

Vol. XVII.

No. 8.

The
D. N. G.
Review



May Number,

1905

Long Test of a Tubular

Just facts—that's all you want. Facts can't hurt you nor Tubular Cream Separators. Facts prove **Tubulars outwear all other makes** five to ten times over.



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43 Years--75 Cents.

| | |
|------------------|---------------|
| Hours run | 1,200 |
| Pounds separated | 1 080,000 |
| Turns of crank | 3,155,760 |
| Turns of Bowl | 1,152 000,000 |
| Oil used | 3 quarts |
| Time oiling | About 4 min. |
| Time adjusting | None |
| Repairs | None |

| | |
|------------------|------------------------|
| Hours run | 2,150 |
| Pounds separated | 1,935,000 |
| Turns of crank | 5,652 070 |
| Turns of Bowl | 1,864,000 000 |
| Oil used | 5 $\frac{3}{8}$ quarts |
| Time oiling | About 7 min. |
| Time adjusting | 10 minutes |
| Repairs | 75 cents |

After 24 weeks, two balls showed wear. This was natural, for each had rolled over 32,000 miles. Renewing balls cost only 75 cents and ten minutes adjusting, yet made this Tubular good as new. All Tubulars are equally durable. **Catalog F tells about it. Write for it to-day.**

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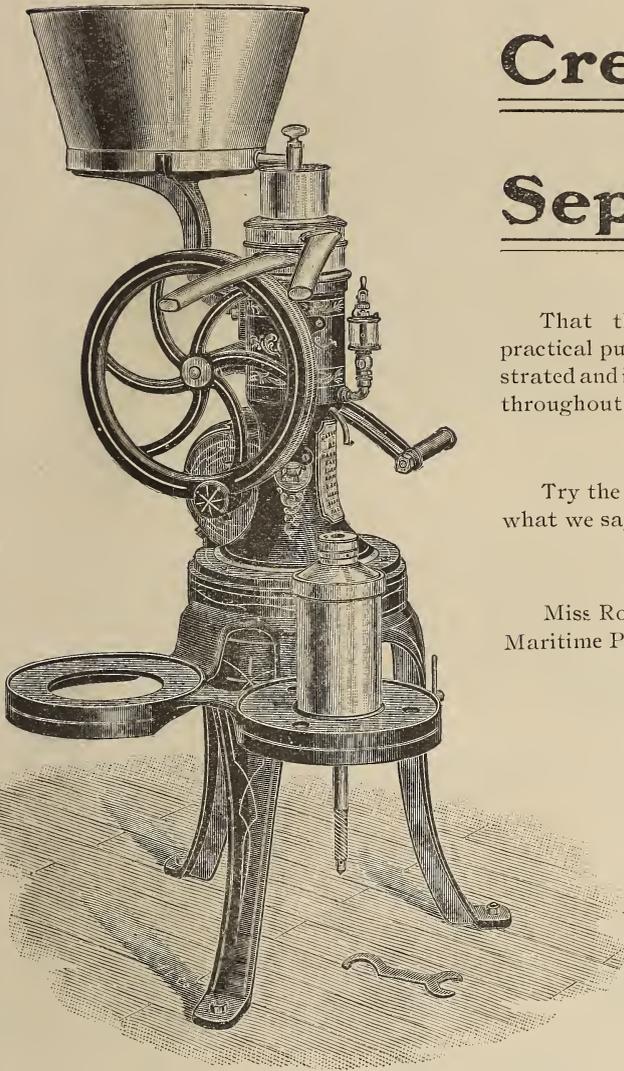
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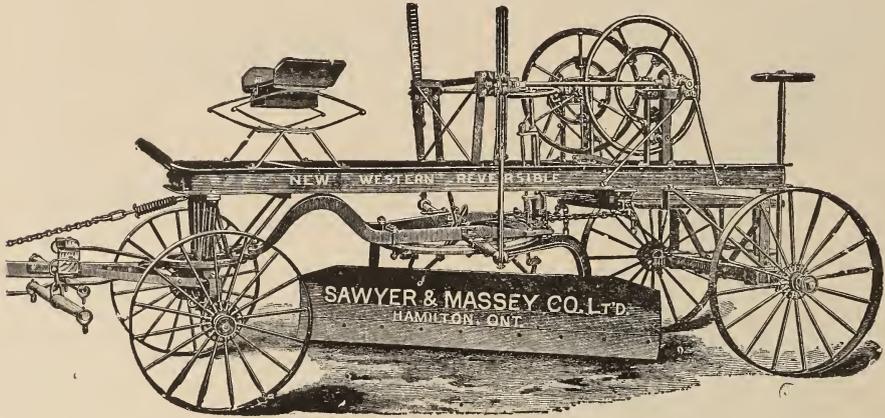
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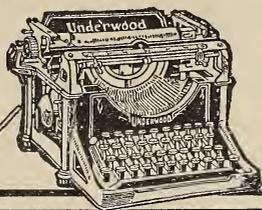
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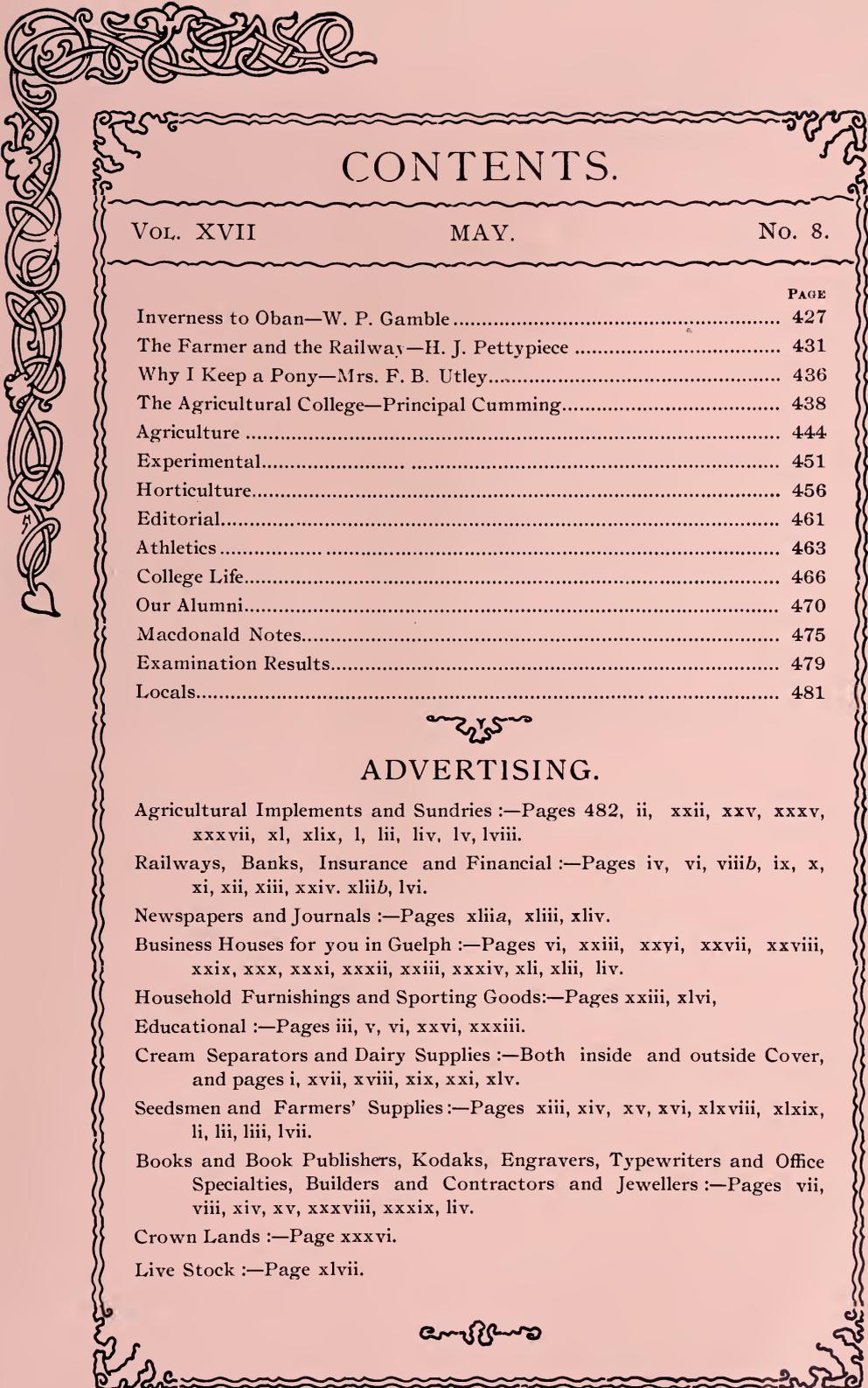
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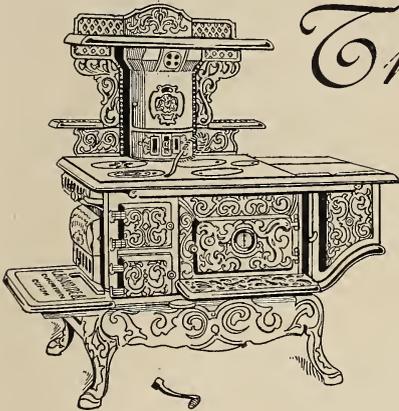
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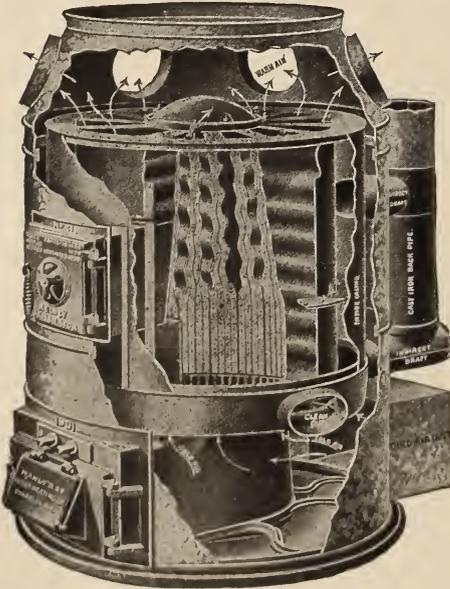
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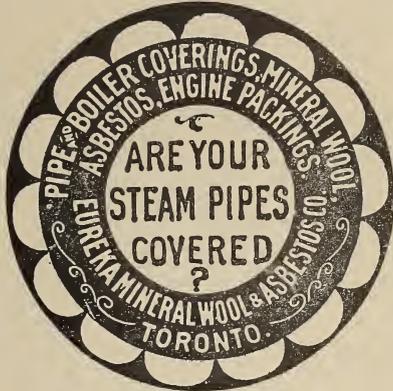
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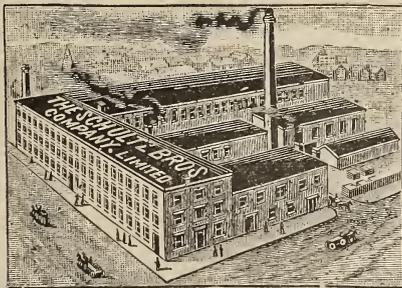
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TORONTO, CANADA

