prepared to send the very best informed men to visit those sections in which

their particular subjects are of first importance. The beef producing districts must receive instruction along their line, while the dairy sections must have special prominence given to cheese and butter-making and the production of the raw material for the same.

There must be some reason or reasons for the evidence of carelessness on the part of many of the farmers in the selection and production of their seed grain. Notwithstanding the fact that prominence has been given to this subject at agricultural meetings, and in the agricultural press, there is evidence of gross neglect in many sections. No doubt the practice of feeding the greater portion of the grain grown upon the farm has led the farmers to be somewhat careless. "It makes little difference," they say, "if there are a few weed seeds, or if the seed is not plump and uniform, as we use most of it for feed, and in case we wish to sell a portion of it, we can easily clean sufficient for that purpose." One reason for the gradual spread of weeds is that labor is much more expensive than it was a few years ago. The farmers hesitate before they employ labor at from \$1.25 to \$1.50 per day to top thistles or to pull weeds from a field of grain or clover.

We appeal to the farmers to count the cost of attempting to save a few cents per bushel as between poor and good grain for seed purposes. A few

cents saved in this way, means as many dollars lost in the course of a few years in the lesser yield of grain and the introduction of noxious weeds. Those who have an opportunity of coming into contact with the farmers throughout the Province, view with concern the possibility of a still greater spread of these robbers of the soil. Both the Provincial and Dominion Departments of Agriculture have given prominence in their literature and through speakers sent out from time to time, to these two subjects; and in the spring of 1904 the Dominion Department asked the Ontario Department to co-operate in holding a series of special meetings in the interests of farmers who were making a specialty of the growing of timothy, alsike and red clover for seed purposes. Forty-nine of such meetings were held between the 8th and 26th of June, and while the attendance was not very large and the apparent interest not so keen as could have been desired, we are pleased to state that much good was accomplished. This is shown from unsolicited statements made by many who were in attendance, as to the benefit derived from the discussions of the following topics, upon the farms of men who were making a specialty of some line of seed production:

(a) The best methods of producing pure, strong seeds of clover, timothy and alsike, with special reference to the preparation of seed bed and kinds of seed used.

(b) Some of the weeds commonly found in clover fields, and the practical means of eradicating them.

(c) The marketing of pure commercial seeds.

(d) How to avoid the clover seed midge.

(e) Object of the Bill (No. 7) Respecting the Inspection and Sale of Seeds.

The Dominion Department has again intimated its willingness to devote a considerable sum of money to

similar meetings to be held in June. Mr. G. H. Clark, Seed Commissioner, Mr. T. G. Raynor, in charge of the Ontario work for the Dominion Department, and the Superintendent of Institutes for the Province, have the work in hand, and are completing arrangements for a series of some 60 or 70 meetings. The object is to illustrate and demonstrate the possibility of improvements in quality of seed and yield of grain by care, selection, and improved methods of cultivation. Anything and everything which is considered of value to the farmers who are making a specialty of seed growing of any kind will be taken up at these meetings. It must not be inferred, however, that the addresses and discussions will not be of value to all farmers. It will be well worth the while of the farmer who is producing only a few acres of one kind of grain, to make it a point to attend at least one session. In those sections of Southern Ontario where the growing of corn for seed purposes is a possibility, special emphasis will be laid on that subject.

The meetings will be held in the open fields near some hall or other suitable building in which the addresses and discussions can be continued in case of unfavorable weather. Farmers are requested to bring samples of grain and weed seeds and specimens of weeds to the meeting for examination and identification. It is the intention of the Seed Division at Ottawa, as well as the Provincial Department to so equip and instruct the lecturers that they will be able to give every farmer, no matter how limited his operations are, something of value and interest.

The meeting will in each instance be held in the afternoon, and the voice of the meeting will be taken as to whether or not an evening session will be held.

Dates and fuller particulars will appear later.

Where Are We At?

By G. E. DAY, B. S. A.

DURING the past winter a very lively discussion has been carried on in the agricultural press regarding the question of bacon production. The whole discussion was started by the fact that Canadian packers fail to discriminate in price between the bacon hog and the fat type. Around this storm centre the discussion has raged, and a great many matters of greater or less importance have been swept from their natural place by this inky cyclone, and whirled before the public in such fantastic fashion, that it would be little wonder if many men failed to remember their natural aspect. Perhaps it is still rather early to emerge from the storm cellar, and yet the sooner we earnestly set to work to make the best use of what is left us, the better it will be for all concerned.

Among the points brought into the discussion, is the advisability of giving up breeding the bacon hog, and going into the production of the fat hog. When a man is on the top of a high fence and makes up his mind to jump down, he will naturally take a lively interest in the spot where he will alight. When we talk of dropping the bacon hog and taking up the production of the fat type, we should carefully consider what would be the consequence of such a step. Judging from the points which have been brought out in the discussion, we are led to conclude that the Canadian packer can handle a limited number of fat hogs to good advantage; that he can, in fact, make as much money out of a certain

number of fat hogs as he can out of an equal number of bacon hogs. While this is true, it does not follow that if all Canadian hogs were of the fat type, the profits would be the same as they are at present; nor does it follow that the prices received by the farmer would be equal to those of to-day. It does not require much thought to understand how this comes about. There is a certain home demand for fat hogs, and home-grown fat hogs can be used to advantage to supply that demand. But, just as soon as that demand is supplied, and an attempt is made to dispose of the surplus in Great Britain, we find ourselves face to face with American competition. It is right here that the bacon hog helps us out of our difficulties. He can go to the British market and keep out of direct competition with his fat cousin; but if we attempted to market the products of the fat hog in Britain, we would soon find ourselves put out of business by American competition. There is no question that the Americans can give us "cards and spades" and beat us out in the production of fat hogs. With their immense and varied home market, and their cheap corn, they have every advantage in their favor. Thus, we see that the bacon hog enables us to dispose of our surplus product in a profitable market. Remove the bacon hog, and the possibility of disposing of our surplus product to advantage disappears. It should not be difficult for the average intellect to grasp the situation, and enable our farmers to realize that the present good prices for fat

hogs are rendered possible by the existence of the bacon hog. The bacon hog is the key to the situation, it opens the door for our surplus product and prevents congestion. If we throw away the key, our hog industry will dwindle away to the position it occupied years ago, becoming practically limited to supplying the local demand. Upon which side of the fence will our farmers jump? Surely none of them wish to become impaled upon the snout of a large sized American fat hog.

Another question which has been raised is whether it pays Canadian farmers to feed hogs of any kind. Some writers have gone so far as to practically advocate that farmers should drop out of the hog business altogether. This position is so unreasonable and so childish as to scarcely deserve notice. We find men who cannot make the raising of sugar beets pay, other men engage in the operation and make a fair profit. We also find men who cannot make dairying pay, and others who find it a very profitable business. The same may be said of almost any business undertaking, whether connected with agriculture or not, and it would be a strange thing if the feeding of hogs were any exception to the general rule. While everyone will admit that it is possible to lose money on hogs, at the same time it is possible to make money, as has been demonstrated a great many times. Those who feel sure they are losing money in the hog business had better stay out of it, but they should have the good grace to give those men who are engaged in it credit for understanding their business, and being their own judges as to whether they should stay in it or not.

But perhaps the most plaintive and

most general wail comes from those who believe that it costs a great deal more to produce the bacon hog than to produce hogs of the fat type. This belief is extremely widespread, and probably has a firm place in the minds of 99 out of 100 farmers. When we come to sift the evidence, however, we cannot find a particle of proof in favor of this theory. At both Guelph and Ottawa, it has been found impossible to demonstrate that there is any fixed relation between the type of the pig and the cost of producing one hundred pounds increase in weight. If a pig is thrifty, has a good constitution, and good digestive organs, it can make good use of its food whether it belongs to the bacon or to the fat type. In addition to the work done at Guelph and at Ottawa, the Iowa Experiment Station conducted three experiments with six different breeds of swine, and a comparison of their results with the results obtained at Guelph with the same six breeds, should convince any thoughtful person that breed has practically nothing to do with economical production. It is worthy of note that one or two experiments amount to practically nothing so far as establishing a certain point is concerned. In our own experiments which we are carrying on with different breeds of swine, we have two litters of pigs of identically the same breeding, and yet one group is making very much cheaper gains than the other. If these two groups had happened to belong to different breeds, the person unfamiliar with experimental work would likely conclude that the difference was solely attributable to the breed. Since they are of identically the same breeding, and since the food is exactly the same for both groups, it follows that there must be some other cause for this dif-

ference in cost. Individuality is far more effective than breed or type in determining the cost of production. This case is quoted simply to show the uncertainty of a single experiment, and yet you will find a great many people thoroughly convinced that their view is the correct one, for the simple reason that some one, and possibly very imperfect, test happened to result in a certain way. It shows how careful we must be in drawing conclusions and when we study all available data regarding the relative cost of producing one hundred pounds increase in weight in bacon hogs and in fat hogs, we are forced to the conclusion that, to say the least, it has never been proved, other things being equal, that the bacon hog is any more expensive to produce than the fat hog.

A very important problem which has attracted a good deal of attention throughout this discussion, and which is worthy of careful research, is the problem of the average cost of producing hogs of suitable weight for bacon purposes. We find the cost of raising hogs variously estimated, some claiming that they can raise their hogs at less than 4 cents per pound live weight, and others that it costs in the neighborhood of 6 cents per pound. Unfortunately, we have not sufficient data at hand to enable us to make an authoritative statement. We are accumulating information as rapidly as possible, and so far as our information goes it indicates that, if moderate market values are attached to the foods consumed, the cost may range all the way from a little over 4 cents per pound to

somewhere in the neighborhood of 5 cents per pound. Methods of feeding and the individuality of the pigs influence results, and it will require considerable time to establish anything which may be regarded as fully satisfactory. The William Davies people of Toronto, have shown their interest in this problem in a practical way, and are offering to farmers who will keep an accurate record of all foods consumed by their pigs from the time they are weaned until they are ready for market, and who will also report the weights of the pigs at weaning time and at the time of marketing, an advance of 50 cents per hundred over the prevailing market price at the time the pigs are marketed. This very liberal offer has been accepted by quite a number of farmers, and we expect a large number to yet take advantage of it. The information thus obtained should be of great value, and farmers are under considerable obligation to the William Davies people for their liberality in this matter.

To thoroughly discuss this whole question would require a great deal more space than should be given to one article, but an attempt has been made to present a few important points for careful consideration. We trust that readers will be careful in drawing conclusions, and that they will consider all phases of the matter before they rashly make up their minds to sacrifice the reputation Canada has obtained in export bacon. The more we reflect upon the matter, the firmer becomes the conviction that Canada has nothing to gain and everything to lose if she abandons the production of the bacon hog.

The Origin of Swamps and Swamp Soils.

By W. LOCHHEAD, B. A., M. S.



URING the last few years considerable attention has been given to the study of swamps and swamp soils, with the result that much interesting information is now at the disposal of the agriculturist who attempts to grow crops on old swamp lands, the lumberman who is interested in the timber, and the capitalist who exploits the marl deposits located in swamp areas. The economic importance of swamps will be recognized when we remember that scattered over Ontario are thousands of swamps of all sizes, thousands of small lakes that will soon become swamps, and thousands of acres that were once occupied by swamps.

The great majority of the swamp depressions in Ontario are a direct legacy of the great glacier which covered the country during the Glacial Period. On its retreat, the glacier left the covering of drift, consisting often of great irregular masses of unsorted clay, gravel and sand, with intervening hollows, which became drainage basins or lakes. In the north country the depressions are frequently rock-basins, either gouged out by the glacier during its advances, or eroded by the chemical action of water on the softer rocks, or formed by the warping and folding of the rocks themselves. Sometimes, too, the glacier deposited drift material across a valley, so as to obstruct the drainage, and in this way many shallow lakes were formed.

Sometimes bars were thrown across arms of lakes, resulting in the formation of lagoons or swamp-like lakes. Some of these depressions had outlets, and the water drained away, but in the large number of cases there were no outlets, and the water which drained into them from the uplands made lakes.

To the geologist, we are indebted for an explanation of the origin of the depressions occupied by the multitude of lakes and swamps of Ontario, but to the botanist, however, we are mainly indebted for an explanation of the development of the swamps and bogs.

On the retreat of the glacier from Ontario, certain types of plants were ready to occupy the land newly laid bare. These were the aquatic forms that could migrate readily. Some of these were arctic forms, driven south on the advance of the glacier, and returning northward on its retreat. Others were temperate forms returning to occupy the areas from which they had been driven by the advance of the ice-sheet. The first group, represented by sphagnum or peat moss, certain reed grasses and sedges, heaths, orchids, tamarack and spruce—true bog species—were adapted to cold, undrained conditions; the second, represented by water-lilies, pond-weeds, most reeds and sedges, and bass-weeds—swamp species—were adapted rather to temperate, more or less undrained conditions. Both of these types are represented in most swamps.

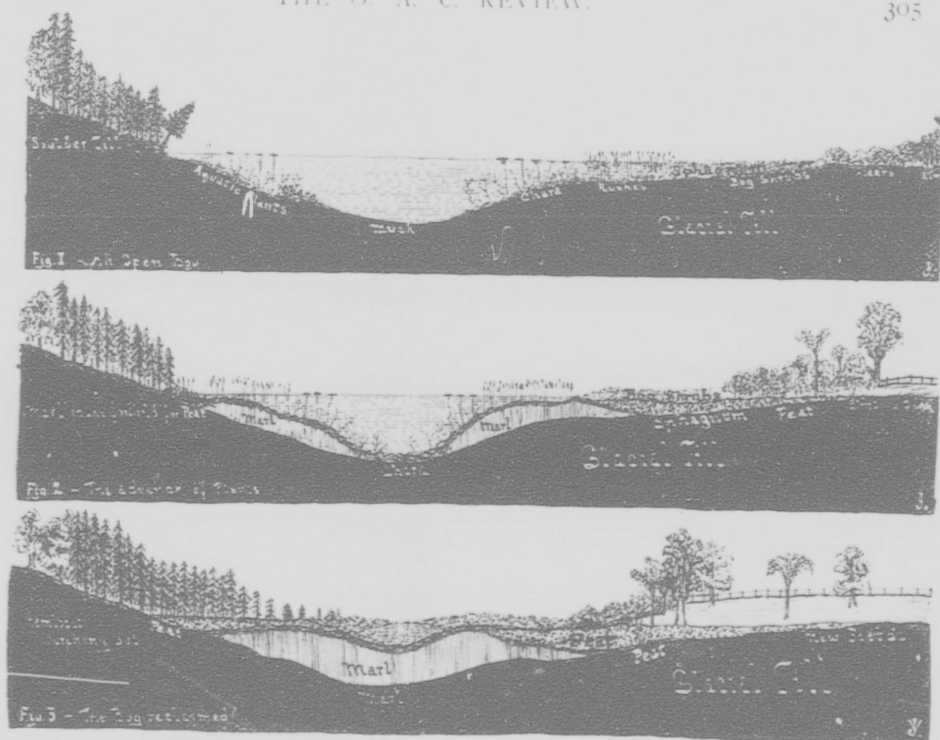


Fig. 2.—Diagrams to illustrate the progressive development of a swamp from a glacial lake, and the formation of peat and marl deposits.

The first or bog group of plants were the first in most cases to gain possession of the new territory, and of these certain submerged forms of algae, such as chara, etc., were the forerunners of the bog sedges and the sphagnum moss. On account of the cold, un-aerated condition of the deeper waters and soils, and the accumulation of humic acids, bacterial life did not develop, and the oxidation of the vegetation did not take place. Peat, therefore, formed on the death of the lower submerged strata of sphagnum, while marl was deposited in deeper water, chiefly through the action of the charas and other algae.

In those sections of the swamp, however, where better aeration and higher water-temperature prevailed, bacterial decomposition of the veget-

able matter took place, and vegetable muck was formed.

The gradual transformation of the lakes into swampy areas was brought about, in some instances, by the deposition of the sediment carried by the streams emptying into the lakes. This sediment sometimes accumulated to such an extent that the shores became shallow and permitted a luxuriant growth of swamp vegetation. Gradually the lakes were converted into broad swamp areas with their characteristic flora.

In other cases but little sediment seems to have been deposited in the lakes, and the vegetation-growth was almost entirely responsible for the filling-up. In the deep water near the shore the charas and other bass-weeds grew; nearer the shore, and often

zonally arranged, were the water-lilies, cat-tails and certain sedges and reeds, with their extensive root-stock systems, from which every year erect stems and leaves rose, to die on the approach of winter. (Fig. 1.)

Upon this ever-increasing mat of roots developed the sphagnum moss and the heath plants. Sphagnum is peculiar in this respect, that, while the lower submerged layers are dead, the surface layers remain active and form a continuous mat of living plants

society of such a swamp area, and under such conditions, the mineral salts leached from the surrounding land are unable, to any extent, to filter through the spongy, peaty mass, so that the bog water is deficient in some of the essential elements.

However, where there is a deposit of mineral soil along the shore, the sedge-grass society is followed by shrubs of willow and maple, leading up finally as a climax to a maple-hemlock forest.

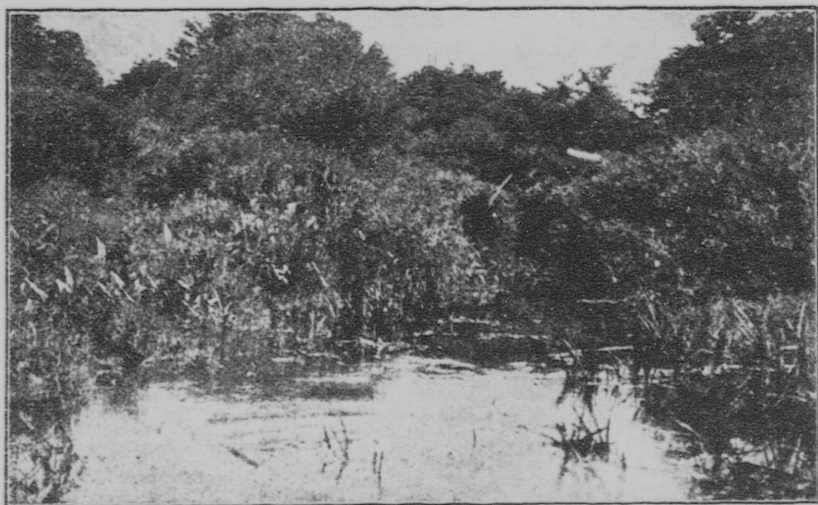


Fig. 1.—The arrangement of plants at the margin of a glacial lake.

through which little oxygen can pass. Each year the sphagnum and heaths crept farther inward from the shore, preceded always by the sedges and the aquatics, while the dead layers were gradually compacted by the overlying pressure of plant growth, and as a result of the chemical changes, peat was formed.

Following close upon the sphagnum and heath, when the conditions become favorable, were the tamarack and black spruce of the tamarack swamp, which form the climax plant

Again, if by any means a tamarack-spruce swamp becomes partially drained, this society is gradually replaced by a society composed of white-cedar, ash, birch, balsam, white pine, elm and oak. Gradually, however, as drainage conditions improve, both the tamarack and the cedar swamps are replaced by maple-hemlock forests, and in Ontario there are hundreds of examples of all of the stages from the lake to the maple-hemlock forest.

The two groups of plants, already referred to, which contribute to the

making of swamps, produce soils that differ much in physical and chemical properties. The true bog soils, formed mainly from the sphagnum-heath plants, are characterized by the poverty of available nitrogen for the growing plants, although there is present an abundance of nitrogenous materials.

In this connection it is interesting to note that many of the plants growing in sphagnum areas, as, for example, the pitcher-plants, the bladderworts, and the sundews, are insectivorous, and get their nitrogenous supplies from the dead bodies of the insects captured.

Again, true bog-soils are deficient in potassium, are usually high in magnesium and calcium, and have about the normal amount of phosphoric acid. The total amount of mineral salts in bog soils, however, is small in comparison with that in the soil waters of the upland, on account of the difficulty these substances experience in dissolving laterally through peat.

Moreover, the acidity of both peat and bog water is high, and aeration is almost entirely prevented by the high water-capacity of peat. These factors, coupled with the low temperature, prevent the action of nitrifying bacteria on the organic substances present.

On the other hand, swamp soils formed from swamp sedges, grasses, and mosses other than sphagnum, have a higher temperature, are not so acid, and have a higher percentage of mineral salts. Bacterial action, too, is more active, and the decay of the organic material proceeds more rapidly. Such soils are more readily drained, and in this condition sustain a somewhat different assemblage of plants from that found on true bog soils.

It will be observed, therefore, that the main difference between swamp and

bog soils is the relatively greater nitrification of the former. After the areas have been drained, the swamp soils will also be brought more readily into a condition suitable for the growing of plants, on account of the presence of all the essential elements of plant food.

The peat immediately below the sphagnum is usually of a brown color, but deeper down it changes to a dark brown or black. After the bog has been drained, oxidation becomes quite rapid. The vegetable tissues disappear, the humus acids are either neutralized by the alkalies and alkaline earths or washed out, and the well known black powdery muck is formed.

The brown color of bog or peat water is due largely to the presence of the soluble compounds of humic acid with the alkalies. Even after the peat area has been thoroughly drained the acid muck retains a very high water-capacity, which allows of but poor aeration, and when wet has all the sticky adhesive properties of very heavy clay. These conditions prevent the growth of many of our cultivated plants. For example, barley, oats, most of our pasture grasses, onions and rhubarb prefer alkaline soils; while flax, corn, cow-pea, soy-bean, buckwheat, blackberry and raspberry appear to grow well on acid soils. These latter plants may be able to get food directly from the constituents of the humus. Collectors of wild plants have for a long time recognized the fact that only certain plants are tolerant of acid soil conditions.

Reference has been made to the fact that in many cases marl underlies the peat. The formation of the marl in these basins is due largely to the action of certain algae, as chara, etc., on the bicarbonate of calcium in solution

in the bog waters. The very small percentage of shells in most marl deposits precludes the idea of an organic origin for all marls, but chemical precipitation may assist materially in building up the deposits of calcium carbonate. [Fig 2.]

The correction of the peculiar conditions prevailing in reclaimed swamp lands so as to permit the growth of ordinary farm crops requires careful consideration, for, as has been shown, the conditions are not always the same.

In many cases the adhesive properties of muck may be greatly improved by the incorporation of materials that will make the muck more friable and open in texture, and will correct the acidity. In other cases potash, phosphate, or lime fertilizers may be required to make up deficiencies in the amount of these essential elements, while in other cases better drainage may be necessary to get rid of the toxic substances which are often present in solution in humus soils.



Soulless is all humanity to me,
 To-night my keenest longing is to be
 Alone, alone with God's grey earth;
 Pulse of my pulse, and consort of my dreams,
 Let me but feel athwart my cheek the lash
 Of whipping wind, but hear the torrent dash
 Down the mountain steep, 'twere more my choice
 Than touch of human hand, than human voice;
 Let me but wander on the shore night-stilled,
 Drinking its darkness till my soul is filled;
 The breathing of the salt sea on my hair,
 My outstretched hands, but grasping empty air.

—E. Pauline Johnson.

The Dairy Industry.



AMONG the many promising features in the future prosperity and progress of the Dominion is the increased interest in the dairy industry. For many years efforts put forth by dairymen and others to show the possibilities of agricultural endeavor seemed apparently to produce but little effect, if not total indifference. Now, this has changed, and this neglected industry has attained a momentum, which will some day place it in the forefront of agricultural thought of this Province, if not of the whole Dominion. Everywhere indifference has given place to an honest, if tardy, appreciation of the value of dairying in the agricultural development of our country.

Much of this is due to the many and varied mechanical productions of inventive genius during the last thirty years, to the development and extension of cold storage, and to the benefits of rapid transit. The manufacture of dairy products has thus been simplified, and a wider market opened for us where we can now place a product of superior quality.

Much is also due to the marked increase of bacteriological and chemical knowledge of this subject; but more is due to those men who have given and are now giving their lives for the advancement of the dairy industry through the testing, application, and spreading of the knowledge which the work of the scientist has placed at his disposal.

During the season of 1905, the aggregate production of butter is estimated at 40,000 packages, with a total value of \$48,000,000. When the value of Canadian cheese is added, we have a grand total of \$80,000,000. This does not take into account the by-products nor has mention been made of milk and cream sold and used as such throughout the country.

In the butter export trade there was a marked increase. The total returns for the season approximate \$30,000,000, an increase of \$10,000,000 over the season of 1904. When we consider that practically 97 per cent. of the weight of butter produced can be obtained directly from air and water by the plant we begin to form some idea of the value of this phase of the dairy industry in the economic saving of soil fertility. Further, when we learn that the additional element nitrogen, essential in the making of cheese, can be obtained from the air in the soil by the aid of leguminous plants, we can then understand why dairy farming is receiving increased attention at the hands of the intelligent and thoughtful agriculturist.

At the present time Canadian cheese stands first in the British market. Our butter, on the other hand, does not hold so enviable a position, though the improved quality of our product has resulted in Canadian butter attaining a higher standing in competition with Danish. London has displaced Bristol as our leading butter market. Liverpool comes second and Bristol third. Saltless butter and 56-pound packages are much in favor. Our market is

gradually widening, and there is an increased demand for the Canadian product. Butter is now being sent to South Africa, Cuba and Mexico, while indications point to a promising market in Japan.

Much discussion has, of late, been elicited over the "moisture question," and the end is not in sight. A stimulus to experimental work along this line has been given by the results of Danish and American workers. There is a danger, however, in the present critical state of our British market that the injudicious and ignorant incorporation of moisture may endanger our position there. The Danes, our strongest competitors, are already calling a halt, though the average moisture content of Danish butter in 1904 was approximately 14.85 per cent. We would do well then to take a leaf out of their book or rather let us not insert a leaf that they are now discarding.

Increased moisture content means increased bacterial activity, and, unless pasteurized water is used in washing the butter, an increased bacterial content as well. Unlike the Dane or our American cousin, our market is not at hand, and so we have to take into account increased bacterial activity in its relation to keeping quality before we can adopt methods recommended by the Danish or American butter-maker. A dry, mealy butter is not desired, neither is butter of high moisture content suitable to our conditions. Let us first look after quality and quantity will take care of itself.

There is also considerable agitation in Ontario, at the present time, for the adoption of a licensing system or some similar law to compel factory owners to keep their factory in a clean, sanitary condition. That such a law is necessary is a discredit to the industry; that

it is needed seems none the less apparent. The manufacture of food products, especially for food consumption, requires special care and cleanliness. If owners and managers of factories do not fulfil these requirements after defects are pointed out, there is one remedy left and that is the arm of the law backed by strong public opinion.

The Canadian Dairyman is doing a splendid work in this connection by exposing undesirable conditions, and keeping ever before the dairymen the possibilities of improvement of the dairy output by the adoption of some method of compulsory sanitary inspection. Out of 56 creameries in Western Ontario, only 38 were fit to receive a license. Such a state of affairs cannot long exist.

Some dairymen claim that education is all that is required. Much money has been spent in education during the last number of years, and the time calls for further action. If we create machinery by which it will be possible to compel the untidy dairymen to keep their factories and surroundings in a clean, sanitary condition, it will be the greatest educational force that could be introduced.

What is equally important to improvement along these lines is the proper care in the storage of the finished product. Under the supervision of the dairy commissioner for the Dominion, Mr. Ruddick, the importance of this feature of dairy improvement has been demonstrated. Cheese kept in the Government cool curing stations have shown a marked improvement in quality. What has been done for cheese can be done for butter. A temperature of at least below 40 degrees Fahrenheit should be maintained, though a much lower temperature is desirable. The age of butter depends upon the tem-

perature at which it is stored. Too many creamery men look upon the refrigerator car as a cold storage warehouse. The most that can be expected is to maintain the butter at the temperature at which it enters the car. Evidently, then, we have much to learn before we can place our butter on foreign markets in a fresh, sweet condition. The proper use of cold storage is an important link in the dairy trade, and should be given more attention.

It is gratifying to note the increasing interest in testing dairy herds. It has perhaps been the weakest side of the dairy industry that more attention has not been given to this important phase of the work. In this respect we are much behind the most progressive dairy countries. In Denmark, there are 450 cow testing associations, with over 9,000 members. Nearly 200,000 cows are tested annually. Michigan, Wisconsin, Iowa, and other dairy states are fast taking up this work. In Canada three or four such associations have been formed, and there is the promise of good work being done.

When we find the production of individual cows varying from 100 to 1,000 pounds of butter per year, we see the possibilities of improvement through a knowledge of the actual performance of each cow.