The O. A. C. Review

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THE DIGNITY OF A CALLING IS ITS UTILITY.

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INVERNESS TO OBAN

By the Caledonia Canal.

BY W. P. GAMBLE.



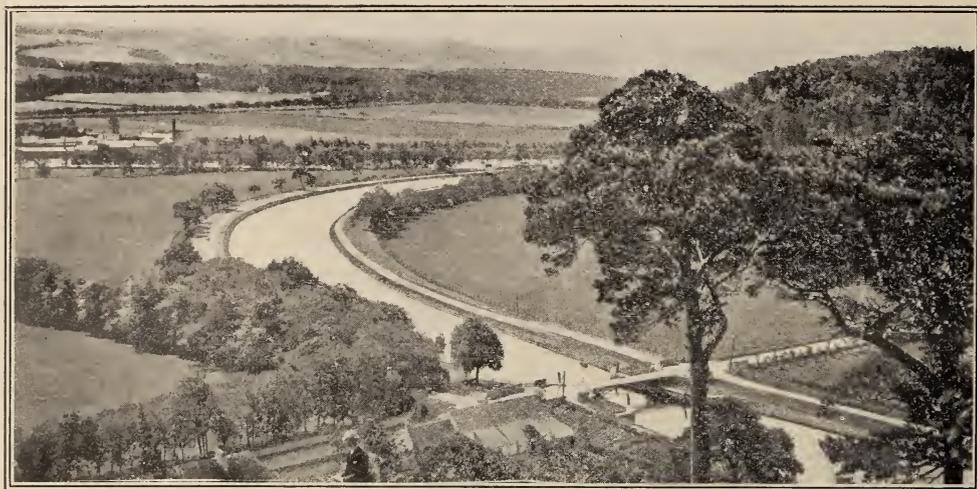
HERE is no more attractive excursion than the one through the Caledonian Canal. The Great Glen of Scotland with its three large fresh water lakes—Loch Ness, Loch Oich and Loch Lochy—would seem to have been designed by "Nature herself" to furnish a waterway between the German and the Atlantic Oceans. The construction of a canal which would utilize these natural advantages was, therefore, one of the important works which, after the pacification of the Highlands, was suggested with a view to the development of their resources and the improvement of their condition.

Some time ago the writer, in company with several other tourists, had the pleasure of visiting Scotland, and of all the delightful scenery of the Scotch Highlands, that along the course of the Caledonian Canal stands unsurpassed.

Before starting on the trip down the canal we made a tour of the city of Inverness, which has much of the air of an

English town about it. It is the capital of the Highlands, and is situated at the point where the Ness enters the Beauty Firth. Inverness is the great traveller's centre of the north of Scotland, and in the estimation of Professor Blackie "may hold its own against the fairest cities in Europe." The surroundings of Inverness show a happy combination of sea and land beauties, and there is also an air of culture, with an amplitude of wild environment, which are certainly very charming to the average tourist.

Inverness is principally built upon the right bank of the river Ness; but it is connected with the left bank by two bridges, one of stone, the other—a suspension bridge—of iron. Behind the latter, on the south, rises a beautiful terrace, which commands an extensive and a richly diversified prospect, and stretches in a southerly direction right to the base of the hills. Against the horizon, on each side, a noble screen of mountains challenges the admiring gaze; westward, the clustering peaks of Strath-



Caledonian Canal from Tomnahurich

conon and Strathglass; northward, the immense mass of Ben Wyvis; while toward the east the blue line of Morray Firth conducts the eye to the cloud-like crests of the mountains of Banff.

The river Ness has a course of only six miles, but throughout it is "broad, clear and strong." Its banks are overshadowed by avenues and groups of trees.

Leaving Inverness the Caledonian Canal winds along the north bank of the river Ness. In making this trip by steamer we pass a succession of villas prettily situated along the bank of the canal. Further, we approach the place from which, if the weather be fine, a full view may be had of the Falls of Foyers. The spacious cavity through which the water rushes is enclosed by complicated cliffs and perpendicular precipices of immense height; and though for a while it wears to the eye a savage aspect, yet when one becomes accustomed to the turmoil there is a certain beauty about the place, and the savagery is softened by what appears to be masses of tall shrubs. These, in reality, are trees

which on level plain would look even stately, but as they ascend, ledge above ledge, the walls of that immense chasm, they are felt on such sites to be sublime.

Leaving this point we next reach Invermorison. The scenery from the latter place to Fort Augustus, a distance of seven miles, is a fairy combination of mountain, woodland and water. A beautiful level road keeps near the water's edge, which is overshadowed by the graceful branches of birch and hazel.

The village and remains of Fort Augustus stand on a little rising ground near the brink of the lake. The fort is a very interesting old structure, but perhaps the most interesting feature of the whole place is the beautiful Loch Ness, of which the tourist may obtain a charming view from this point. The serene grandeur of the lake baffles description. Bold, steep mountains rise on the south side, little retiring bays and sloping woods give variety to the north. The immediate scene, in short, is tranquil and beautiful, while the surrounding objects are rude and majestic.

The prospect which the fort commands



At the Islands, Inverness.

is one of varied beauty, including the whole extent of Loch Ness. On one side, the lake is bordered by lofty and precipitous rocks as far as the eye can reach, without any interruption except the hanging gardens of Glendoe. On the other side, a richer and softer landscape affords a delightful contrast to the wild grandeur of Suidh Chuiman and the gloomy heights of Stratherrick. The blue waters nestle in the verdant bays; wooded hills slope gently upward, sheltering inhabited glens of a pastoral character, each of which is brightened by a winding stream. The slope of the sides of the mountain chains is deep, rugged, heathy and rocky, with their faces in many places furrowed by the wintry storms. On the north side of the lake, however, the mountains are luxuriantly clad with a profuse variety of forest trees—birch, oak, ash, elm, and aspen, and a thick underwood of hazel, sloe, and holly, resting in a carpeting of purple heather and verdant bracken.

At Fort Augustus the Canal ascends by five Locks; and as the passage of the steamer occupies about one hour, the

tourist has time to land and make a hasty examination of the old monastery situated at this point.

Passing Fort Augustus the steamer carries the passengers slowly up the canal to Kyltra Locks, where she enters Loch Oich. This Loch is about four miles in length. It forms the highest level of the Canal and has an elevation above the sea of 100 feet. The scenery around it is picturesque and attractive, but is without an element of sublimity or grandeur; verdant slopes reach down to the blue waters, and at the mouth of Glengarry lies a tract of cultivated land. The waters of the Loch cradle some pretty inlets fringed with trees. On one side of the Loch the mountains are bold and lofty and remarkable for their regularity of outline. From their base Glengarry stretches away westward, with tasselled birch dripping down to the stream that gives its name to this valley.