There is also much to be done along the line of bacteriological and chemical research. It is not too much to ask that this Province have one man in each of these departments whose whole time is devoted to the solution of those problems which are every day met with in dairy practice. Increased accommodation and better equipment for the teaching of these subjects should also be supplied.

Much has been done; much remains to be done. Rest assured, however, the dairy industry no longer begs, but compels attention.

No amount of discouragement, no accumulation of difficulties, can stop its progress, directed as it is by some of the ablest men the Dominion can produce, and backed up by her most progressive citizens, the dairymen.

—J. Bower, '06.

CANADA.

The whitethroat calls across the dusk,
From woodland sweet with pine and musk,
What time the purple twilights rest
Upon the city's glimmering breast—
"Sweet, sweet Canada, Canada, Canada!"

The night wind hushes and more near,
The sound of revelry I hear;
And by the star-light's opal beams
My woodbird whispers in its dreams—
"Sweet, sweet Canada, Canada, Canada!"

—Helen M. Merrill.

Some Notes on Galls.

THE attentive observer of vegetable growths must often have noticed on the trunks or branches of trees, on the stems of weeds and flowers, on leaves and their petioles and even on roots, certain curious deformities or excrescences, which he rightly suspects as foreign or parasitical.



On the Left—The Elliptical Goldenrod Gall (*Gnorimoschemia gallae-solidaginis*.)

On the Right—The Goldenrod Ball Gall (*Trypeta solidaginis*, Fitch.)

These excrescences he finds to vary in size from that of a pin's head on the oak leaf, to the bulk of one's fist on the trunk of the poplar or elm. As to color, he remarks that they follow the natural seasonal changes of their chosen places—as to shape, they are varying and fantastic, sometimes taking on the

form of a pea, a cherry or other familiar natural object, and again following more singular shapes suggesting a pine cone, a toy trumpet or a cock's comb. These parasitical and abnormal growths are known to the naturalist as Galls, and are the work of insects.

Evolution of Insect Galls.

The insect origin of galls appears to have been entirely unsuspected until recent times, although Pliny, in his Natural History (xvi., 9, 10, xxiv., 5) remarks that a kind of gnat is produced in certain excrescences on oak leaves. Bacon was so far astray as to describe "oak-apples" as an exudation of plants, accompanied by putrefaction. A writer of the eighteenth century (Pomet) thought that gall nuts were the fruit of the oak, and a similar opinion exists among the Chinese to this day.



Mite Gall (*Eriophyes quadripes*, Shimet) on Soft Maple.

Causes Inducing Gall Formation.

The exciting causes of the hypertrophy which produces these galls are probably two in number: first, the irritating fluid or virus secreted by the female insect and deposited with her egg in the puncture made by her ovipositor in the cortical or foliaceous parts of plants; secondly, simple oval or larval irritation of itself. In either case, the result is the rapid enlargement and subdivision of the cells affected, thus forming the tissues of the gall. In actual process those plant cells which happen to be most active in growth and subdivision are most subject to gall formations.

The weight of authority inclines to the view that it is the quality of the irritant within the tissues rather than the native peculiarities of the plant affected that chiefly determines the nature of the gall. At the same time an affinity between an irritant and the cellular tissue of some plants

must be held to exist, inasmuch as, in the majority of cases, each species of gall-insect limits itself to some one vegetable structure.

In proof of the first of the two preceding hypotheses may be instanced (1) the bright red galls of the Sawfly (*Nematus gallicola*) which are found on 4 species of willow, viz., *Salix fragilis*, *S. alba*, *S. caprea* and *S. cinerea*; (2) the galls of the Cynipid (*Biotheza aptera*) which are found in the rootlets of the oak and also of the cedar.

In proof of the second, we may instance the galls formed by *Cecidomyia Strobiloides* exclusively on the terminal buds of the *Salix Discolor*, and those of the *Euura Ovum*, which are only to be found on the smaller branches.

Morphology.

In degree of complexity of internal structure galls differ considerably. Some are monothalamous (single-chambered) and contain but one larva of the gall-maker, while others are polythalamous (many celled) and numerously inhabited. The largest class are the unilocular or simple, external galls divided by Lacaze-Duthiers, the eminent French naturalist, into those with and those without a superficial protective layer or rind, and composed of hard and spongy tissues.

In a common gall-nut Lacaze-Duthiers distinguished seven constituent portions.

1. An Epidermis.

2. A subdermic cellular tissue.

3. A spongy and hard layer, composing the Parenchyma proper.

4. Vessels which, without forming a complete investment, underlie the Parenchyma.

5. A hard protective layer.

6. An alimentary central mass inhabited by the growing larva.

7. The larva.

A singular characteristic of galls is the great diversity in formation and structure which is found in those formed by insects so closely related as to be included in the same genus and who might perhaps be expected to produce uniform types.



Goldenrod Ball Gall, showing the larva within the monothalamous hypertrophy.

In illustration of this diversity, we have those peculiar little red galls so common upon the leaves of the maple, and more rarely upon the elm.

formed by extremely small and curiously-shaped mites belonging to the genus *Eriophyidae* (*Phytoptidae*). On the hard maple these galls assume a slender and somewhat cylindrical form, tapering to both extremities. On the soft maple, however, they are rounder and have a short petiole, presenting a top-like appearance. Again, on the Manitoba maple, these galls are sessile, while on the birch they form adventitious buds. On the elm they are similar to those of the soft maple, but smaller, while upon the pear leaves they appear as reddish blisters, which often coalesce, forming large blotches, owing to the eggs having been laid close together on the leaf.

These galls were but a few years since erroneously considered by some botanists to be fungus growths, and were so described in the genus *Cephaloneon*.

It is, therefore, not only the insects of different orders or families that produce characteristically constructed galls, but even species belonging to a single genus have distinct variations that are traceable.

In the identification of galls in summer perhaps one of the first characters, which it is well to observe is, whether or not there is any natural opening into the gall. It is by means of this distinguishing feature that galls formed by members of the families *Eriophyidae* (the mites), the *Aphididae* and *Psyllidae* (the plant lice and jumping lice), may be differentiated. All other galls, so far as is at present known, which have no natural opening, belong to the gall-making insects of the orders *Hymenoptera* or *Diptera*; although this distinguishing point is quite reliable in summer, it does not hold strictly true in the autumn, for many insects emerge at this time to pupate over winter in the ground.

The openings of the galls of the *Psyllidae* and *Aphididae* are usually quite large and occasionally Aphids may be seen passing in or out on a fine summer's day. The openings of the mite galls *Eriophyidae* (*Phytoptidae*) are generally to the underside of the leaves, and are in proportion to their size much smaller than those of the Aphids. They have also a peculiar growth of hair-like projections, through which the mites, when emerging from their galls, must crawl, but which are sufficiently fine to keep out tramp insects.

A singular feature of these three families, i. e., *Aphididae*, *Psyllidae* and *Eriophyidae*, is that there is a reproduction of insects within the galls.

With the exception of the oak-galls of commerce, none have so far disclosed any direct utility for human needs.

Even their purpose in the general economy of nature is, in common with so much of the life of the lower world, untraced as yet. Those tiny, busy, innumerable activities, escape ordinary vision or notice, yet reveal to close inspection unceasing movement, according to recondite plan or law: what they all portend or signify, and to what extent, who yet shall say?

—Douglas Weir, '06.



Bright Red Galls of the Sawfly,
(*Nematulus gallicola*) on the leaves
of White Willow (*Salix alba*.)

The O. A. C. Review

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Editorial

The resignation of Professor Sherman has once again brought into prominence a question which will sooner or later have to be faced by the Provincial Government—the question as to whether an efficient staff can be retained at the O. A. C. if the present maximum salary is to remain fixed. Professor Sherman has been with us only one year, and yet in that time has shown a degree of energy, enthusiasm and initiative which bid fair to make his newly-established Department of Entomology rival the strongest of the older departments in the excellence of the work done. That an American university can offer him an initial salary some two hundred dollars in advance of what he could expect to receive if he remained here all his life, is certainly a reflection upon the pro-

Higher Salaries

gressiveness of the Ontario Government.

The loss of Professor Sherman is merely a case in point, however. We have lost many good men in the past because prospects were brighter elsewhere, and it is not only probable, but certain, that we shall lose more in the future unless something is done. Among the junior members of the staff there are several whose names are frequently mentioned as likely to leave us soon. Most of the senior members having already reached, or nearly reached, the maximum salary here, know that they can command better elsewhere, and the moment of their leaving us depends only upon the strength of family ties and associations which at present bind them to the college. During the past year we have lost two of them to a sister institution in Canada.

There is a growing spirit of rivalry among agricultural colleges which, though undesirable, nevertheless forces recognition. If the O. A. C. is to retain her proud position in the van, more liberality will have to be shown towards those upon whose shoulders the responsibility of upholding the reputation of the college rests. Money may be spent lavishly upon new buildings, upon extensions and upon equipment in order that to outward appearances our college may be second to none, but it is after all to the men who are in charge of the departments and to those under them that we must look for the secret of our success in the past and for the promise of even greater achievements in the future.

The people of the Province of Ontario are wont to refer with pride to the fact that upon the staff of the Ontario Agricultural College we have at present some men whose places it would be almost impossible to fill should they be induced to leave us. The sooner, then, the Provincial Government realizes that they must raise the limit in the matter of salary and be prepared to "go the limit" if necessary in order to retain these men, the easier will rest the minds of those who have the interests of the college at heart.

Among the members of the Senior and Junior Years there is at present considerable discussion as to whether we derive sufficient benefit from the French and German course here to warrant its retention on the curriculum. This dis-

ussion does not originate in any undervaluation of the efforts of our present instructress. It is merely a question as to whether in an agricultural course, crowded with many subjects of greater importance, enough attention can be given to this subject to make it worth while.

If all who go on for their degree were holders of matriculation certificates the work could be commenced at a more advanced stage and much could be done towards the thorough mastering of one language or of both. As long as the so-called matriculation equivalent is accepted, however, there is always a certain percentage of the junior year whose knowledge of foreign languages is practically nil, and the course has to be begun at the primary stage. As the students have all passed that age at which a foreign language is readily assimilated, the progress is necessarily slow, and at the end of the fourth year, in spite of the time spent both in lectures and in preparation, the knowledge gained is very elementary.

In the existing circumstances, would it not be better to do away with the languages entirely and to devote the time to other subjects, preferably to English, a more thorough knowledge of which would stand many of our graduates in good stead? This would not interfere to any extent with those who plan a post graduate course, for, as a rule, they are holders of real matriculation certificates which give them a standing practically the "equivalent" of that of the B. S. A. degree in those subjects.

The Language Question



Some Changes in the Staff.

FRANKLIN Sherman, jr., our Professor of Entomology and Zoology, leaves in the latter part of May for North Carolina, having accepted a position there similar to that which he held here, but much more lucrative. He has been here only one year, having assumed his duties last fall. It was thought to be a piece of good fortune for the college that the services of so able a man had been secured. Professor Sherman has more than justified expectations entertained concerning him. While here he has proved himself to be a most efficient and energetic worker, and has done much in a short space of time to build up an entomological department which is and will continue to be a credit to the O. A. C. Professor Sherman is of a genial and obliging disposition, and is always ready and anxious to assist in every way in his power, those who desire to extend and increase their familiarity with the insect world. The best wishes of the student body among whom he was deservedly popular, go with him to his new appointment. Dr. Bethune, Editor of the Canadian Entomologist, is to fill the vacancy in the Entomological Department.

Next term will mark the establish-

ment of a Chair of English at the college. Professor Reynolds is to assume charge, and will now be able to give his undivided attention to this very important branch of our course. His place as head of the Physics Department will be taken by Professor W. H. Day, assisted by Mr. Thom, now in the Experimental Department. In addition to his duties as Professor of English, Professor Reynolds succeeds Professor Harrison as librarian.

Mr. V. W. Jackson, B.A., who has been demonstrator in botany and geology at the O. A. C., for the past two years, has recently been selected by the New Zealand Government to introduce Nature Study and Agriculture into the schools of the Auckland District.

New Zealand is striving to take the lead in educational matters, as it has in many other things. Mr. Edwin Hall was sent out a year ago to investigate the school systems of other colonies and England, and was much pleased with the work done at the O. A. C. and Macdonald Schools. The Government then advertised in Australasia, England and Canada and it speaks well for our system and the advanced educational work of Professor Jas. W. Robertson that a Canadian should be selected for this important position.

Mr. Jackson, who has been chosen

from the Empire to introduce this new work, is well prepared for such a responsible position. An honor graduate from Queen's University, Mr. Jackson spent some time in pedagogic work, and was always an earnest and ardent supporter of Nature Study. Two years ago he had the honor to lead the first class, graduating in Manual Training from the Macdonald Institute. Since that time he has been connected with the Biological Department at the college. During his stay here, Mr. Jackson has made many friends, whose good wishes will follow him to his new field of labor.

Public Speaking Contest.

On Friday evening, March 16, the Fifth Annual Public Speaking Contest was held in the college gymnasium. A large audience greeted those who took part in the evening's entertainment. The following programme was rendered:

1. Cornet Solo
Mr. J. M. Dawson.
2. Speech, "Canada and the Empire"
J. Bower.
3. Speech, "The Future of Canada"
T. H. Binnie.
4. Reading (Selected)
Miss Constance Roos
5. Speech, "What Great Britain Has Done for India"
A. E. Slater.
6. Speech, "Our Glorious Heritage"
J. Craig.
7. Vocal Solo
. (Selected)
Mr. Howell.
8. Speech



J. Craig, '06, Winner of Public Speaking Contest.

- "Canadian Nationality"
P. E. Angle.
9. Speech, "The Question of Chinese Exclusion"
P. Diaz.
10. Trio for Piano, Flute and Cello
Miss Jessie Hill, Messrs. Raymond and Crowe.
11. Vocal Solo—"Saved from the Storm" E. Barrie
Miss Mae Hunt.
12. Decision of Judges.
13. Reading
V. W. Jackson.

"God Save the King."

The judges, Professors J. B. Reynolds, W. P. Gamble and H. S. Arkell, gave their decision regarding the speeches as follows:

- 1st.—J. Craig.
- 2nd.—A. E. Slater.

3rd.—J. Bower.

4th.—T. H. Binnie.

In connection with this contest, four prizes are given; first, \$10; second, \$8; third, \$6; fourth, \$4. Mr. Craig's speech is deserving of special mention, in that it was an excellent specimen of choice English rhetoric. He possesses, in a remarkable degree, the power of setting things before the mind's eye so clearly and graphically as to enable one almost to live in and see the conditions which he describes.

Mr. Slater speaks with considerable

force, earnestness, and eloquence, and made, on the whole, an excellent speech, and setting forth in a very interesting manner the rapid strides made in India, socially, morally, industrially and commercially.

First Year Concert.

Massey Hall, so often the scene of speeches from the throne, the battle ground of forensic eloquence, again be-

and austere counsels, the heterogeneous jury, such as only the first year could produce, or reproduce, the noble and reverent judge, the very pink of propriety and essence of manliness; then doubting his very senses, hesitatingly entered the much-maligned Mr. Pickwick himself. The melancholy, sad-eyed Mrs. Bardell ushered in another coterie, known the world over, as the garrulous Mrs. Cluppins, the ingenious



A FEW OF THIS YEAR'S DAIRY CLASS.

Mr. Bathgate, New Zealand. Mr. Stallan, England. Mr. Hoase, U.S.A.
Mr. Schoenmaker, Holland. Mr. Harvey, Australia. Mr. Alex. Wark, Ontario.

came on Saturday evening, March 31, the centre of college interest. This time it was the freshman class who, with the spirit of progression, common to all freshman classes, were occupying the stage.

The chief event of the evening was the representation of Mr. Pickwick's Breach of Promise Case.

Promptly as came the hour for calling the court, stalked in the learned

Mrs. Sanders, the bereft little Master Bardell, and Mr. Pickwick's staunch supporters, baffling description in the guise of Sam Weller, Tracy Tupman, Augustus Snodgrass and Nathaniel Winkle.

The court complete, the trial proceeded as only Dickens could direct, and so realistic were the various costumes, so accurate the representation, so faithful the reproduction, that even

Dr. Mills, in the audience, lost the present in the true reflection of the past.

Second Year Banquet.

The closing hours of the college year were spent by the second year men, seated around the tables of the Wellington, at the annual banquet of the Sophomore Class. After the tension, caused by something like a quarter of a hundred examinations, the nity-eight men and their guests did ample justice to the menu provided, and enjoyed to the full the relaxation afforded by the music and speeches.

The repast over, the President of the class, Mr. D. A. McKenzie, acting as toastmaster, proposed "The King." This having been loyally honored, "Canada and the Empire" was the subject of the next toast, proposed by Mr. L. Caesar, who pictured in a vivid manner the great part which our country is destined to play in the future of the British Empire. Mr. W. A. Brown responded in a speech full of patriotism and eloquence.

Mr. J. B. Fairbairn proposed "Our Alma Mater," and dealt with the importance of the O. A. C. in the agricultural life of the Dominion. In a happy reply Professor Harcourt gave the class some anecdotes of conditions at the college in the days when the teaching staff numbered but five.

The sentiments of the class of '08 regarding "The Staff," which was the next toast, are best expressed in the line, "For they are jolly good fellows,"

with which old strain the toast was heartily received, being proposed by Mr. W. Baker and responded to by Mr. H. S. Arkell.

Mr. A. E. Slater proposed "Our Sister Classes," to which the Presidents of those classes, Messrs. MacVannel, Mills and Yeo responded.

The toast of the evening, "The Class of '08," was proposed by Mr. D. H. Jones in his inimitably happy manner. Recalling every other speech of the evening, Mr. Jones gathered up all the nice things which had been said about anyone and applied them all to his toast, creating merriment and laughter. Mr. J. H. Hare replied in a carefully-worded speech, voicing the feeling of the whole year that "we'll ne'er regret the time we spent as the boys of the O. A. C."

The toast to the ladies was handled by Mr. W. A. Kerr and Mr. L. A. Bowes, who did justice not only to the fair sex, but to themselves as well, by the expression of sentiments which told the company that chivalry is not yet dead.

A toast to "The Press," by Mr. E. K. Glidden, concluded the programme for the evening, and the boys returned to College Heights for a few hours' rest before separating for all parts of the Dominion.

During the evening music and readings were provided by Mr. D. Weir and Mr. Goulding, Mr. R. W. Mills and Mr. J. Strachan to the delight of all present.

Athletics

The Retiring Athletic Executive.

THAT this year has been a landmark in the course of our college athletics, no one will deny. For the cause thereof we must look to our old executive. Old executive, now, since on Saturday, March 31, they handed over the reins of office, after six months hard, conscientious work.

It is doubtful whether the student body understand what being on the executive means. To the majority of executives it means sacrificing their personal enjoyments on the most enjoyable days of the college year, the Sports Day; it means attending weekly meetings, and being placed on committees; it means having fellows say, "Why didn't you do this instead of that?" with never a word of praise or commendation for good things accomplished.

When at the beginning of this season, the executive assumed the responsibilities of their work, they had the following balance to their credit: An athletic trainer and an additional fund, received from the summer booths. To counterbalance this unique start, they had a corresponding debit side of increased responsibilities, increased expectations of the student body, and fear of the criticisms resulting from failure to "make good."

With a determination to succeed, they inaugurated the custom of having a small refreshment booth on Field Day—simple move in itself, but one prophetic of greater things to come.

Through their efforts and those of our trainer the football season was entered with great promise, which was only partially fulfilled for various reasons, already discussed. Just before the inter-year games, they instituted a radical change from O. R. F. U. to inter-collegiate rules; this move was made with a view to entering inter-collegiate football. Its wisdom was justified by the marked success that attended the playing of these games, due to the enthusiasm shown by the students in making the best of a rather abrupt change. There was some grumbling, but no step was taken by the students to return to the old order, and the fruits of their forbearance will, no doubt, appear next fall.

Then, with an eye to hockey, and recognizing that a diminutive bull-paddock was not conducive to the best and most skilful playing of that game, they interviewed the President and succeeded in acquiring a sufficiently large piece of land. They immediately appointed an energetic committee, who commenced work in good time and had the land graded and fenced.

Not satisfied with merely providing good rink accommodation, they attempted to insure immediate dispatch in commencing the season. Unfortunately a mild season and a mild rink attendant combined to overthrow their plans, so that the rink was very little used this year.

Their next big move was in the interests of the indoor sports, and was

initiated to arouse the enthusiasm of the Freshmen—this was the holding of a Freshmen's indoor meet at the end of the fall term. The consequence was that in the off season, after football, the Freshies flocked to the gymnasium and soon got an idea of its proper use.

After the Xmas holidays, they started a campaign to minimize the year spirit, by making as little of the inter-year hockey games as possible; ultimately they "cut out" all inter-year games, except indoor baseball, and it is to be hoped that the next executive will back up their decision and have no inter-year games next year.

However, their chef d'oeuvre has been the drafting of the new constitution. If they had accomplished nothing else, this alone would have been sufficient to stamp them in succeeding years, as the most progressive executive in the history of the O. A. C. A. A. They have left as a legacy to all future executives a constitution which any college might be proud of, and which will, if followed out, further the best interests of athletics in this college, and tend to subdue the professional spirit, that has been creeping in. We don't mean "professional" in the sense that we shall ever get any students here who come simply for athletics and have their fees paid that they might play on the team; but we do mean that spirit that demands money's worth for victories on the athletic field, that takes no heed of the honor achieved in being able to do what other fellows cannot do, or in being able to do better than they can. We repeat that this spirit has been creeping in, and the executive are to be highly commended on their actions in promoting healthy, amateur competition.

In this connection a decision they made recently, the justice of which is

questioned by some, proved that they were perfectly willing to stand by their words. Unfortunately for the individual, who suffered their displeasure, he was the first to come under the ban, and consequently, was dealt with more severely than might otherwise have happened, because there certainly were extenuating circumstances to be put forth on his behalf. But the executive had to make an example of him, as every student must be made to realize that the good of the college has the prior claim, and that whilst at college he is not everybody, but only one of many. To the man who best sinks his own interest in those of the student body, is the most honour due, and if a man never learns this lesson at college, he will never learn it in the world, at least, only at great cost to himself. The executive are to be commended for their decision in this case, and "prevention is better than cure," is the best extenuation of the severity of their judgment.

Among other minor matters, they made an attempt to get the dairy students to join the association by paying the term's fee, \$1, promising them representation if two-thirds of their number paid up. This seems only right: the Dairy Class is as much a portion of the student body as any class in the college, and they ought to pay their fee, especially as they seem eager to use our gymnasium and its contents. But this year's class were very aggressive, and thought they had a perfect right to use the property of the association without paying for the privilege.

Not only have the executive accomplished much in the matter of useful changes and innovations, but also have their meetings been regularly attended, and every motion has been eagerly and sensibly discussed. From the Presi-

dent, J. F. Monroe, to the first-year representatives, every one has evinced the liveliest interest in the proceedings at every meeting, and they have taken care that the best interests of the students were always considered.

With such forerunners, it is "up to" the next executive; and looking over the names of the men, we feel sure that

tario Agricultural College to fertilize it and allow it to sprout. Mills showed his perfect adaptation for the work by the manner with which he hustled the work on the rink through to a finish. Along with Hibberd and Weir, he drew up the constitution, which supplied a long-felt want, so that we feel sure that the wisdom of our choice of a Presi-



BASKET BALL TEAM

Hayes—Left Forward. G. Hibberd—Manager. Atkin—Left Guard.
Clowes—Centre. Treichler, (Capt.)—Right Forward. Hoy—Right Guard.

"there'll be something doing," when they get together next fall. With two such men at their head as Mills and Hare, both from the old executive, they should be able to continue the good work.

In spite of Mills' saying that he had taken no interest in athletics until coming to the O. A. C., it is apparent to all that the seed must have been lying dormant and it only needed the On-

dent will be justified in the ensuing season.

Mr. Hare has always done his work as if it were a pleasure and not mere drudgery, and whilst the character of his position was such as to prevent his taking an active part in the procedure, his minutes show that he must have always been deeply interested.

These gentlemen will be backed by a committee consisting of such men as

Coglon, who looks as if he could get up steam at a moment's notice; Jacobs, who has already hurled defiance into the ranks of the footballers; Carr, who ought to be able to hustle Jacobs; as well as a few more notables, and no doubt our utmost expectations will be fulfilled.

Indoor Sports.

The indoor sports were held on Friday, March 23, and they were, certainly, the best we have had within the past few years. Every event was keenly contested, the champion of the day being W. A. Kerr, who gained 29 points. Bracken was next, with 19. Treherne and Duff were third and fourth respectively. The events and winners were as follows

Standing broad jump—Duff, Kerr, Weir.

Standing high jump—Kerr, Stephenson, Weir.

Running high jump—Kerr, Stephenson, Bracken.

Twenty yard dash—Kerr, Bracken, Hodson.

Rope-climbing—Bracken, Duff, Treherne.

Bar vault—Bracken, Duff, Kerr.

Diving for form—Treherne, Alexander, Ryan.

Seventy-yard swimming race—Ryan, Treherne, Stafford.

Rescuing contest—Treherne, Morewood, Langley.

Boxing—Light weight (under 140 pounds), Chisholm T. B., Hodson. Middle weight (under 160 pounds), Kerr, Hodson. Heavy weight, Carr, Sharman.

Wrestling—Light weight (under 140 pounds), Duff, Cooley. Middle weight (under 160 pounds), Kerr, Treherne. Heavy weight, Bracken, Jacobs.

Saturday night, March 24, the gym-

nasium display was given. The President of the O. A. C. and the A. A. was in the chair, and it is largely due to his well known cheerful personality that the feeling of bonhomie, which characterized the evening, was so marked. There was a large and appreciative audience, made up of people from the city, the hall and the college.

Of course we expect to do better next year; but, considering the shortness of the time at the disposal of Mr. Hibberd, the training that his team received was marvellous. Their feats on horizontal bar, mat, parallel bars and rings were the feature of the evening. Unfortunately however, Ryan, the star of the team, was unable to continue after the performance on the horizontal bar because of a sprained wrist, but his work on that certainly displayed nerve and grace.

There were three exhibitions of the fighting arts; a wrestling bout between Carr and Coglon, in which the fine points were demonstrated; a sparring bout between L. Kerr and Alexander, which was a clean exposition of the noble art of self-defense; a fencing bout between Thompson and Hodson—the two sons set to in a way that would have pleased their sires had they been present. For the musical part of the programme we were indebted to the college quartette—Messrs. Mills, Boutwell, Edwards and Jenkinson—and Mr. De Coriolis. Whilst Professor Von Bumm and his bride (Messrs. Thompstone and Weir), were kind enough to forego some of the pleasures of their continental tour to furnish us with a few of the best numbers of their repertoire.

The bride, a very highly-colored lady of ample proportions, was tastefully arrayed in a very simple costume, composed of a plain white shirt waist and

dark blue walking skirt. Her dainty feet were well booted, one half of her hosiery was a football, the other half a hockey stocking, worn as a compliment to the Association. However, the crowning glory was the hat. This delightful production of the milliner's art (which seemed to be greening from exposure to the inclemency of the weather) to a close observer, bore a familiar aspect, being decorated with small red flowers, placed at varied intervals around the brim; this masterpiece gave a very piquant effect to the charming countenance of the wearer. The lady displayed great power over her mandolin, and her foot work was a marvel.

The remarkable facial contortions of the learned professor himself were mirth-provoking, and his ability to adapt himself so readily to the costume of a Piccadilly Johnny, was rather strange in one who belonged to the Weary Willy faculty.

There were two other individuals, the Scrapping Twins, Tweedledee and Tweedledum (Monroe and McKenzie). These well-developed and all-round sports applied themselves assiduously to the task of following the gymnasium team in their different feats; owing to certain bodily features, over which, we suppose, they had no control—nature being so exact in her demands—they experienced some difficulty in getting on the parallel bars, and were forced to procure a step ladder to reach the top of the horizontal bars. However, because of the same aforesaid features, they were able to roll off quite easily. At the close of the performance they caused much embarrassment to some of their friends in the audience by insisting on shaking hands.

During the evening Mrs. Harrison presented the emblems and medals to the captains of the respective teams and to the winners in the sports.

Football O's were awarded to Bracken (captain), Hoy, Clowes, Row, Yeo, Murray, Chisholm, Coglon, Jacobs, Atkin, Bower, Warner.

Hockey—Foster (captain), Savage, Foysten, Barton, Johnson, Monroe, Weir.

Basketball — Treichler (captain), Hayes, Clowes, Hoy, Atkin.