From Loch Oich the steamer passes through a number of lochs and enters Loch Lochy. This beautiful loch is about ten miles long, and is bordered on either side by mountain ranges. The



Pass of Melfort.

mountains on the south side of the Loch form a continuous unbroken range; the opposite heights are divided by innumerable gullies, but the pastures on both sides are of rich emerald green. As the steamer ploughs her way through the waters of the Loch we catch glimpses of Glengloy House, and a little further on Glenfintaig House. Later we pass Achmacarry Castle, which lies embosomed among dense foliage, through which the romantic stream of the Arkaig wanders its way to swell the ample and beautiful waters of Loch Arkaig.

We now approach the end of the Loch Lochy after which we descend through a series of eight locks to Banavie. At this point we obtain an excellent view of Ben Nevis and the heights lying around about it. From Banavie tourists are conveyed by bus to Fort William.

As the steamer bears us away from Fort William to resume our voyage to Ballachulish, we view with interest the towering bulk of Ben Nevis receding in the distance. Next Ardgour House comes to view. Later we pass, near

Onich Point, Cuilchienna House, the favorite residence of the late late Dr. Forman Macleod.

In travelling by steamer from Ballachulish to Oban, the tourist is carried over the waves of Loch Eil, Loch Linnhe, Loch Etive and finally across the peaceful waters of Oban Bay. Along this part of the route his admiration is aroused by a close view of the ivy-clad castles of Dunstaffnage and Donnelly, still majestic in ruins. The scenery too is of such nature as to inspire the admiration of even the most prosaic. The wooded shores of Loch Linnhe, its still sequestered bays, its jutting promontories, and high above all, the everlasting hills, combine to form a picture of ideal beauty which is hard to describe.

As the steamer sweeps into the sheltered waters of Oban Bay, the tourists gaze rests upon a beautiful little town nestling close by the base of those surrounding hills, which lend no small part to the picturesque grandeur of this famous tourists resort.

The Farmer and the Railway.

BY H. J. PETTYPIECE, EX-M.P.P.

(Continued from March Number.)

AN example of the benefits which accrue from State control of rates, both local and through, and the effect that such control has on railway development and the general prosperity of the State, as well as a good object lesson, is afforded by the sister States of Iowa and Wisconsin. These States are about equal in size and population, and also in variety of products. In Iowa the State Legislature, through a State Board of Railway Commissioners, has full control of all railway rates, while in Wisconsin the fight for such control is now going on. The natural supposition would be that the shipper in Wisconsin, having the advantage of water competition for a large amount of his shipments, would have an advantage over the shipper in Iowa who has no access to the Lakes; but such is not the case, as will be shown farther on in this article.

IN IOWA.

The fight for State control was carried on in Iowa for many years before anything satisfactory was accomplished. In the political campaign of 1887 in that state, control of railways was one of the main issues, and the election resulted in a complete victory for the people over the railway corporations. At the next session of the State Legislature, the question was taken up, and the following extract from Governor Larrabee's message in 1898, eleven years later, will

best shew how the struggle in the Legislature ended:—

“A large number of bills contemplating railroad reforms in various ways were introduced in 1888, but the material presented was carefully sifted by the railroad committees, and a committee bill was framed which incorporated the best features of them all. The committee listened patiently for weeks to the arguments of representatives of both the railroads and the shippers.

Never before had so formidable a railroad lobby assembled at the state capital. The danger signal had been raised, and not only were the great political manipulators of the state called into requisition, but experts from adjoining states joined them in besieging the legislature. The dogs of war were let loose from all quarters. A legion of hirelings were zealous to show their servility and loyalty to their lords. The daily and weekly papers of the state in the service of the railroad companies teemed with arguments from the pens of railroad attorneys.

“There were, however, an unusual number of strong men in this general assembly, and this extraordinary display of railroad forces only tended to impress more strongly upon them, the necessity of curbing the railroad power, and their best energies were concentrated upon the subject, with a firm determination to deal with it in a manner dictated by reason and experience.

“So well did the bill which was finally adopted by the committee reflect the general sentiment of the members of the general assembly that not a single vote was cast against it in either house upon its final passage. Since the adjustment of business under this law, there has been less friction between the people and the railroads than before for thirty years, and so satisfactory has it proved to all that no one, not even a railroad man, has to this day asked the legislature to repeal the law or any part of it.”

IN WISCONSIN.

In 1903, when a bill was introduced in the Wisconsin Legislature to regulate the railway rates, one of the railway companies in that State submitted to the House a printed document in opposition to the proposed legislation, in which the railway company undertook—quoting its exact language:

“To show to this honorable body that the rates paid by Wisconsin shippers for the transportation of their freight are not exorbitant, but, on the contrary, are just and reasonable, are equitably distributed, and, with scarcely any exception, are satisfactory to the great body of shippers of the state; that the producer and shipper in Wisconsin are on an equality with the producer in Iowa.”

At the time that Iowa passed under the control of a State Railway Commission, some fifteen years ago, that State and the State of Wisconsin had reached about the same stage of development, and it is therefore interesting to compare the figures of the freight rates which have since obtained in the two States, and also to compare the industrial progress that has been made by both States under the two systems, viz., the system in Wisconsin, where the freight rates are fixed by the railways, without State con-

trol, and the system in Iowa, where the State has assumed and exercised authority in regulating such rates.

COMPARATIVE RATES.

Below is a summary of the rates charged by the railways in the two States on various staple articles, which are shipped every day, and which are in common use.

On fuel, wood and soft coal, for distances ranging from five to six hundred miles, the rate per hundred pounds in Wisconsin is 6.59 cents, in Iowa 5.70 cents, excess for Wisconsin, 15.69 per cent.

On cattle, from 298 shipping points in Wisconsin, the average length of haul being 136 miles, the average rate was 13.68 cents per hundred pounds; in Iowa, from the same number of shipping points, with an average haul of 139 miles, the rate was 12.83 cents; excess for Wisconsin, 8.63 per cent.

On hogs, from 298 points in Wisconsin, average haul 136 miles, the rate was 17.84 cents per hundred; in Iowa from 298 points, average haul 139 miles, the rate was 12.48 cents; excess for Wisconsin, 45.43 per cent.

On agricultural implements, 14 comparisons, on an average haul of 202 miles, the average rate in Wisconsin was 17 cents per cwt.; in Iowa, on an average haul of 206 miles, the rate was 16.32 cents; excess for Wisconsin, 6.39 per cent.

On furniture, 36 comparisons, Wisconsin, average haul 203 miles, rate 19.57 cents; Iowa, haul 207 miles, rate 16.31 cents, excess for Wisconsin, 22.41 per cent.

On hay, 431 comparisons; Wisconsin, average haul 182 miles, rate 12.12 cents; Iowa, average haul 185 miles, rate 8.88

cents ; excess for Wisconsin, 38.45 per cent.

On coal, 30 comparisons ; Wisconsin, average haul 46 miles, rate 45.28 cents ; Iowa, average haul 48 miles, rate 31.72 cents ; excess for Wisconsin, 47.68 per cent.

On lumber, 53 comparisons ; Wisconsin, average haul 121 miles, rate 8.19 cents ; Iowa, average haul 122 miles, rate 6.71 cents ; excess for Wisconsin, 20.23 per cent.

On wheat, 302 comparisons ; Wisconsin, average haul 125 miles, rate 9.67 cents ; Iowa, average haul 128 miles, rate 8.72 cents ; excess for Wisconsin, 12.95 per cent.

On corn, barley and oats, 302 comparisons ; Wisconsin, average haul 125 miles, rate 9.67 cents ; Iowa, average haul 128 miles, rate 7.25 cents ; excess for Wisconsin, 35.96 per cent.

On manufactures of iron and steel, 140 comparisons ; the excess rates for Wisconsin over Iowa are 12.24 per cent.

On general merchandise, 303 comparisons : (including car lots and less than car lots) the excess for Wisconsin is 32.34 per cent.

The terminal charges on freight of all kinds at 321 stations in Wisconsin were 32.81 per cent. higher than the terminal charges at the same number of stations in Iowa.

UNFULFILLED PREDICTIONS.

When the Iowa law was enacted, it was predicted that the progress of the State would be retarded, that agriculture and manufacturing would stagnate, that railway development would be paralyzed, and property generally depreciated in value, as a result of giving a State Commission the power to regulate rates. It will then be worth while to note how

those predictions of ruin were fulfilled, or rather how they were not fulfilled.