Gymnasium team—Ryan, Bracken, Kerr.

Kerr received the championship medal and O's for making over ten points and creating two records in track athletics. Bracken received second medal and an O for making over ten points. W. A. Munroe received an O for creating a record in track athletics. Treherne and Duff received O's for making over ten points. Two leather medals were presented to Tweedledee and Tweedledum as a recognition of the leathery consistency of their own cuticles.

Indoor Baseball.

Once more has the premier place in indoor baseball fallen to the lot of '08. They lost only one game, and that to the fourth year, when their regular catcher was absent. Their battery is the best in the college, and no doubt contributed largely to their victory. It is altogether likely that they will hold the championship until they graduate, as Dan Johnson's lightning-like pitching and Hare's sure eye can hardly be beaten, and the general alertness of their field, makes it difficult for an opposing team to get the ball out.

Our Old Boys

While attending the Fruit Growers' Conference in Ottawa last month, Professor Hutt had the pleasure of meeting a number of the ex-students and others who have been intimately connected with the college at some recent date. On getting off the train in Ottawa he met Howard Leavens, '06, who was also attending the conference. Leavens is engaged in fruit farming in his home county of Prince Edward, and has met with good success. G. H. Clark was found working for the good of his country in the seed department, and associated with him were a number of the old boys. F. W. Broderick, '03, has charge of one branch and is doing his duty nobly and without complaint. Len. Newman is on the road the greater part of his time, disseminating knowledge of this work among those less fortunate than himself. "Big" Cote is using his superfluous strength unravelling the knots of nature in plant-breeding. Harvey Miller is also an active member of the staff, but this does not hinder him in the least from taking his usual interest in the fair sex. W. G. Milligan, late of the college library department, is in the postoffice department, and likes his work well. He sends his regards to the boys and still has pleasant memories of his connection with the college, and especially of the rugby team. James B. Spencer is doing all that his position of assistant live stock commissioner will allow for the advancement of our live stock industries. As inspector of dairies, Mortureux, '09, is doing a good work in the interests of our dairymen. Mrs. Craig was visited by the Professor and

she still exhibits a lively interest in the life around the college. Roland was away at that time on a visit to the west in connection with his work on the forestry department. Dr. Mills was found closely engaged in his work in connection with the railway commission. Mrs. Mills and Pansy were eager listeners of the happenings around the O. A. C., and expressed it as their intention to visit their old home in the near future. Favorable reports of many of the boys, whom he did not have time to hunt up, were given the Professor. Among these might be mentioned Whitely, '92, who is connected with a dairy business in Ottawa; J. H. Grisdale, agriculturist on the Experimental Farm, and Geo. Rothwell, who is farming on his own farm not far from the city. All were well and were perfectly satisfied with the prospects for the future.

Fred. A. Parker, '98, is making farming his occupation at New Germany, N. S. He has had excellent success and has everything in first class shape for the future. He is engaged in mixed farming, but is inclining his efforts towards fruit raising with a view to making that his sole occupation.

Those who attended the college in '79 and '80 will remember the face of Mr. R. F. Holterman. One of the best men in his class when a student, Mr. Holterman has since shown his ability in practical and executive capacities. His reputation as a bee keeper is not confined to his own Province, for he has filled in succession the offices of secretary, vice-president



R. F. HOLTERMAN.

and president of the International Bee-Keeper's Association. He has also been president of the Farmers' Institute of South Grant.

Realizing the benefits derived from a course at the O. A. C., Mr. Holterman last fall set a worthy example to other graduates in sending Holterman, jr., who as a freshman has already won a place in the regard of his fellow students.

J. G. Gibb, '80, who has for a number of years been employed as farm manager at Lawrence, Kan., has returned to Canada and taken up his residence near St. Catharines. He intends breeding Shorthorn and Hereford cattle, and

his wide practical experience will be a valuable asset in his business. We trust his efforts may meet with fullest success and that he may never have occasion to regret the change from the land of his adoption back to the land of his birth.

W. A. Linklater, '07, is a graduate whom any college would be proud to own. He is at present at Pullman College, Wash., and is making history for that place. The college, of which he is Professor of Agriculture, is one of the most up-to-date and progressive in the whole country and his success is no more than is deserving to a man of such wide experience, good judgment



W. A. LINKLATER.

and sound opinions. Link's ability and worth, combined with his physical attributes and youth, make him a man from whom we shall hear more, in the coming years.

J. C. Readey, '04, Superintendent of Farmer's Institutes and Deputy Minister of Agriculture for Prince Edward Island, called on us a few days ago. Readey is looking as if his work was agreeing with him thoroughly. He reports a great future for agriculture in the Province of his adoption, and with "John" at the helm we can well understand how this will be possible.

J. G. Cornell, '92, is operating his large farm at Scarborough, Ont., and is most extensively engaged in the dairy business. He was unable to attend college for more than one term, but still recalls, with pleasure, the good time he had there and also the old fellows among whom were Professor Day, Jim Atchinson, "Pat" Kennedy, J. J. Ferguson and Findlay, who was killed in South Africa.

Elmer Lick, '86, will be remembered as an enthusiastic horticulturist while at college, and since leaving, his interest has not diminished in the least. He owns and operates a large fruit farm at Oshawa and has recently been appointed director of the Dominion Horticultural Society. His wide experience fully qualifies him for this position and his practical knowledge will prove exceedingly valuable to that society.

After graduating from here, G. I. Christie, '02, went to Ames College to pursue his studies with the intention of taking his M. S. degree. His work was of such a nature that he was taken on the staff of the Agronomy Department of that College. Close application, which has always characterized the man, soon won for him the promo-

tion he merited and in a short time he was sent to Purdue University as assistant agronomist. He still has



G. I. CHRISTIE.

"tender" memories of his alma mater, and is always interested in any news from the O. A. C.

We are pleased to state that E. C. Drury, '00, has been recently appointed Professor of Agriculture in the Macdonald College at St. Anne. Mr. Drury is the kind of man we like to see. Since graduating he has shown his ability as a practical farmer and as a public speaker. He was chosen to represent the farmers' interests before the Tariff Commission and the masterly manner of his address demonstrates his suitability for the position he is about to occupy.

F. C. Elford, '91, of Ottawa, has been appointed to a similar position in the Poultry Department of that college.

Elford is a man eminently qualified for the position. For a number of years he has had charge of the poultry branch of the Department of Agriculture, Ottawa, and the knowledge thus gained will prove a valuable addition to the college. The Review joins in wishing them much success in their efforts for the advancement of agriculture.

Among our graduates who are occupying prominent positions in United States, Professor R. S. Shaw, '91, deserves a foremost place. When a student, he always stood well up in examinations and in his final year tied with Professor Day for first place.



R. S. SHAW.

Since graduating, he has occupied several positions of importance in the country to the south of us, and at present is engaged as Professor of Agriculture in Michigan Agricultural College at Lansing. His genial nature

and sterling value have won for him many friends in that part of the country.

Jack Nasmith, '96, is manager of the Nasmith Company, Toronto. As president of the Master Bakers' Association, he headed a delegation to the O. A. C. last month with a view to finding out its suitability for establishing a station to carry on experimental work with wheat and flour.

Wm. F. Newcomen, '89, and Franz Alex. Grocker, '92, are two of our ex-students who have been winning names for themselves in foreign fields. The former has been engaged for a number of years as bacteriologist in Paris, France, and the latter is chemist in a large manufacturing plant in Liverpool, England. Both these men showed great promise as students, and their success has been but a matter of time. It reflects much credit on our college to have our graduates take such excellent positions and be able to compete successfully with graduates from some of the most famous colleges in the world.

Down in the Eastern part of our Province we find W. L. Summerby, '93, doing an enobling work as principal of the public school at Cumberland, Ont. His broad ideas and wide, general education make him much liked and respected by all with whom he comes in contact. His training in agriculture gives him a first class grasp of the subject of nature study, which is receiving so much attention in our schools at the present time. The results of his efforts speak well for him in that several of his pupils have attended or are attending the college from which he derived his training.

Macdonald

"The Child Is Father of the Man.."

Annie Rose, Guelph.

My heart leaps up when I behold

A rainbow in the sky,

So was it when my life began;

So is it now I am a man;

So be it when I shall grow old.

Or let me die!

The child is father of the man;

And I could wish my days to be

Bound each to each by natural piety.

—Wordsworth.

"The child is father of the man," "as the twig is bent, the tree is inclined." The characteristics, desires and ambitions fostered and encouraged in the child will be manifested in the adult. If this be true, what great responsibilities rest with parents, guardians and teachers.

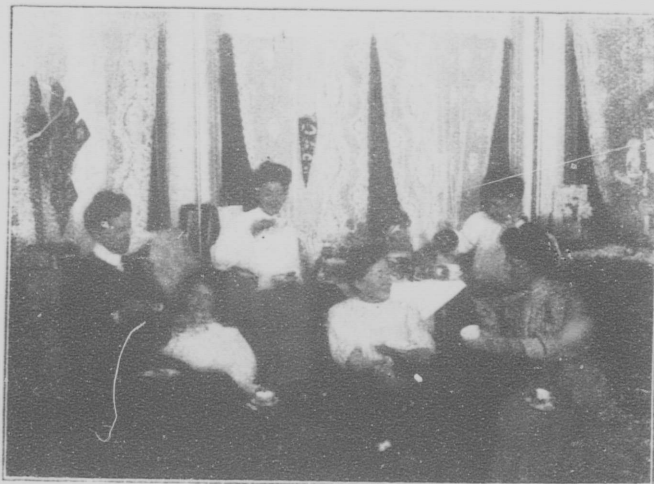
When our grandparents were young, children were kept in the background. As was commonly said and universally practised, "Children should be seen and not heard." The pendulum has swung to the other extreme, and today the child is the centre of attention, is allowed to monopolize the conversation and to oppose his will and judgment to that of his elders. This is a children's age—much is written, and much is spoken about their health, dress, education, etc. One has only to look at the shop windows and see the number, and variety, and costliness of the toys and books for children to be convinced of the difference in this respect to the times when we were young. What is the result? Let us see if the children now-a-days are as

happy as we remember being when we were their age. What is it occupies the mind and attention of the children between the ages of 6 and 16? Is it the dear old doll, home-made all but the china head, or is it the little play house, built in a corner of the woodshed?

How well we remember one ideal play house in an unoccupied room divided off into parlor, kitchen and bedroom, the line of partition being where the difference of furniture began. In those days we were delighted with broken dishes and furniture improvised out of buggy seats and boxes. Sometimes visitors came—grown up folks—and tea was served—occasions much talked of before and long remembered afterwards.

How is it now? Do little girls "pretend" as much as they did long ago? Do they enjoy the "make believe" as we did? Does this superfluity of toys make them happier and better or does it not rather tend to dissatisfaction and greed.

Judging from observation, children now-a-days think and talk too much of what they wear, how they look, what they eat, and where they go. They are consulted too often when father or mother should decide what is best. There is an unrest that does not tend to strength and development. Not long ago a lady, who serves in a store, told me it grieved her to see how little tots 6 years old acted. They really must have this or that to wear, so and so had one and they must have one like it; this hat was not becoming, and that color did not suit. Children



The Cup Which Cheers But Does Not Inebriate.

used to be served at the table and were expected to eat what was given to them. Now they are asked what they will have and they eat what their fancies or whims suggest. Consequently we hear of very young children having indigestion.

Parents strain every effort to gratify a daughter's tastes and ambitions, and she becomes a selfish, exacting woman, and an extravagant, dissatisfied wife. In tracing back many household disasters, we find their source in the training of the mother or father, received during childhood. They were never taught self-control nor a consideration for other people's rights and feelings. True happiness does not lie in receiving and enjoying, but in giving and contributing to the enjoyment of others—not what we have, but what we share, brings joy.

So far, I have spoken more particularly of the girls. I am glad to say in my wide experience with boys, I find their pleasures are little changed; they fish and swim, play marbles in the slush of spring, and shinny in the heat

of summer just as they did 40 years ago. I am sorry, however, to have to acknowledge that from the moral standpoint they are lower in the scale. It is not an uncommon sight for a boy in knickerbockers to be seen boldly smoking on the street corners. This used to be done in the greatest secrecy behind the barn, in fear and trembling, lest his elders should see him. On all sides we see a great lack of respect for parents, teachers and preachers, those who in our youth were above criticism. We have often wondered why this is so, and have concluded it comes from older people criticising and talking about these people before the children and allowing the children to do the same. When a child's faith is shaken, his respect soon totters.

It is a grave question what this forwardness in the child and lack of restraint may lead to. It certainly does not tend to develop strong, independent character. This is seen in the child, when given a task to do, asking "Is it hard?"; "Will it take long?" and giving up without having made a strug-

gle to succeed. Nowhere has this manifested itself so plainly as in my manual training classes, and to me a prominent feature of this new subject on the curriculum is in the child being given an opportunity to overcome by his own personal effort little difficulties and discouragements, and having the pleasure of seeing his efforts rewarded in the successful completion of some piece of work.

"The child is father of the man." How important, then, that the ideal placed before the young should be one worthy of imitation! To a greater extent than is recognized, a child's environment moulds his future character. By example, rather than by precept, let us teach him that honesty includes small things as well as great; time as well as money; conduct as well as speech. Very often the child gets his first lesson in lying from the lips of his mother, who threatens with impossible punishments and makes promises never intended to be fulfilled. The father may give the first lesson in stealing by taking an apple, candy or

something from the shop counter and sharing it with his child. These may seem trifles, but they are the first beginnings that break down the child's keen sense of justice and honor.

"When shall I begin to train my child?" asked a young mother of a learned physician.

"How old is the child?" inquired the doctor.

"Two years, sir."

"Then you have lost just two years," replied he, gravely.

"You must begin with his grandmother," said Oliver Wendell Holmes, when asked a similar question.

"The trifles of our daily lives,

The common things scarce worth call,

Where no visible trace survives,—

These are the mainsprings, after all."

The Diamond Mine at Jagersfontein.

This mine is the crater of an extinct volcano, and is an open mine. The ground in which the diamonds are found is known as "blue ground."

By boring and blasting, this ground is broken into pieces small enough to be conveniently handled.

It is shovelled into trucks which run on small tracks.

These trucks carry the broken ground to "stations," where it is emptied into huge steel buckets attached to ropes of twisted wires, and by means of electric power is drawn to the surface. Here the "blue ground" is again thrown into the trucks, placed on rails and drawn by horses and is carried to the different floors.