As already intimated, these two States, bordering each other for hundreds of miles, with similar climatic conditions, started out about the same time on almost equal terms. Wisconsin, with an area of 54,450 square miles, was admitted to the Union in 1848 ; Iowa, with 55,470 square miles, was admitted in 1846. What advantage Iowa had in better farm lands was more than compensated for by Wisconsin's location on the Great Lakes, especially for manufacturing and transportation purposes. The new law went into force in 1889, and since that time Iowa has been forging ahead of Wisconsin in both agriculture and manufacturing, but also in the accumulation of wealth. In 1890 the amount of capital invested in agriculture and manufactures in Iowa was \$146 for each \$100 in Wisconsin ; in 1900 the Iowa investments had increased to \$170 for each \$100 in Wisconsin. The annual increase in the capital invested in these two great industries in Wisconsin was \$32,500,000 ; in Iowa, \$59,000,000 ; the latter thus beating her sister State by \$26,500,000 each year. The great advances made by Iowa were relatively greater in manufacturing than in agriculture, showing that Wisconsin's more favorable situation in regard to shipping facilities could not offset Iowa's lower freight rates. In fact, had it not been for the advantages afforded by lake ports, it is very doubtful if Wisconsin would have made even the progress she did in manufacturing, as more than 70 per cent. of the \$330,000,000 invested in manufacturing in that State is invested in the nineteen counties along the lake, leaving only 30 per cent. on the other 53 counties. With the great advantage of hundreds of lake shipping ports, a bountiful supply of

timber, hard wood and pine, rivers supplying abundant water power, and rich mineral deposits, the natural supposition is that Wisconsin could easily lead a prairie State in manufacturing; and so she could, were she not handicapped by the excessive transportation rates, which become a tax on all kinds of industry and investment.

In 1890 the average wealth of each person in Wisconsin was \$479, and in 1900 it was \$557, an increase of \$78 per head; in Iowa, the wealth per head was \$616 in 1890 and \$870 in 1900, an increase of \$254 per head. And the rapid increase of wealth in Iowa is not due to the spasmodic growth of any large cities, as the total population of her 14 cities is only 350,000, the largest being Des Moines, with 65,000. In Wisconsin one city alone has 285,000.

Even in railway development itself Iowa has kept ahead of the sister state, having 9500 miles of railway, while Wisconsin has only 7000 miles. In 1878 the Wisconsin roads earned net 6 per cent. on a valuation of \$26,000 per mile; in 1900 they earned net 6 per cent. on a valuation of \$41,000 per mile. In 1878 the Iowa roads earned net 6 per cent. on a valuation of \$32,000 per mile; in 1900 they earned net 6 per cent. on a valuation of \$30,000 per mile. The Iowa railways paid last year \$1,719,654 in taxes.

The falling-off of the earnings in Iowa was to be expected; indeed, if the earnings had not been deemed excessive and unreasonably large there would have been no demand for regulation and control of the rates by the State.

CAUSE AND EFFECT.

The reasons for Iowa's greater development and prosperity are not far to seek. The cheaper freight rates being

established, and their continuance being guaranteed because they were under State control, offered a greater inducement to the investor of capital for manufacturing purposes; increased manufacturing was followed by increased mercantile trade of all kinds, and an enlarged market for the farmer, thus creating a greater degree of prosperity all around, and furnishing more traffic for the railways. On the other hand, exorbitant rates scare away manufacturing capital, discourage mercantile investment, diminish the farmers' profits, and hinder railway development.

The Iowa Railway Commission after years of operation under the new law, said in their report of 1891:—

“The farmer gets his supplies cheaper, his lumber, cattle, salt and other heavy commodities at fair rates. He finds a market for a portion of his surplus corn, oats, hay, wood, timber, etc., at home, and saves transportation. He markets many of his hogs in Iowa packing houses and saves freight charges. Wood and logs that lay in the timber rotting, the Iowa rates are making a market for; and new mills are sawing the latter up for use in excelsior, fencing pickets, handles, boxes and other industries unknown before. The railway policy of the long haul has, in a measure, been supplanted by the new system, and an exchange of products between different parts of the State is one of the commendable results. Hay and corn from northern Iowa are now being sold at better prices in the dairy counties of eastern and southern Iowa in large quantities, a thing hitherto unknown. This formerly paid tribute to Chicago.”

Thus we see how State control of rates has a most beneficial effect on the general prosperity of the people. What has

been done in Iowa can be done in Ontario, if the people will demand Provincial control of rates. It is needless to say that fair and reasonable rates, if established and guaranteed here would be the means of giving a new impetus to manufacturing, mercantile and agricultural investments, and add materially to the general prosperity of the whole people of the Province, and would give the railway more traffic.

THE PROBLEM IN ONTARIO.

It is very difficult to make a satisfactory comparison of local rates in Ontario with the rates in Wisconsin and Iowa, because there is no uniformity of rates in this Province. For instance the rate per hundred pounds on paper from Montreal to Forest is 36 cents, while the rate to Sarnia, 22 miles further on the same line, is only 24 cents—a difference of 50 per cent. between points only 22 miles apart. Then, throughout that portion of the Province north of the main line of the G. T. R. the rates are higher than they are south of that line. In many cases the local rates here are higher than they are in Wisconsin; and it is safe to say that in all cases they are much higher than in Iowa, where there is State control. During the past few days it has been shown in the Dominion Parliament and before the Railway Commission that the rates on farm products from points in Western Ontario to Montreal are higher than they are on the

same products from points in the States further west.

But the discriminations between different points in Ontario, and between points in Ontario and points in Michigan are not the only grievances that the Ontario farmer rightfully complains of. The people of Canada have aided in the development of our great railway systems to an amount equal to the Dominion National Debt; and at least 40 per cent. of the burden is borne by Ontario. That the through lines crossing the most populous parts of the Province should be practically handed over to the Beef Trust, to aid that monstrous monopoly to carry the products of the Western States to the seaboard at lower rates than are charged for carrying the farm products of Ontario less than half the distance is a grievance which calls for immediate redress. And that redress is in the hands of the farmers themselves.

If they will stand together, and vote together, and send to Parliament representatives who will take an interest in their welfare, they can secure and enforce the legislation necessary to remedy these great evils. All they ask is fair play, but even that cannot be obtained so long as they divide their great strength on party lines, instead of uniting in their own interests, as the great and successful corporations do.

“United we stand, divided we fall,” is an axiom that was never better exemplified than now in this vital question.

Why I Keep a Pony.

BY MRS. F. B. UTLEY.

BY pony I mean the Shetland type. What child has not some time in its existence longed, yes, yearned for a pony? I shall be slow to forget the longings of my childhood days in that direction, and not until my childhood had passed, so far as years are concerned, did I reap the realization of my earlier desires. It is now a great wonder to me that more people do not keep these interesting little creatures, for the cost of keeping one is trifling when compared with the results. I use the word "results" advisedly, for the benefits are many.

For children, I do not know of anything that could be nicer. Apart from the great joy and pleasure they will derive from having a pony, there is an education in connection with it which can not be obtained in other ways. I do not believe that all education must come from books. Owning a pony, in addition to teaching a child how to handle a horse, has the broader and more beautiful instruction of teaching a child how to be human. The caring for, feeding, petting, handling and driving will arouse and stimulate and keep alive in a child all the finer feeling of sympathy, kindness and gentleness. The parent who has not stood at the doorway and watched the children drive away with their tiny pony turn-out, their hearts

full of glee and their happy faces radiant with delight, has not known the pleasure of seeing their children supremely happy. Or to watch them in the paddock caressing or feeding tasty bits from their tiny hands, or hitching pony to play "farm" and draw grass, or sticks, or boxes, or away to the



An Interesting Pair.



Drawing a Sleigh at Five Months.



They Learn Tricks Readily.

country for nuts or apples,—all this has a joy that is fairy-like in its realization. Add to this the healthful benefits to be derived, and could one have anything more valuable for the children?

If considered only from the pleasure point of view it amply repays one, but there are additional advantages that are not all absorbed by the little ones. A pony, in addition to being a source of pleasure, is certainly very useful. Many an errand can be run with them, and I have frequently driven one whose weight was about 500 lbs., and height $11\frac{1}{2}$ hands, on trips 14, 15 and 20 miles. They are tough little tots, and can stand trips of this kind easily.

There is much pleasure in training them tricks. They learn readily and seem to enjoy it. A little patience and some wonderful results are obtainable. Every one knows how attractive young animals are. Of all the various animals none seem to equal a pony colt. They are so interesting and so tiny. We had one last summer whose height was but 26 inches when born, and one of its little feet would hardly cover a U.S. silver dollar. We trained (not broke) it to harness at five months, and it would draw a sleigh at a great pace.

I do not understand why more farmers do not raise ponies. One breeder says he would as soon raise a pony as a sheep. They are hardy little things, and their keep amounts to a trifle. Many a trip they could save the work horses in running to town or other places, and surely the children of the farm have as much claim to children's pleasures as those in the town. In addition to all the above the farmer who will raise ponies will profit financially. They are easy to raise, far easier than sheep, and a good pony when two or three years old will sell for \$75 or \$100.00.

The Agricultural College,

TRURO, NOVA SCOTIA.

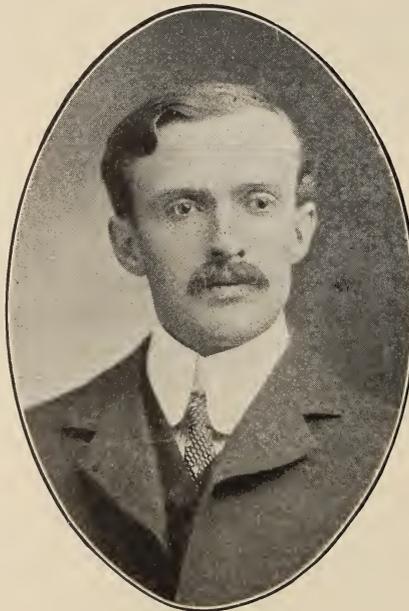
BY PRINCIPAL CUMMING, B.A., B.S.A.



It is yet too soon to write anything of a very definite nature about the Nova Scotia Agricultural College. It was only on February 14th last that it was formally opened, and since that time the educational work has been confined to short courses. The regular session work of the College will not begin until the first of October, and, meanwhile, the staff are devoting themselves towards the outlining of courses and the equipment of laboratories, class-rooms, and farm, so that everything may be in readiness for the beginning of regular work at that time. However, there is always a certain interest attached to the beginnings of any movement, and that is largely the scope of this article.

The subject of agricultural education has received considerable attention in this eastern province, but, unfortunately the measures adopted towards its advancement have not been comprehensive enough to accomplish for Nova Scotia what has been accomplished at the Ontario Agricultural College for Ontario. In the year 1885 there was established, in connection with the Pro-

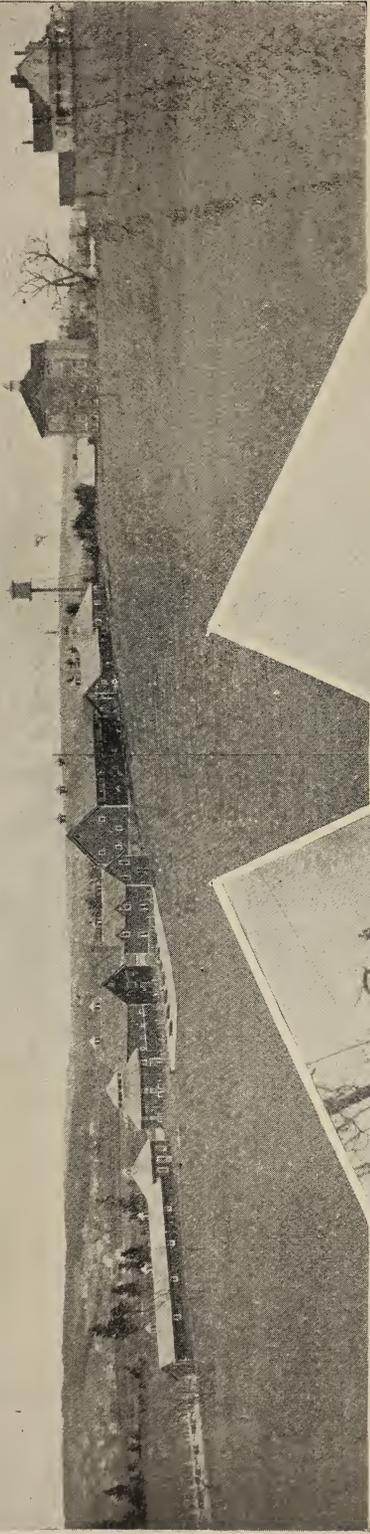
vincial Normal School, at Truro, an Agricultural School, but it was not until 1888 that a farm was purchased and a building, to be used exclusively for agricultural education, erected upon it. However the fact that one man, H. W. Smith, had to be the principal, the farm superintendent and instructor in all subjects necessarily precluded the possibility of much being accomplished. Of course, it must be remembered that, in those days, agricultural education was in its infancy. Its problems had not been worked out. The college at Guelph was still in its swaddling clothes and many were predicting it would never get out of them. There were few but Dr. Mills and his co-workers who "dreamed dreams and saw visions" the realization of which we of



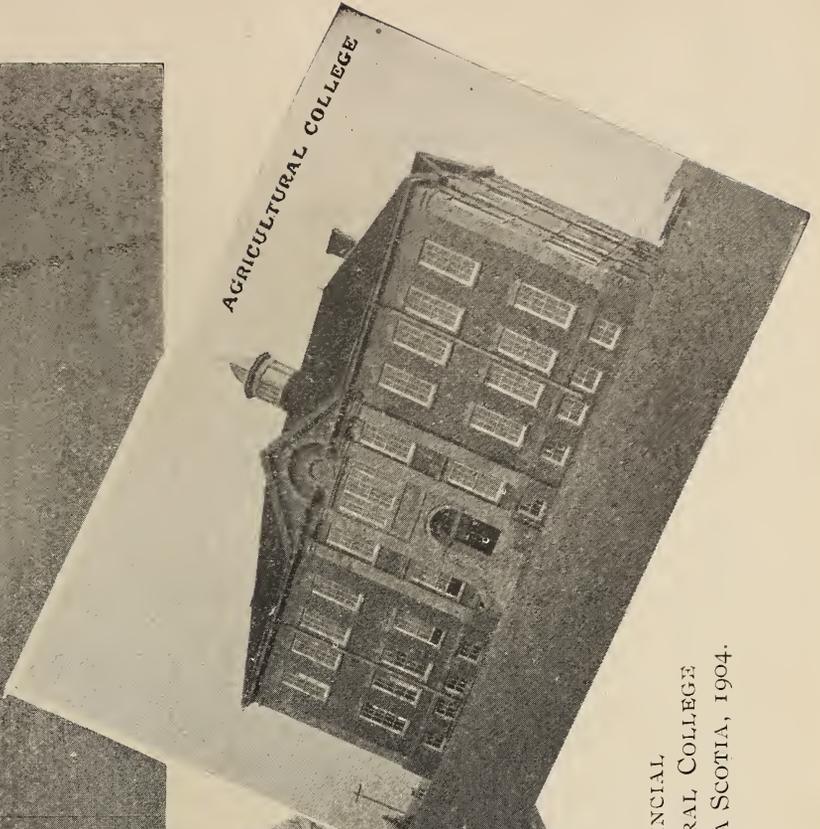
Principal Cumming.

to-day are enjoying. And so matters drifted on, the only advancement being the appointing, some ten years ago, of a farm manager, Mr. F. L. Fuller, under whose care with the hearty co-operation of the present Secretary for Agriculture, Mr. B. W. Chipman, an effort was made to equip the farm with pure-bred stock that would be an aid and a stimulus to

GENERAL VIEW OF AGRICULTURAL COLLEGE FARM
TRURO, NOVA SCOTIA.

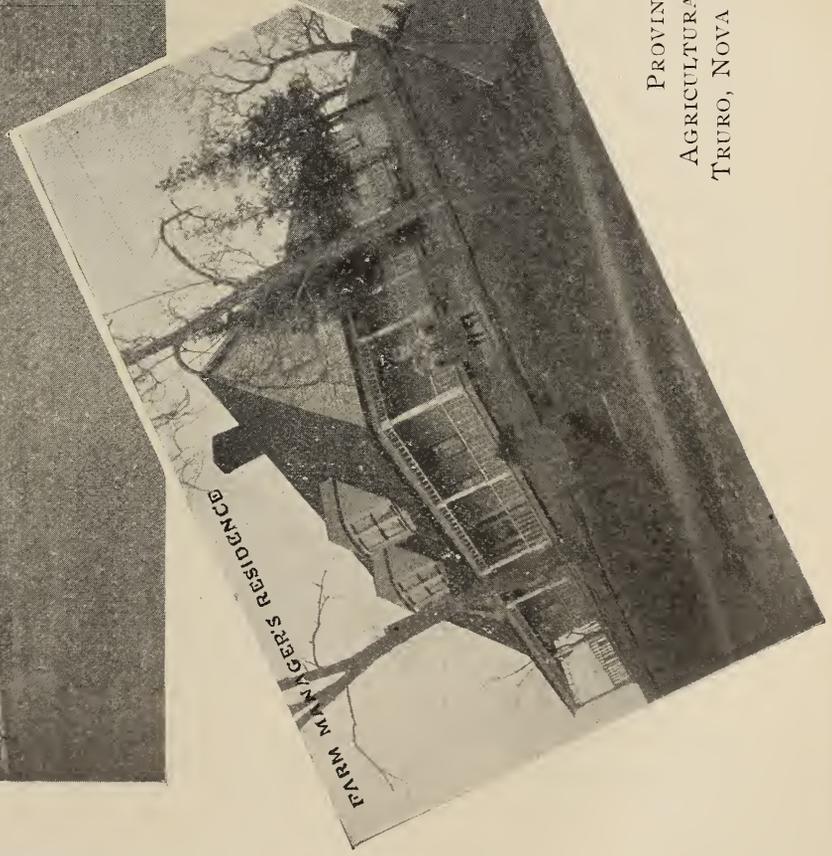


AGRICULTURAL COLLEGE



PROVINCIAL
AGRICULTURAL COLLEGE
TRURO, NOVA SCOTIA, 1904.

FARM MANAGERS RESIDENCE



the improvement of live stock and thus of the farming industry all over the province. The accomplishment of this meant, the improvement of the farm itself and the erection of the barns and stables, which are to be seen in the illustrations. In the spring of 1898 the Agricultural School, which had been built on the farm, was burned down and in its place was erected some two years later, in closer proximity to the Normal School, in fact almost adjoining that institution, a School of Science, which however was still called the School of Agriculture, with H. W. Smith as its principal. Since then the farm has been carried on largely as a stock farm, under the supervision of Mr. Fuller, and the school largely as a School of Science, in connection with the Provincial Normal School.