After a Hard Climb.

These "floors" are simply large pieces of land on which the "blue ground" is spread and left for about two years exposed to the action of sun and air. These tend to pulverize the "ground" without injuring the diamonds in it. The next process is the washing. In the washing the sandy portions of the "blue ground" are carried away, leaving the harder parts of the ground free as stones, pebbles and diamonds.

In a "pulsator" the stones are separated according to their different sizes, and fall gradually into pans placed below to receive them.

Men fill sieves full of these different pebbles, rinse thoroughly for a few minutes in a tub of water and turn them out on a table. The diamonds will be found, as a rule, on the top layer of pebbles, but the whole sieveful is carefully examined, the diamonds picked out and then the pebbles are thrown outside, where they are often examined again.

Naturally, among the large pebbles are found large diamonds, and among fine gravel are the small diamonds. All are worth finding. The output or "find" in one month was reported to be valued at 90,000 pounds sterling. The following month 120,000 pounds sterling, and yet this is not considered one of the richest mines.

Between three and four thousand natives are employed in this mine. They live in the "compounds" inside the mine limits, and having once been engaged for work, cannot go beyond the boundaries of the mine until their

term of engagement expires. Then they are thoroughly searched and allowed to return home. While in the mine, they are fed at the expense of the company, on mealie (corn) porridge. This is cooked in huge boilers, and at meal time the natives form in line outside of one door and in turn each walks in past the boiler of "mealie pap," receives a shovelful in his pail, and passing through another door, squats on the ground to enjoy his repast.

White men are employed as foremen, engineers, managers, etc.

The mine is worked day and night, and the men take week about on "night shift" and "day shift." The diamonds are kept in a safe, which requires two keys to open. The manager keeps one key and the assistant manager the other. Visitors who are not suspicious looking characters are allowed to see the mine, and sometimes are shown the "find" for the week or month.

It was with general regret that the girls said good-bye to Miss Edna Ferguson, who has so acceptably filled Miss Holland's position during the past three months. Before closing, her pupils of the Short Course gave her a beautiful pearl pin.

Le Roi est mort—vive le Roi! We have little time to mourn for the dear departed girls of the Short Course, as our time is fully occupied in making the acquaintance of the fifty or so Nature Students, who have taken up their abode among us. We are glad to welcome them.

Locals.

The Local Editor's Dream.

If you saw a pink pug puppy playing
ping pong with a pig,
Or a great gray goose a-golfing with
a goat,
Would you think it was as funny as a
big, brown Belgian bunny
Blowing bubbles with a bishop in a
boat?

If a gormandizing gobbler gobbles
gooovers by the gross,
Which he pilfered from a peanut ped-
dler's pack,
Could he earn his absolution by an act
of restitution,
If he gave the Dago man his full
crop back?

If a singing stegomyia stung a Jap
upon the jaw
And injected venomous virus in his
veins,
Would the microbe not prove sterile,
since each one's a Yellow Peril,
If the homeopathic theory obtains?

If a gentle jokesmith jabbbers nutty non-
sense in a way
That causes you brain softening to
dread,
Would you send him to a college where
they try to hammer knowledge
Into people that are foolish in the
head?

Overheard after sophomore banquet:
"Pshaw! You never saw me with
more than I could carry."

"No, but I have seen you when it
would have been better had you gone
twice for your load."

Conjugation of the word "buss"—to
kiss:

Buss—to kiss.

Rebus—to kiss again.

Pluvibus—to kiss many times.

Syllabus—to kiss a homely girl.

Blunderbus—to kiss the wrong per-
son.

Omnibus—to kiss everybody.

Erebus—to kiss in the dark.

One Sunday afternoon last winter
Klink was enjoying himself in the
home of one of his town-down friends.
Towards evening he was somewhat
disconcerted by the inevitable little sis-
ter bursting out with the query: "Lit-
tle man, are you going to stay to sup-
per?" This was easy, however, com-
pared with his discomfiture when a few
hours later came the second question:
"Little man, are you going home to-
night?"

We understand that Curran intends
to return next year to specialize in
botany. His preference this year was
very marked.

It is said that coal oil goes farther if
kept in a cool place. If you doubt it,
leave your can standing outside your
door some night and see if it does not
travel to the other end of the resi-
dence.

Freshman (despondently)—I wish
the governor would send me some
dough. He seems to think I can get
along on next to nothing.

Room-mate (consolingly) — Cheer
up, old man! He must think a lot of
you when he shows such "unremitting"
kindness toward you.

Mr. Jackson—Alexander, please describe the animal that lived during the Mesozoic age.

Alexander—Well, they were a-a-very large animals that-that can't be described easily.

Mr. Jackson—It would seem so. Next, please.

A few answers to examination questions:

Another member of the tobacco family is the cabbage.

An elevation is something which exists in space between earth and sky. The moon is an elevation of the earth.

What would happen if you pinched off the head of a queen bee? She would probably die.

The wall of the foot is secreted by the periosteum, which is the longest bone in the body.

Galt Sure Grip Shingles



are no puzzle to lock or to lay. Made of best galvanized steel and can't rust. They are fire, storm and lightning proof.

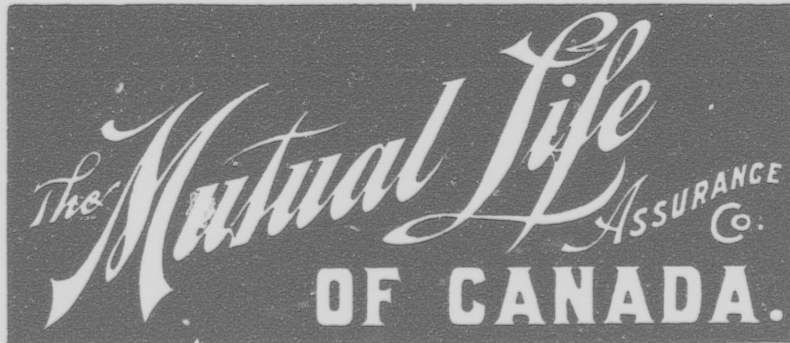
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The stability of a Company may be gauged by the class of securities in which its funds are invested. Those of



are all gilt-edged, as may be seen from the following list:

LEDGER ASSETS.	PER CENTAGE.
Mortgages	\$4,265,533 86
Debentures and First Mortgage Bonds	3,245,401 89
Loans on Policies	1,017,480 99
Cash on Hand and in Banks..	261,960 60
Real Estate	56,281 08
Total Ledger Assets	\$8,846,658 42
	100%

R. Melvin, President.
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THE EMPIRE CREAM SEPARATOR

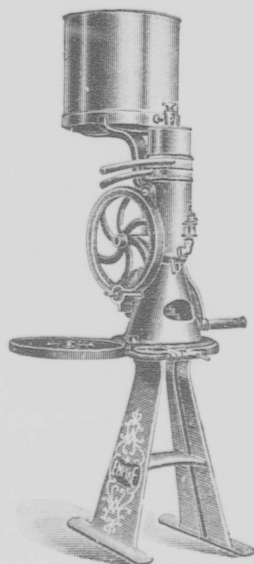
is the separator that embodies the newest ideas with the most approved methods. It is the most popular cream separator in the world—simply because it has *proved* that it does

The Best Work

Its light bowl, its simple construction, its lack of friction, its ball bearings, its great ease of cleaning, its close skimming and its durability are all explained in our

FREE DAIRY BOOK

We want you to read it and study it thoroughly then give our machine a trial which won't cost you anything but which will show you why there are so many satisfied EMPIRE users in Canada to-day.



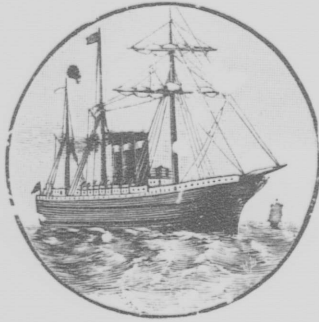
EMPIRE CREAM SEPARATOR
COMPANY OF CANADA, Limited

TORONTO, ONT.

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

Ocean Steamship

Tickets



SAILED ON ALL LINES TO ALL PARTS OF THE WORLD

JOHN DAVIDSON
Market Square, Guelph, Ont

Professor—Which is the hardest of the metals?

Voice from the rear—Gold is, sir—to get.

Mr. Jones—Name one of Sir Walter Scott's characteristics.

Walker—He always commenced a thing before he finished it.

Waterloo Mutual Fire Ins. Co.

Established in 1863

HEAD OFFICE — WATERLOO, ONT.

Total Assets, 31st Dec., 1905 - - - \$514,000
Policies in force in Western Ontario, over 30,000

FARM INSURANCE A SPECIALTY

GEORGE RANDALL,
President.

WM. SNIDER,
Vice-President

FRANK HAIGHT, Manager

T. L. ARMSTRONG, } Inspectors
R. T. ORR, }

The Traders Bank of Canada

ASSETS TWENTY MILLIONS (\$20,000,000)

IT IS THE
Farmers' Bank



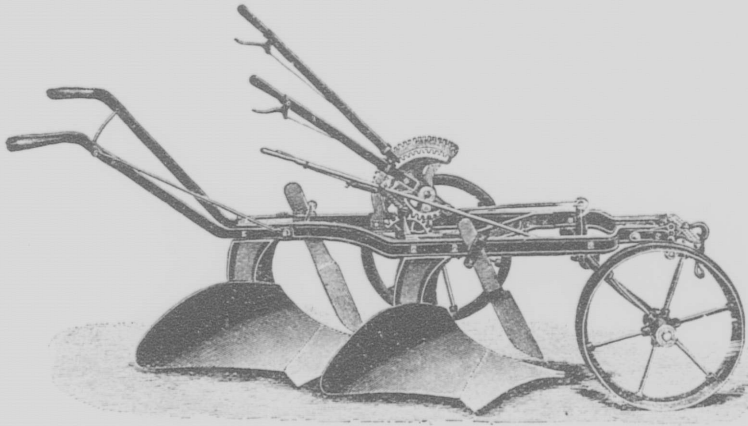
NEXT DOOR TO
The Post Office

WYNDHAM STREET
SPECIAL ATTENTION PAID TO FARMERS' BUSINESS

Loans Made Deposits Received
The Most Favorable Rates and Terms Given

A. F. H. JONES, Manager

"CROWN" GANG PLOW



EQUIPPED
WITH EITHER
SOD OR
STUBBLE BOTTOMS.

By its use, **one man and three horses** can do more work in a day, and do it better, than **two men and four horses** can do in the same length of time with two ordinary walking plows.

Stop and consider what this means to you. The **CROWN** has **F. & W. Quality** in its every detail; it is a good plow and we want you to know it.

Let us send you our Illustrated Plow Folder. It's Free.

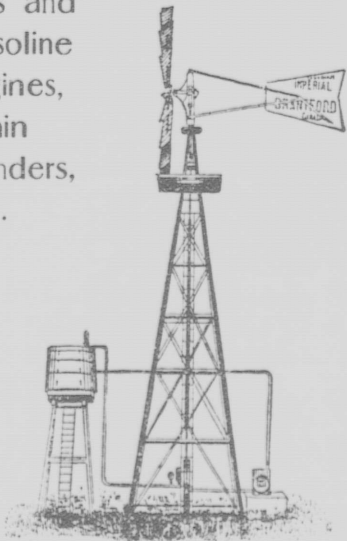
THE FROST & WOOD CO., LIMITED

Head Office and Works,

SMITH'S FALLS, ONT.

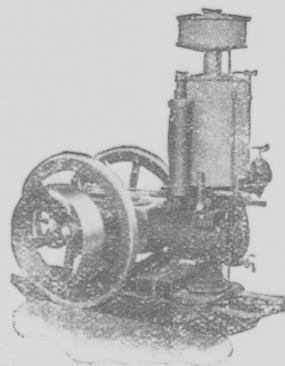
WINDMILLS

Gas and
Gasoline
Engines,
Grain
Grinders,
etc.



GOOLD, SHAPLEY & MUIR CO. Limited.

Brantford, Canada.



Stickney Gasoline Engines.

Embodies
**Simplicity,
Economy and
Power.**

We guarantee to
develop power
stated.

YOUR BOY CAN RUN IT

No complicated parts to get out of
order, and expensive to replace.

Sizes: 2½, 4½, 6, 9, 12 and 15 H. P.

**Windmills, Grinders,
Tanks, Pumps, Water-Basins**

OUR GOODS SAVE MONEY

Ontario Wind Engine & Pump Co.

Limited, - TORONTO.

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Craigieburn Stock Farm

**CLYDESDALES, SHORTHORNS
and SHROPSHIRE**

Imported and Canadian Bred
Young Stock Always For Sale

FOR PARTICULARS APPLY TO

G. A. BRODIE
BETHSEDA, ONTARIO

Stations:
Stouffville, G. T. R.; Claremont, C. P. R.
Telephone service from stations to residence.

CLYDESDALES

SMITH & RICHARDSON
COLUMBUS, ONT.

Importers of Clydesdale Horses

Now on hand a great number
of Stallions and Mares, among
them the Toronto Show Winners

R. R. Stations—G. T. R.—Oshawa.
Brooklin
C. P. R.—Myrtle

LONG DISTANCE PHONE at RESIDENCE

N. DYMENT

Ayrshires

Hickory Hill Ayrshire Herd

CLAPPISON, ONTARIO

CHAS. S. AVILWIN, Freeman, Ont. Ayrshires
Stock always on hand.

P. D. EDE Woodstock Station. Stock for
sale from Record Cows.

GEORGE RICE, Tillsonburg, Ont. Holsteins.
Young Stock for Sale.

F. MARTINDALE & SON, York, Ont. Short-
horns and Berkshires.

PINE GROVE STOCK FARM

Rockland, Ontario, Canada

BREEDERS OF CHOICE

**SCOTCH SHORTHORNS
and SHROPSHIRE**

W. C. EDWARDS & CO., Limited
PROPRIETORS

JOSEPH W. BARNET, Manager

Alva Farm Guernseys

Awarded First Prize at Montreal
for Breeder's Young Herd

Young Animals of Merit For Sale

Pedigrees and particulars to parties
wishing to purchase, address:

SYDNEY FISHER, Knowlton, Que

J. DRYDEN & SON

Maple Shade Farm **BROOKLIN, ONTARIO**

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.

W. M. SMITH, Scotland, Ont. Ayrshires.
Poland Chinas, Duroc Jerseys.

JOHN MORGAN & SONS, Kerwood, Ont.
"Cherry Grove Stock Farm." Shorthorns
Young Bulls and Heifers on hand for sale.