Shortly after the establishment of the School of Agriculture at Truro, the members of the Fruit-Growers' Association of Nova Scotia agitated for, and had established in the fruit belt at Wolfville, a School of Horticulture. The plant was a small one, consisting of about one to two acres for experimental, orchard and garden work, a greenhouse and class room. At first under the direction of Prof. Faville, and latterly under the direction of Prof. F. C. Sears the school continued for some ten years. But here again the plant was too small and the opportunities for study too limited to draw very many students.

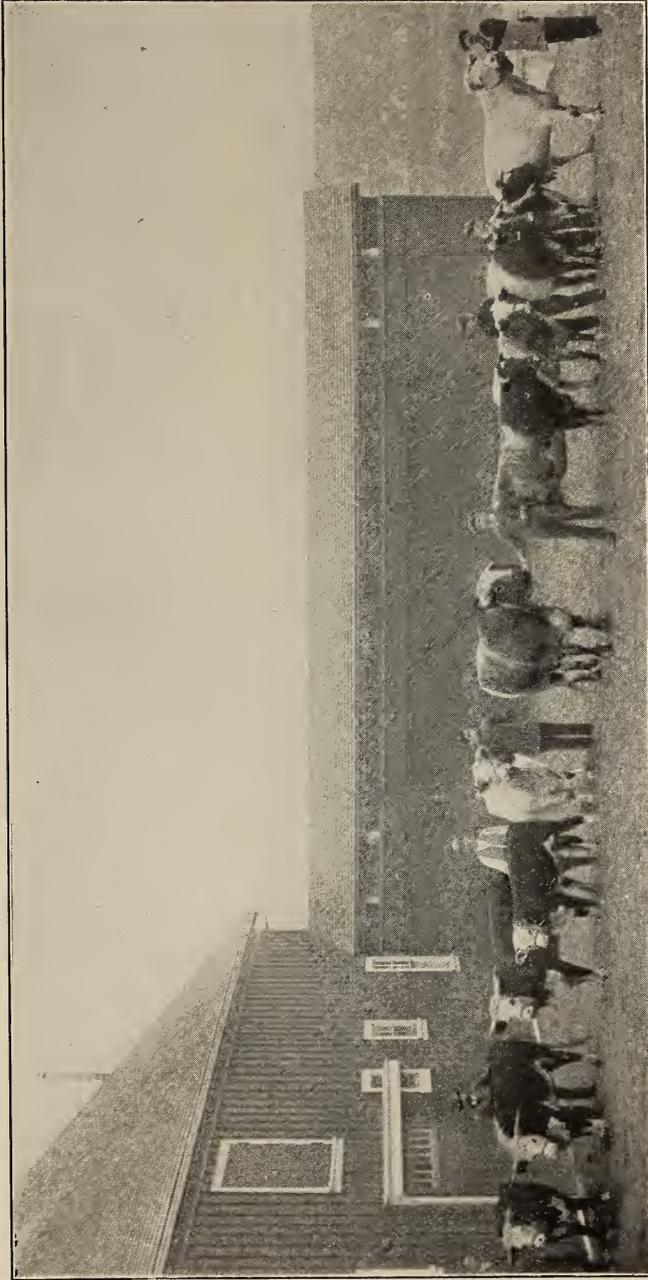
It was at this stage that Prof. J. W. Robertson, then Dominion Commissioner for Agriculture, came upon the scene and publicly agitated the importance of centralizing these efforts at agricultural education and establishing at Truro a well equipped agricultural college. Acting upon his suggestion, the government appropriated some \$50,000, with

which to erect an agricultural college building and to improve the premises already at Truro. This has been accomplished. The School of Horticulture at Wolfville has been closed and merged into the Agricultural College and, as already mentioned, the new institution was formally opened on February the fourteenth, of the present year.

The selection of Truro as the seat of the College was a good one, for not only is Truro the railway centre of the province, but it is also the seat of the Provincial Normal School. The two institutions have been partially affiliated; it being agreed that the science, mathematic and English teachers at the Normal School teach their respective subjects to the agricultural students, and that the regular agricultural instructors in turn teach the principles of agriculture in its various phases to the embryo teachers at the Normal School.

The farm and college buildings are beautifully situated at the top of a hill that overlooks the Town of Truro, about one mile distant. The college commands a magnificent view. To the south and coursing through one of the lower lying college fields, is the Salmon river. To the north is the valley of the North river, from where the land gradually slopes towards the beautifully wooded North mountains in the distance. To the west one can see for miles over the level fertile marshes that extend on either side of the united Salmon and North rivers. One can almost catch a breath of the sea, for the tide rises to within two miles.

The farm itself consists at present of about 150 acres, partially upland, partially interval, but, in the near future, this will be considerably increased. When first purchased, in the eighties, it would



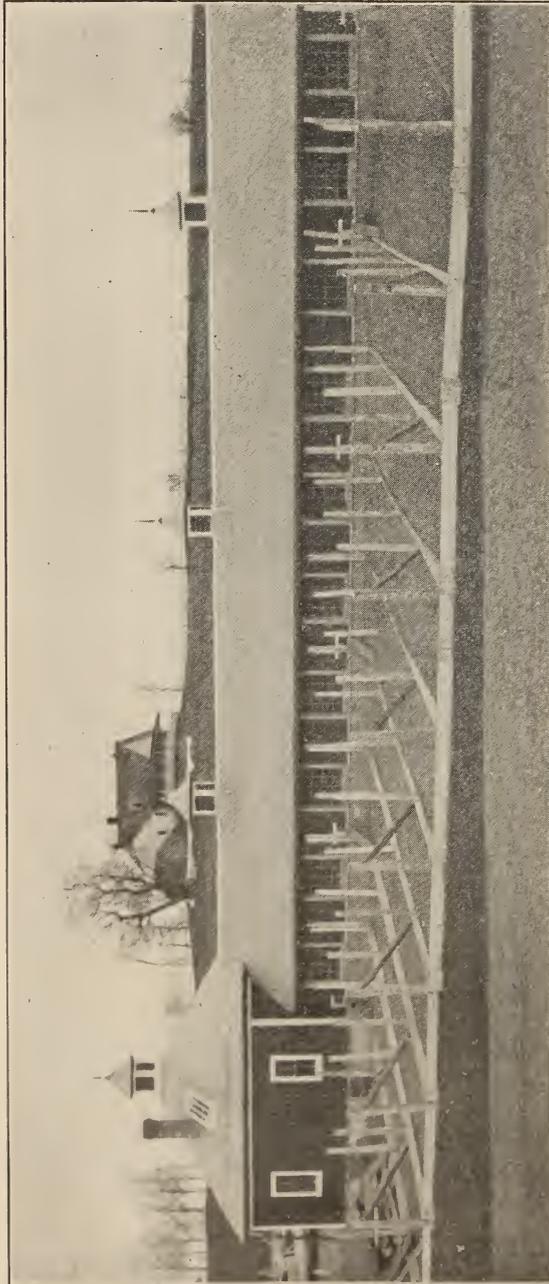
College Shorthorns and Herefords.

not cut more than half a ton of hay per acre. To-day, under the efficient management of Mr. Fuller, it produces some 70 to 80 bushels of oats, 3 to 3½ tons of hay, and 1000 bushels of turnips per acre. The farm buildings are excellent,

consisting, as seen in the illustrations, of a large main barn building with cattle stables, a horse stable, a piggery and a hennery. Excellent herds of Short-horns, Herefords, Jerseys, Guernseys and other breeds which are at present being purchased, sniall studs of Clydesdale, Hackney and Thoroughbred horses, herds of Berkshire, Yorkshire and Tamworth pigs and flocks of various breeds of poultry have been established.

In connection with the college proper is the main building, which is well equipped with class-rooms and laboratories and in the basement floor of which is a blacksmith and machine shop, as well as a carpenter shop. To the rear are greenhouses to be used for the teaching of practical horticulture. There is also a live stock judging pavilion modelled after the one at Guelph, and a dairy building equipped with factory as well as home dairy machinery and appliances. For the more purely scientific work along chemical and scientific lines the well equipped laboratories of the School of Science at the Normal School will be used.

The faculty too have not yet been all chosen but the sketch would scarcely be complete without a brief reference to those who have been selected. The Principal is, I presume, fairly well known to the readers of this paper, having been assistant and lecturer in the Animal Husbandry and Farm Department of the Ontario Agricultural College or the past four years. Prof.



POULTRY DEPARTMENT.

F. C. Sears, the director of the horticultural department is a graduate of the Kansas State College. Before coming to Nova Scotia, where he has been some six or seven years, he taught at his Alma Mater and at the Utah State College. He comes to Truro after having thoroughly established himself in the confidence of the fruit growers and horticulturists of the province. Mr. F. L. Fuller, the agricultural and farm Superintendent, is a particularly efficient man. In addition to his practical farm experience at home he was for some time on the Dominion Experimental Farm at Nappan and took the Dairy course, as well as the short course in Animal Husbandry at the O. A. C. Mr. I. P. Landry, the manager of the poultry department, is also exceedingly well qualified as a practical poultry man. In addition to a wide practical experience, he took the special course in Poultry at the O. A. C. and has already secured the confidence of the poultry fanciers of the province. Arrangements have about been completed with the leading Veterinary Surgeon of the Province to teach the principles of Veterinary Science, to demonstrate the proper management of horses and other stock and especially to teach the boys how to shoe all kinds of horses. Various members of the Normal School staff, as already mentioned, will teach their own respective subjects. Principal Soloan himself will teach some of the English and the fact that two other members of his staff are graduates of the Agricultural Department of Cor-

nell University, H. W. Smith and L. C. Harlow, is a guarantee of the efficient aid to be expected from that institution.

It is too soon to outline definitely the courses that will be given. The short course which was given during the months of February and March of this year was a comprehensive one, including instruction in all phases of agriculture and horticulture. In carrying on this course we were greatly assisted by some of the O. A. C. faculty, as well as by members of the Dominion Department of Agriculture. The attendance was good, especially when it is remembered that the roads were rendered almost impassable by the heavy fall of snow, there being a regularly enrolled class of 65, which, on some days, was augmented to 159 or 200. These short courses will always form a prominent feature of the college work, but no less stress will be laid upon the development of a regular course, which, as far as possible, will be modelled upon that given at the O.A.C. At present it is our intention to confine ourselves to the two years' course, and to so arrange matters with the authorities at Guelph that students desiring to do so can enter third year at that institution and study for the B. S. A. degree on a par with those who have taken their preliminary course at Guelph.

In a later article we hope to tell something of what is being done at Truro, but this brief sketch may give some idea of matters as they are at present, as well as some little view of what we look for in the future.



Editorial Reflections.



WITH this, the last number of the College year, we present agricultural descriptions of parts of our vast Dominion which are not familiar to the majority of our readers. The names of the contributors, Mr. W. D. Albright, formerly of the Maritime Farmer, and now of the Advocate, and Mr. Geo Harcourt, B.S.A., Superintendent of Institutes for the Territories, are sufficient guarantee for the worth of these articles which describe the important agricultural conditions in the East and in the West.



Beginning this year, some of the leading stockmen of the province, seeing the advantage of attracting the special attention of our readers, nearly all of whom are interested in good animals, have begun to advertise in this paper. Our readers see and appreciate the live stock advertising section, because they know that we solicit ads. only from reliable breeders. Thus with the firm foundation of reputable advertisers, and an ever increasing circle of interested readers as patrons, THE REVIEW will be able to present a much larger and more varied

section of live stock offerings in the year and years to come.



And now the editor of this section lays down his pen, to pass with his fellows into another sphere of activity. The associations have been not only pleasant but also practically helpful, and we may be pardoned if a feeling of regret prevails at separating from the institution we love, and from THE REVIEW which we also love, and for which some of us have labored. Not only those on the staff, but all the members of the class of '05, have felt a deep and sincere interest in the journal, and thus have contributed much to its success. We have seen it grow from less to more, but we still feel that its growth has only begun. Our work has been fully repaid by the measure of success which has attended it, and we look forward to the time when there shall be issued to all the lovers of rural life in Ontario, not merely an artistically bright and interesting periodical, but also one of practical benefit, a herald of the gospel of more scientific agriculture and an exponent of the best thought of our Alma Mater.



Agriculture in the Maritime Provinces.



MARITIME agriculture is rather a wide subject. An industry upon which nine-tenths of the people depend must be wide in its scope

and importance, but when you attempt to deal with it as affecting three provinces, with a range of production from the buckwheat and oats of the "North

Shore" of New Brunswick to the apples and peaches of the Annapolis Valley, you are called upon to compress within the limits of an article too much for comprehensive treatment. I shall, therefore, confine myself to a few phases, which I hope may be of most interest to REVIEW readers.

The climate of Eastern Canada does not differ to any great degree from that of the inland provinces. Somewhat the same range of latitudinal variation is found between Southern Nova Scotia and Northern New Brunswick as between Point Pelee and Ottawa, except that the mean in each case is a little lower, the summer more so than the winter. The precipitation is heavy and the hot, parching summer almost unknown. Last year, it is true, the drought in Nova Scotia and Prince Edward Island was severe, but being so rare it occasioned unwonted distress. A southern Ontario farmer would experience a succession of such seasons without more than a kick about dry weather and unusual precautions in curing the grain straw. He would plant an extra acre in oats and pease, and a couple in corn to soil his stock, take extra pains in cultivating the corn and roots, and skimp through the year impoverished but still in business. The easterner, on the contrary, long accustomed to rely upon timothy hay, oats and buckwheat, was pitifully helpless, and but for the free transportation of hay from Quebec, would have been stranded high and dry. Many suffered acutely, and cattle worth thirty dollars were freely offered for ten. I dwell upon this as significant in showing the helpless dependence which a hay and grain system imposes upon farmers



REV. FATHER BURKE,
The Leading Agricultural Spirit of Prince
Edward Island.

who follow it, and also in pointing the observation that the eastern climate is usually beneficent in rainfall.

As might be expected, too, this seagirt country is free from extreme summer temperature. Ninety in the shade is "fierce" at Sussex, thirty miles inland, while the coast knows no such sweltering heat. Cool summers, delightful Julys and Augusts are the rule everywhere, a fact revelled in by the army of New England tourists who annually flock "down to the Provinces," as Torontonians seek the shady nooks of Muskoka. The growing season opens about a fortnight later than in Central Ontario. Seeding grain is finished the last of May, sometimes the first of June. Nature is leisurely and does not severely chastise

the husbandman if he tarries long at his seeding. There is no succeeding period of drought to bake the ground and stunt the belated seedlings. The whole summer is an Ontario May or June, leafy and fresh and green. There is plenty of time and the people take it.

SOIL LIGHT—THE MYSTERY OF THE MARSH.

The soil is almost uniformly light. An Ontario clay loam would be here considered a stiff clay, the genuine clay of the Upper Province being, so far as my observation goes, practically unknown. About the only exception is the dike lands bordering the Bay of Fundy. These, reclaimed from the sea-marsh by a system of embankments and ditches which allow the tide waters to flow up the streams and, submerging the low land back from the shore, deposit a sediment and then drain readily away instead of lying stagnant and preventing the growth of anything but seaweed, repeating the inundation until the land has been built up several feet above the layer of weeds and moss formerly on the surface—these dike lands are a most mysterious thing to those uninitiated in the art of building them up. For be it understood that the work is not complete with the "making" of the marsh, the dikes must be kept up, the ditches cleaned and periodic flooding resorted to that the amazing fertility may be maintained. Marsh land, has, moreover, the disadvantage of being hard to work and is given little tillage, being cropped repeatedly to hay, either the indigenous wild grasses or the "English" hay, timothy and clover, mostly the former, for the trefoil is, by contrast with Ontario, almost an exotic in Maritime Canada.

The marsh is valued as high as two hundred dollars an acre, being owned

and cropped by homesteaders living on the bordering high lands. The hay is hauled off, some of it sold and the rest fed to stock. In this way many of the more thrifty have greatly increased the fertility of their upland and the richest farmers of the Provinces are these cattle feeders of the marsh counties. The line between the marsh and the upland is usually quite sharply marked and as the principal marsh area is tributary to the inlets and streams a large number of farmers have holdings thereon and the crop from the thousands of acres is handled better than might be thought possible. Most of it is housed or stacked until winter and the sight of the immense level plains dotted with barns or with conical haystacks set on stake or pile foundations arouses the curiosity of railroad travellers all around the Bay. The complaint is heard, though, that the marsh is running out, that much of it is in need of another great flooding. Sometimes, indeed, it gets an unexpected deposit, as for instance this year when an unusually high tide broke through the dikes in many places, notably at Nappan, N. S., washing up into a great tangled windrow thousands of tons of hay that was lying in the swath. Superintendent Robertson of the Experimental Farm, estimated the damage to their dikes alone would require a hundred days' labor, besides a share of communal taxation to repair the general or larger dikes. So the dike land real estate holders have troubles of their own. This year the drought was more severely felt by them than by the upland farmers. Then the mere taking of a crop without sowing has a tendency to induce lack of thrift. Thus it happens that little dairying is carried on here, the farmers being content with the smaller but easier profits of feeding beef cattle; and so, while many are well off, they have not made



Turnips are a Great Crop Down East.

out of their holdings nearly what they might. Some go so far as to say that the upland farmers are the more fortunately situated, but while there are reasons for the opinion, it may be partly a case of "sour grapes."

FRUIT AND GENERAL FARM CROPS.

Fruit raising is more and more popular. It has long been an opulent business in Western Nova Scotia, while of late years Prince Edward Island has leaped into prominence by the luscious luxuriance of her horticultural products. Nowhere has any branch of farming made such marvellous progress in the last ten years as has fruit-raising in the Island Province. Most of the credit for this is due the P. E. I. Fruit Growers' Association and especially its whole-souled, enthusiastic, and practical president, Rev. Father Burke, who has done more for Maritime agriculture than any other man at present on the scenes.