Wellington Bee and Poultry Yards

Layers. Great Payers. Prizewinners. My birds
won over 200 first prizes and 4 cups at seven
shows, including Ontario. Eggs \$1.00 per 15,
or \$5.00 per 100 from Barred and White Rocks
White and Silver Laced Wyandotts, Brown and
White Leghorns, Black Javas, Buff Orpingtons,
Black Orpingtons and Blue Andalusians. \$2.00
per 15.

F. W. Krouse, Guelph, Ont.

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

Oak Lodge Yorkshires



The Profitable
Type of Bacon
Hog.

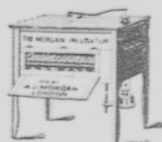
Stock of all ages
for sale at all
times.

Quality Guaranteed.

Long Distance Phone at the Farm

J. E. BRETHOUR
BURFORD, ONTARIO

INCUBATORS and BROODERS



Poultry Supplies
of all kinds
Large Catalogue
Free

A. J. MORGAN
LONDON

Gregory (at dinner table)—They are getting pretty economical around here; they are even diluting the water with dirt.

Zubiar (after purchasing Professor Day's Book on Swine)—Be sure to let the Professor know I bought this: it may help me out in the finals.

A few sophomores were cramming for an exam. in physics recently, when one of them propounded the question: "What is work?"

"Everything is work," responded Goulding, nonchalantly.

"Humph!" replied the leading light sarcastically. "I suppose you would say that that table was work."

"Yes," replied Goulding, as he watched a ring curl slowly toward the ceiling. "That table is wood-work."

Federal Life Assurance Company

HEAD OFFICE,

HAMILTON

Capital and Assets.....	\$ 3,300,000.00
Policies Issued 1905.....	\$ 3,328,177.08
Business in Force.....	\$ 17,292,776.11

DAVID DEXTER

President and Managing Director

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



DUNLOP
Horseshoe
PADS

*Save a horse from falling in
slippery places -- prevent
balling on the hoof in loose
snow—keep the hoof healthy*

PUT ON BY
ALL BLACKSMITHS

DUNLOP
TIRE & RUBBER
GOODS CO. LIMITED

HEAD OFFICE AND FACTORY:
Booth Ave., TORONTO

According to reports heard in the corridors on the last night of the term, there was a revolution in China. Stocks fell rapidly—in some instances to the foot of the stairs.

On the night of the fire in the brooder house, our friend Jerry came tearing across the campus, yelling "Heigh!" "Heigh!" at the top of his voice. Evidently Jerry is not "as green as grass," for an appeal for assistance couched in such truly agricultural phraseology is surely more in keeping than the ordinary fiery alarm.

Dickson thinks the Biological course is heavenly. In fact, he was overheard the other day trying to prove mathematically that biology is better than heaven, as follows: "Nothing is better than heaven, biology is better than nothing, therefore biology is better than heaven."

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 St.

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

An Invitation

FOR ICE CREAM OR ICE CREAM SODA



may be modestly accepted, but the soda itself will be none the less enjoyable. The

Ice Cream Soda

we serve is by far beyond the ordinary. The soda itself is the best that can



be made and we make it still better by using Ice Cream of a quality seldom used in soda.

The Kandy Kitchen

Lower Wyndham Street

GUELPH, ONT.

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**ZENOLEUM
DISINFECTANT AND DIP**

USED AND ENDORSED BY

ONTARIO AGRICULTURAL COLLEGE
IN ITS SEVERAL DEPARTMENTS

THE CANADIAN GOVERNMENT
AT ITS ARMY BARRACKS

CANADIAN PACIFIC RAILWAY CO.
THROUGHOUT ITS SYSTEM

PROMINENT VETERINARY SURGEONS
IN THEIR DAILY PRACTICE

LEADING LIVE STOCK MEN
ALL OVER THE WORLD

ON SALE AT EVERY DRUG STORE
In Tins 25c. - 50c. - 90c. - \$1.50 - \$6.25

WRITE FOR FREE BOOKLETS

Zenner Disinfectant Co.

WINDSOR, ONT.

DETROIT, MICH.

The Farming World

A Semi-Monthly

*The Paper for the Farmer whether
a Specialist or General Farmer*

Information gleaned from the most
reliable sources. Carefully edited, well
printed and profusely illustrated :

ONE YEAR, 60c.

TWO YEARS, \$1.00

A Sample Copy on Request

SPLENDID INDUCEMENTS TO AGENTS

The Farming World

90 Wellington St. W.

TORONTO

CHOCOLATES
G.B. G.B.

ARE
FULL WEIGHT

G. B.—CHOCOLATES—G. B.

are put up in 1/2 lb., 1, 2, 3, or 5 lb.
packages. Each box contains full weight
of chocolates without including weight
of box, paper or packing material.

*The new "EVANGELINE" box
is a dainty package*

GANONG BROS., St. Stephen, N.B.
Limited

A. B. PETRIE
SOLE AGENT IN GUELPH

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

**The
Bond
Hardware
Company
Limited**

President:

JOHN M. BOND

Vice-President:

W. GEO. BOND

2nd Vice President:

T. A. KEATING

Sec'y-Treasurer:

J. S. MILLAR

*If
You
Require
Anything
in
Hardware
or
Sporting
Goods
Let
Us
Serve
You*

Our Prices Are Always Right

Men's Furnishings

JUST TO REMIND YOU

That I carry one of the largest and most select stocks of Hats, Shirts, Ties, Socks, Collars, Underwear and Men's Furnishing Goods in the city.

ORDERED CLOTHING

I have a select stock of Suitings, Overcoatings and Trouserings to select from. Styles, Trimmings, Fit and Workmanship the very best, and prices as low as any in the trade. Our motto is: "The best possible value for the least money." All goods marked in PLAIN figures and ONE PRICE TO ALL. Be sure you come to 73 Wyndham Street for your Furnishings and Clothing.

R. E. NELSON

Next Traders Bank.

Men's Furnisher, Hatter and Fine Tailoring

The King Washing Machine

Wholesale and Retail
Dealers in

**LUMBER,
LATH and
SHINGLES**

All Kinds of
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

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

**A SQUARE DEAL FOR
EVERY MAN**

THE NEW STORE FOR
MEN'S AND BOYS'
CLOTHING
AND FURNISHINGS

EVERYTHING NEW
EVERYTHING RIGHT

Earliest with the Latest Things.
Fairest Price on all Things.

**THE STORE FOR STYLE
AND QUALITY**

EVERYTHING THAT
WOMEN, GIRLS AND
CHILDREN WANT
TO WEAR

Also Carpets, Curtains, Draperies and
Furnishings for the House

Nothing that is not Good.
'Most Everything that is Good.

G. B. RYAN & CO.

UPPER WYNDHAM STREET. We Do What We Say.

**The Canadian Bank
of Commerce**

Established 1867. Head Office, Toronto
B. E. WALKER, General Manager

Capital (paid-up)	\$10,000,000
Rest	4,500,000

GUELPH BRANCH

A general banking business is transacted.
Banks for the Dominion Live Stock Association.
Farmers' notes discounted.
Drafts issued payable at all points in Canada, and the
principal cities in the United States, Great Britain,
France, Bermuda, etc.

SAVING BANK DEPARTMENT

Deposits of \$1.00 and upwards received and current
rate of interest allowed.
Interest added to the principal at the end of May
and November in each year.
Special attention given to Collection of Commercial
Papers and Farmers sale notes.

J. M. DUFF, - Manager

R. B. Kennedy

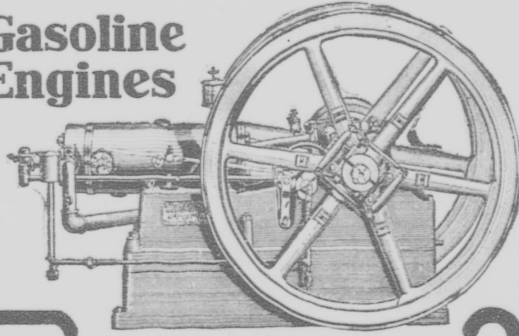
PHOTOGRAPHER

The best place to get a good Group
Photograph or a Portrait of yourself

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

I. H. C. Gasoline Engines

**Increase Your Profits,
Lighten Your Work.**



YOU need one of these handy helpers.

Because with its aid you can do more and better work at less expense of time and energy.

And you will soon find that the "I. H. C." Gasoline Engine **pays for itself** in the actual saving in money and increased profits it brings you.

Steam power is dangerous and expensive. Wind power is treacherous and unreliable.

Call on the International Agent for information or write nearest branch house for catalogue, showing how "I. H. C." Gasoline Engines will save you money.

CANADIAN BRANCHES: Calgary, Montreal, Regina, Toronto, London, Ottawa, St. John, Winnipeg.
INTERNATIONAL HARVESTER COMPANY OF AMERICA, CHICAGO, U. S. A.
(INCORPORATED.)

Horizontal—Stationary or Portable, 6, 8, 10, 12, 15 H. Power. Vertical style, 2, 3, 5, H. Power.

Gasoline, as applied to the "I. H. C." Engine, is **proved** best for all practical purposes.

Feed Cutting, Wood Sawing, Husking and Shredding or Shelling Corn, Grinding Feed, Pumping, Churning, Separating, etc.

Be wise! Save yourself, your help and your horses by investing in an "I. H. C." Engine.

Go to Petrie's Drug Store

for your

**Photograph Supplies,
Films, Papers,
Plates, Mounts, etc**

Developing and Printing done. Only expert workers employed in Photo Department. **LET US DO YOUR PRINTING FOR YOU.**

Remember the Place.

PETRIE'S DRUG STORE
Guelph, Ont.

Advance in Fine Furs



Is the latest report from the big Fur Centres. This will make no difference

this season with us. We have an immense stock bought and paid for; so it is up to you to get your money's worth this fall.

Our experience and guarantee should be worth something. We take the responsibility if everything should not prove satisfactory.

In FINE TAILORING we are in the First Division in Canada.

Keleher & Hendley

THE LITTLE TAILOR STORE COLLEGE MEN

Are usually particular about their appearance. They demand character in their clothes.

We make the kind of Suits and Overcoats that give a man that "well-dressed" appearance so much desired.

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

ABOUT OUR PRICES

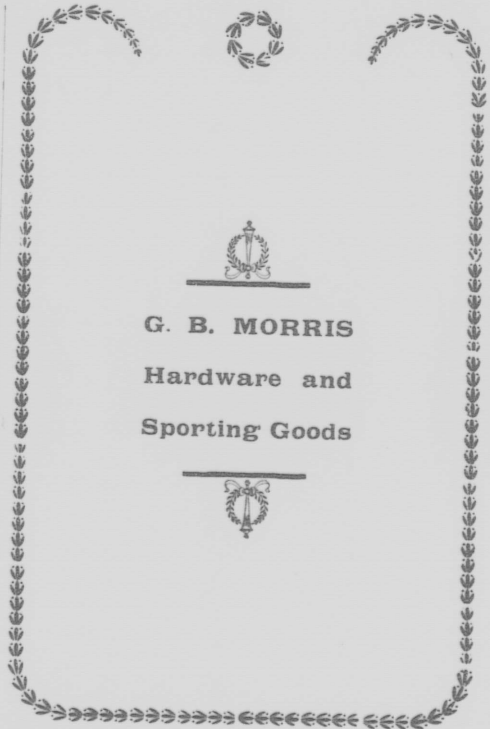
Being on a side street, our store rent is very small compared with main street rentals.

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	Blue and Black Serges
\$15 to \$25	\$18 to \$27
Overcoats \$16 to \$25	Trousers \$4 to \$7.50

R. J. STEWART

Opposite Knox Church, Quebec Street



G. B. MORRIS

Hardware and

Sporting Goods

McKEE'S DRUG STORE

MACDONALD INSTITUTE TEXT BOOKS

McLellan's Psychology	\$1 00
Food and Dietetics	3 00
Cook Book— <i>Farmer</i>	2 00
Elementary Chemistry	1 00

NATURE STUDY DEPARTMENT

Sylvan Ontario	\$0 40
H. S. Botany	1 00
Science Note Book	35
Plants— <i>Coulter</i>	1 00

1ST YEAR BOOKS

West's Grammar	\$0 50
Alexander's Anthology	50
Carpenter's Rhetoric	60
Soil— <i>King</i>	75
Elementary Chemistry	1 00
H. S. Botany	1 00
Poultry Craft	1 50
Canadian Dairying	1 00
Soils and Crops	1 00
Testing Milk	1 00
H. S. Book-keeping	60

A complete stock of 2nd, 3rd and 4th year Text Books always on hand.
Fountain Pens, Note Book, Scribbler, etc.
Try our \$1.00 Fountain Pens.

McKEE'S BOOK STORE

Central Book Store

Opposite where the Street Cars stop

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

In fact, everything that is kept in a well-ordered Bookstore.

C. ANDERSON & CO.

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ONLY
ARTISTIC
CLOTHING

IN OUR READY-TO
WEAR CLOTHING
AND FURNISHING
DEPARTMENT

THE
DOWLER CO.

**Burr &
Ainsworth**

FURNITURE
DEALERS

Guelph, - Ontario

**One
for
the
Boys**

94 SUIT ENDS
worth \$24 to \$30

WHILE THEY
LAST
\$18.00 to \$22.00



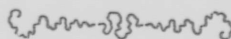
*Work:
High Class*

J. A. SCOTT

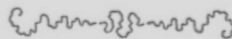
Maker of Men's Clothes

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GRANT & ARMSTRONG



**Furniture Dealers
and Upholsterers**



WE MAKE A SPECIALTY OF

**Repairing
Upholstered
Goods. . .**

COSY CORNERS AND SKIRT
BOXES MADE TO ORDER.

**TRY
US!**

Quebec Street

Phone 488

BELL *HIGH CLASS*
PIANOS
PIANO-PLAYERS, ORGANS
 MANUFACTURED BY
Bell Piano & Organ Co., Limited
 CATALOGUE FREE. GUELPH, ONTARIO

MEN'S CLOTHING
 PAR EXCELLENCE

There is no reason in the world why you should not wear the best clothing made—we sell it, and at a price no greater than some inferior kinds are sold at. There is style to our clothing—there's wear and there's value—what more can you ask? You cannot get more than we give for the money—anywhere.

Do you realize that we also sell the best lines of furnishings you have access to? This is news to scores of men in this vicinity—good news, and if they will, they can profit by it. Just come and see.

D. E. Macdonald & Bros.

5 and 7 Lower Wyndham. 56 McDonnell St.
3 Entrances

**Lowney's
Chocolates**

When you eat Chocolates you want to enjoy the best obtainable. Lowney's goods have a world-wide reputation, and are always to be relied upon. J. A. McCREA & SON can supply you. Let us have your order when getting up those little "Suppers."

J. A. McCrea & Son

Two Stores :
Wyndham St. and Elora Road

STALL No. 3, GUELPH MARKET

ALFRED HALES

Wholesale and Retail Dealers 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

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UNDERWOOD
VISIBLE TYPEWRITERS



Used by the Ontario Agricultural College
All Makes of Rebuilt Typewriters
Write for Price List.

UNITED TYPEWRITER CO., LIMITED
TORONTO, ONT.

New Oak Hall Store

MR. O. A. C. MAN!

We keep a Practical Tailor to do your Pressing and repairing. Monthly contracts taken. All goods called for and delivered. A post card to Box 807 will bring our boy for your parcel.

CUMMING'S
OAK HALL STORE.

Guelph's Leading House

For Stoves of every Description.
Sheet Metal Workers, Kitchen
and Dairy Supplies. Expert
Heating Contractors.

H. OCCOMORE & CO.
86 Upper Wyndham St., Guelph

THE
**Electric Boiler
Compound Co., Ltd.**

PHONE 396, BOX 409, GUELPH, ONTARIO

**Walker's Electric
Boiler Compound**

High Grade Lubricating Oils, Greases Pack-
ings, Belt Lacings, Flue Scrapers Etc.

Crystal Cream Separator Oil
A SPECIALTY

THE
PRINGLE JEWELER

Entomological Supplies,
Magnifying Glasses, all qualities,
Fountain Pens,
Rubber Stamps,

O. A. C. and Macdonald Institute
College Pins

Horse-Power Spramotor

Will pay for itself the first season in removing wild mustard from your fields.

Automatic in action throughout; everything under control of driver without stopping.

Machine automatically stops at 125 lbs. pressure, starting again at 100 lbs.

Tell us your needs. You will get expert advice.

Our 86-page Treatise D free. Agents wanted.

SPRAMOTOR CO.,
BUFFALO, N. Y. LONDON, CAN.

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

FOSTER AND FOSTER

DENTISTS

Office and Surgery :

Corner Wyndham and Macdonnell Sts.

(OVER DOMINION BANK)

Residence—"Sunset," Paisley Street

TELEPHONE 14

W. J. STEVENSON ANDREW MALCOLM

PHONE 143

STEVENSON & MALCOLM CO.

Late Members of

THE BENNETT & WRIGHT CO., LIMITED, TORONTO

CONTRACTORS

For Steam and Hot Water Heating,
Ventilation and Hydraulic Engineering,
Plumbing and Gas Fitting,
Specialties in Sanitary Appliances.

Upper Wyndham Street, Guelph, Ont.

THE TYSONS

WHOLESALE AND RETAIL

Butchers and Cattle Dealers

J. & A. TYSON

No. 1 Stall, Guelph Market

'Phone 78

TYSON BROS.

Shop Cor. Green and Norfolk Streets

'Phone 152

JACKSON & SON

GROCCERS

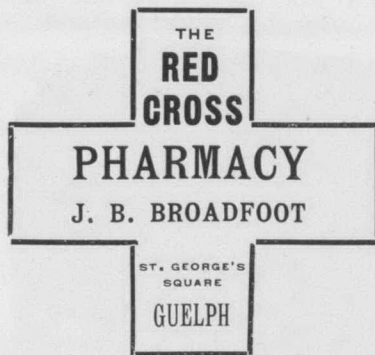
FIRST-CLASS FANCY GROCERIES

IN ALL LINES

17 Lower Wyndham Street

TELEPHONE 112

Established 40 Years



2 NEW LINES

College Folder

and

"Chic" Folder

BOOTH,

Photographer

NEILL THE SHOE MAN

SOLE AGENT FOR

THE

SLATER SHOE

GUELPH,

ONTARIO

G. A. C. STUDENTS

Like Smart Shoe Styles

So do the Macdonald Girls

We lead in the Newest

Footwear.

W. McLaren & Co.

'PHONE 370

South-west Corner from the Post Office

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

Thornton & Douglas
LIMITED

Makers and Importers of Wearing Apparel for Men and Boys

Dairy Suits
a Specialty

Stratford, Chatham,
Guelph

HEADQUARTERS

FOR HARDWARE AND
SPORTING GOODS
AT LOWEST PRICES

G. A. RICHARDSON

Upper Wyndham Street, - GUELPH

GUELPH AND ONTARIO INVESTMENT AND SAVINGS SOCIETY

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

J. E. McELDERRY, Sec - Treas

EYES TESTED

BY AN EXPERT OPTICIAN
(No Charge)

SAVAGE & CO.
OPTICIANS

JAMES LAW
UPPER WYNDHAM STREET

Manufacturer of all kinds of

UNDERWEAR, JERSEYS, HOSE, ETC.
NEAR GEMMELL'S DYE WORKS

FOOTBALL and HOCKEY GOODS

Made to Order in College Colors

Bicycle Stockings

STUDENTS

When You Want Material to
Smoke or Chew, Call at the

Senate Cigar Store

You find everything you want there

McHUGH BROS. 26 Lower Wyndham

GEO. HARPER

Picture Frames
QUEBEC STREET
NEAR CHALMERS' CHURCH

T. H. GEMMELL & CO.

Steam Dyers and Cleaners

No. 70 Wyndham St., West Side

Suits Cleaned, Dyed and Pressed.
Pressing Done on Shortest Notice.

Also Agents for Parisian Laundry. PHONE 69

— TRY —
BURGESS

FOR
GROUPS

There's as much difference in Barbers
as in any other Tradesmen.

The Royal Opera House Barber Shop

Is the place to get the finest work in Guelph,
and when the best can be had at the same price
as inferior—Why not have the best?

DR. COGHLAN

DENTIST

Cor. Cardigan and Woolwich Streets

TELEPHONE 223

A CHOICE STOCK OF
FOOTWEAR
FOR LADIES AND GENTLEMEN

And a RELIABLE
Repair Department

W. C. GOETZ, UPPER WYNDHAM STREET
Opposite G. B. Ryan & Co.

W. A. CLARK

Watchmaker
Jeweler and Optician

79 Upper Wyndham St., Guelph

Issuer of Marriage Licenses

WATERS BROS.

Wyndham Street

O. A. C.
SUPPLIES

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

Best for Butter

Windsor Salt will make money for you in two ways.

It makes better butter—richer, tastier. As it dissolves quickly, and works in easily and evenly.

It cuts down your salt bills, because it is absolutely pure, and requires LESS to properly season the butter.

The first trial will prove this. Your dealer has Windsor Salt or will get it for you.

Windsor SALT

CANADIAN OFFICE & SCHOOL FURNITURE CO. LIMITED
PRESTON, ONT.



OFFICE, SCHOOL, CHURCH, & LODGE FURNITURE

FINE BANK, OFFICE, COURT HOUSE AND DRUG STORE FITTINGS A SPECIALTY

SEND FOR CATALOGUE!

Dominion Bank

GUELPH



Capital Paid Up - - \$3,000,000
Reserve Fund and Undivided Profits \$3,565,000

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

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

The Busy Bookstore

26 Lower Wyndham Street

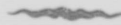


City Headquarters for
O. A. C. Students' Supplies

College Text Books

Fine Stationery, Etc.

And for those who are planning for a gift for the folks at home, we are opening up and showing the finest range of goods in the city.



Scott & Tierney



Now will you
be good

and go to

Knechtels

for your Shoes?



We sell the Geo. A. Slater, Astoria, Miss Canada,
and many other good makes.

You will find this a nice store to deal with.

We Do Repairing.

All kinds of Sporting Shoes Sold.



We have a very complete stock
—OF—

Entomological

—AND—

Botanical

Supplies

For Students. At Student's Prices.

ALEX. STEWART,

Chemist, - Next Post Office.

THE DAIN Hay Loader



The machine that does the good work. Loads
out of the **swath** or **windrow**.

No weight to lift in attaching to the wagon.

Pushes the hay forward on the wagon.

The **one-man machine**.

Send for circular.

The Dain Manufacturing Co.

Preston, Ontario

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

ALL O. A. C. Graduates

Should Subscribe for
Guelph's Leading Paper,

The Weekly Mercury

It will keep them in touch with important matters pertaining to their Alma Mater; will furnish them with full information concerning the Ontario Winter Fair; will give them the news of the Royal City, and the Farm and Live Stock News of the District

Daily, \$4.00; Weekly, \$1.00 in advance.

McINTOSH & GALBRAITH

Education Department Calendar for 1905

(IN PART.)

JUNE:

1. Public and Separate School Boards to appoint representatives on the High School Entrance Boards of Examiners.
By-law to alter School boundaries -last day of passing.
9. University Commencement.
13. Senior Matriculation Examination in Arts, Toronto University, begins.
16. Provincial Normal Schools close.
28. High School Entrance Examination begins.
30. High, Public and Separate Schools close.
District Certificate, Junior and Senior Teachers' and University Matriculation Examinations, and Commercial Specialist Examination, begin.

Protestant Separate School Trustees to transmit to County Inspectors names and attendance during the last preceding six months.
Trustees' Reports to Truant Officers, due.

JULY:

- Last day for establishing new High Schools by County Councils. Legislative grant payable to Treasurers.
Trustees to report to Inspectors regarding Continuation Classes.
11. Inspectors' Reports on Continuation Classes, due.
 1. Notice by Trustees to Municipal Councils respecting indigent children, due.
Estimates from School Boards to Municipal Councils for assessment for School purposes, due.

For Examination Papers of the Education Department address orders direct to the Carswell Co., Limited, Law Publishers, etc., 30 Adelaide St. East, Toronto.

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



Reproduced Photograph of J. W. Young's Barn,
Ryckman's Corners, Ont.

A Paroid Roof

The roof that lasts and anybody can lay. Thousands of the most progressive farmers, dairymen and poultrymen, as well as railroad companies and the U. S. Government are using Paroid for roofing and siding in preference to all others, because they have PROVED that Paroid is

**The Most Economical
The Most Durable
The Most Satisfactory** of all Ready Roofings

This is why: It is made of extra strong felt, with an extra good saturation which makes it proof against sparks, cinders, water, heat, cold, acids and gases. Light slate color; contains no tar; does not run nor crack and does not taint rain water. Don't be put off with a cheap imitation. Get the economical Paroid—the roof that lasts. **SEND FOR FREE SAMPLE** and name of nearest dealer. Investigate for yourself. For a 2 cent stamp we'll send new book of complete plans for poultry and farm buildings.

F. W. Bird & Son,

Makers

Hamilton, Ontario

(Originators of the free Roofing Kit—fixtures for applying in every roll).
Established 1817 in U. S.



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

THE STANDARD
Fertilizer and
Chemical Co.

Limited, - SMITH'S FALLS, ONT.

Manufacturers of Superphosphates, Bone Meal,
and High Grade Fertilizers, and Dealers
in Nitrate of Soda, Sulphate of
Ammonia, Muriate of
Potash and Sul-
phate of
Potash

WRITE FOR PRICES

AMERICAN-ABELL
Engine and Thresher Co.
LIMITED

MANUFACTURERS OF THE
"COCK O' THE NORTH" LINE
OF THRESHING MACHINERY



FACTORY:
TORONTO - CANADA

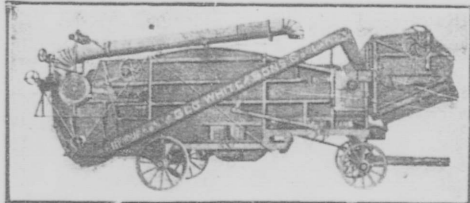


BRANCH SALE HOUSES AT
WINNIPEG and REGINA

THREE WINNERS

Our First Quality Line

DOES TWO DAYS' WORK IN ONE.



Saves Work, Time and Money
for the Men Folk.

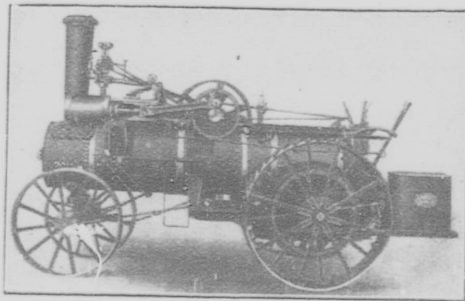
Saves Work, Time and Worry
for the Women Folk.

The White Challenge

With Cutting Box Attachment, Wind Stacker and Feeder.

FIVE SIZES:

- 14 h.p. 17 h.p.
- 20 h.p. 24 h.p.
- 27 h.p.



How does
this one
suit you?

The White Traction Engines

Has our 1906 circular reached
you? Full of good things.



The White Challenge with Wind Stacker.

The George White & Sons Co.

London, Ontario

Limited

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Grand Sweepstakes

CREAMERY SWEEPSTAKES DAIRY SWEEPSTAKES



Ohio

Grand Sweepstakes Creamery Sweepstakes Dairy Sweepstakes

at the Ohio State Dairymen's Convention held at Dayton, Jan. 24-26.
Creamery score 97 $\frac{1}{4}$, Farm Dairy 97.

Wisconsin

Grand Sweepstakes

at the Wisconsin State Dairymen's Convention at Waukesha, Jan. 30-Feb. 2. Score 97 $\frac{1}{2}$.

Connecticut

Grand Sweepstakes

at Connecticut State Dairymen's Convention at Hartford Jan. 17-18. Score 98.

Maine

Dairy Sweepstakes

at Maine State Dairymen's Convention at Pittsfield, Dec. 5-7. Score 97 $\frac{1}{4}$.

The United States Separator Holds World's Records for Closest Separation of cream, and above is another of the many lists of victories which show that

The United States Separator Delivers the Cream in Smoothest and Best Condition to make the finest quality of butter.

FREE CATALOGUE ON APPLICATION.

Vermont Farm Machine Company

Bellows Falls, Vt.

Eighteen distributing warehouses throughout the United States and Canada.

W I S D O M

is just a short
way of saying
the



De Laval Cream



Separator



in the dairy. 700,000
wise men have
proved it.

77 York St., Toronto
Winnipeg Montreal