New Brunswick also is awakening horticulturally, and before many years,

apples and strawberries will supply the revenue formerly derived from lumber, fish, and shipbuilding. The clearing of the forest will mean much for Eastern Canada. Once the ready dollar can no longer be made in the woods the farmers will of necessity turn their minds to the study of farm problems with the earnest singleness of purpose which alone can make for progress.

On the general farm, the leading crops are timothy, oats, buckwheat, and potatoes. Turnips too are a great crop, yields of 1000 bushels per acre being not uncommon. The acreage, however, is not half what it should be. Mangels are not so successful, neither soil or climate being well adapted to them. Most of the soil is deficient in lime and potash, a fact which undoubtedly accounts in fact for the somewhat unsatisfactory experience with clover.

THE PEOPLE AND EDUCATION.

Nowhere in Canada is there a more stalwart, intellectual, and liberal-minded

people than in the Maritime Provinces. The pity is that so few of the leaders turn their attention to Agriculture, a combination of causes having contributed to depress the standard of this occupation and render it unattractive to the rising generation. Thus what with the waning of the lumber industry, the decline of ship-building, and the allurements of American opportunities, the young blood of the country has been drained away. The only substantial hope lies in the salvation of Agriculture, and the only hope of Agriculture is AGRICULTURAL education, in its various phases from the gardens and nature study of the Macdonald Schools to the courses of the Truro Agricultural College. To this I pin great faith, knowing the kind of men who are shaping its curriculum to be imbued with the right idea. Where would Ontario Agriculture be, had it not been for the stimulus, the encouragement, and the direct practical benefit of the O. A. C., situated as it is right among the farmers where they can keep in touch with it, and know that the problems solved and results reached are applicable to their conditions? I never fully realized what the Guelph College has done for Ontario

until I went down to the Maritime Provinces, and saw how they had suffered there for the lack of such an institution. In the East they are frequently pointed to experiments conducted at Guelph; but conditions are different, the institution is too far away, much of the instruction is beyond the farmers, none of them have ever visited it, and it is a remote affair, much as the European stations are to the Ontario farmer. The new college will in time supply the lack, bringing the gospel of scientific agricultural home to the hearts and minds of the people in concrete form. Agricultural instruction to be effectual, must be administered at short range, frequently, and in small doses, adapted to the peculiarities of the local palate. Far-reaching will be the influence radiating from the Nova Scotia Agricultural College, leavening the thought and affecting the practice of farmers in the remotest parts. The students who pass through its halls will represent but a fraction of the influence exerted. It will become as it were, a fountain of agricultural progress from which will emanate a latent influence tending to uplift and advance the occupation throughout Atlantic Canada.

W. D. ALBRIGHT.



Some Peculiarities of the North-West.

THE farmer from Ontario, the Eastern Provinces, or the student from an agricultural college, soon finds himself face to face with new problems when he attempts to farm in Manitoba or Assiniboia. It took the early settlers many years of discouraging work to find out the method of soil culture best suited to their prairie farms. So great are the differences that it has been

said that it is easier to teach one who never farmed than to persuade an Ontario farmer to unlearn, or forget, what he has been all his life learning about soil culture. This statement is no doubt far fetched, but it serves to illustrate the great difference there is in the methods of successful cultivation followed in the Western provinces. So great is the difference that some are apt to think that



With the King of the Cereals.

the scientific truths underlying soil culture in Ontario are not applicable here; but when the conditions of success are understood, it is seen that those truths still hold good.

The cause of all this trouble is the light rainfall of the North-west—not much more than one-quarter of that of Ontario. Thus we have an approach to arid conditions, which is intensified by the treeless prairie presenting favorable scope for high winds, and by a proportionally shorter growing period. However, the drier climate gives a clearer atmosphere full of ozone, and the long hours of bright sunlight give a growth that is nothing short of marvellous. These are the conditions that enable us to produce a grade of wheat superior to that produced any where else.

The *amount* of rainfall in the course of a year is not always a safe guide, but the *time* it falls in relation to the growing crops is the point to consider. June is our month for rain. By this time the wheat is almost shading the ground, and the very best conditions presented for

holding all the rain that falls. Occasional showers during July and early August complete the growth, and once harvest commences little rain is wanted, and as rule we get very little until the fall comes on. The last few years have been exceptions to the above, too much rain having fallen in July and August, causing increased growth and consequently late ripening which brings the crop dangerously near to early fall frosts. The ideal season gives but little rain in July and August—just enough to help fill the grain—and these two months permit harvesting, stacking and threshing to proceed with dispatch. A high stubble is left in order to hold snow during the winter to supply moisture, and to lessen the amount of crop to handle. If heavy rains fall just before freezing up so much the better. Very little comes in the early spring, and the crop must depend on the moisture stored in the soil.

One of the first lessons the early settlers had to learn was that the tough prairie sod could not be plowed deeply,

like a timothy or clover sod, and a successful crop obtained. The reason is that there is not moisture enough to rot the sod until the June rains come, after which the season is too short. By and by this was found out, and also it was discovered that better results were obtained by breaking as shallow as possible and in time for, or immediately after, the rains. In this way the sod was easily rotted, and a great store of plant food liberated that would grow a profitable crop the following year.

Continued cropping of the land with wheat after wheat soon causes a diminished yield; not because the land becomes run out, as some supposed, but because the demand of the crops for moisture has exceeded the supply obtained by rainfall, and the natural reserve of the soil has been exhausted. To remedy this situation summer-fallowing has been resorted to, and by it a year's moisture is stored to help the crop the following year. This has not proved a remedy for true soil exhaustion, however, being nothing more than the whip to the tired horse. It has prolonged the crop giving power of the soil, but it adds nothing to the fertility of the soil. On the contrary the increased amount of moisture and greater exposure to the action of the atmosphere through cultivation causes a more rapid decay of the vegetable matter in the soil, and consequently a greater liberation of the plant food nature has so bounteously stored in the prairie soil.

Years of such work soon puts the soil in a condition that it "blows" or "drifts," just like snow, with the light winds in the spring before the new grain is big enough to protect the soil. Sometimes the soil round the roots of the grain is carried away to the depth of an inch or two, leaving the plant standing up out of the ground. The particles of soil lifted by the wind strike the leaves of other plants cutting them off. The cause of this condition is that the root fibres of the prairie sod have all become rotted by continued tillage, and there is nothing to bind the soil together.

The cure for this is not more summer-fallowing but more grass. The land must be seeded down to a crop like brome

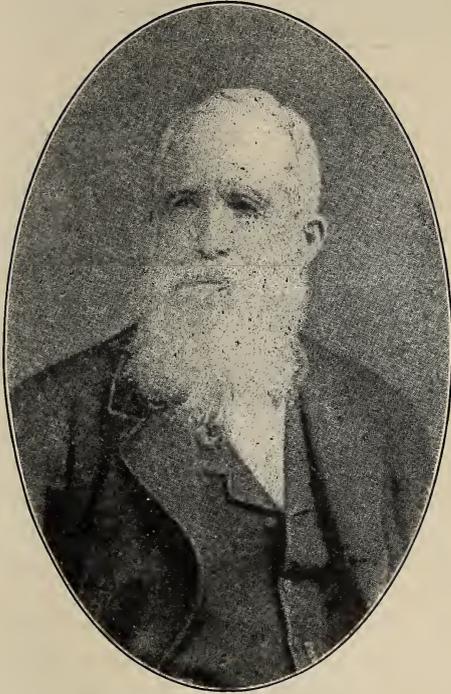
grass, which will fill the soil full of roots, these again furnishing the binding material, which will prevent the wind lifting the fine particles. This is no theory, for it has been proven time and again. No one ever saw newly broken prairie sod to "drift." Soil drifts only when the grass roots have all decayed, and the resulting humus has been dissipated.

One more point in this connection. A study of prairie soils reveals the fact that humus is the great water holding substance and that a supply of it must be kept up if successful crops are to be obtained. Continued cropping and summer fallowing without returning anything in the way of manure not only reduces the available plant food but the power of the soil to hold moisture as well. Thus the farmer's chance of obtaining paying crops, though increased for the time are none the less diminished for the near future. Research has also shown that the humus of the prairie soils, besides being the great water holding element is also the greatest plant food holder. It has been found that from 60 to 90 per cent. of the available nitrogen of the soil is held by it, and that fully 40 per cent. of the available phosphoric acid is also within its grip, while a large percentage of the potash is also to be found in the same connection. It will thus be seen that the vegetable matter is the most valuable constituent of a prairie soil—in fact the life of the soil. Yet little attention is paid to the retention. The day has already come in some districts where diminished yields tell their own story if farmers were only to read the signs of the times. The last three seasons there has been plenty of moisture and good crops as a consequence. But a day of reckoning is coming when the dry years set in again. The increased amount of moisture is only causing a faster destruction of the humus of the soil, and with dryer years the land will soon drift. The wet years are also encouraging lax methods of cultivation. These may be successful in wet years but the man who practices them will be the loser when the lean years of moisture have their innings.

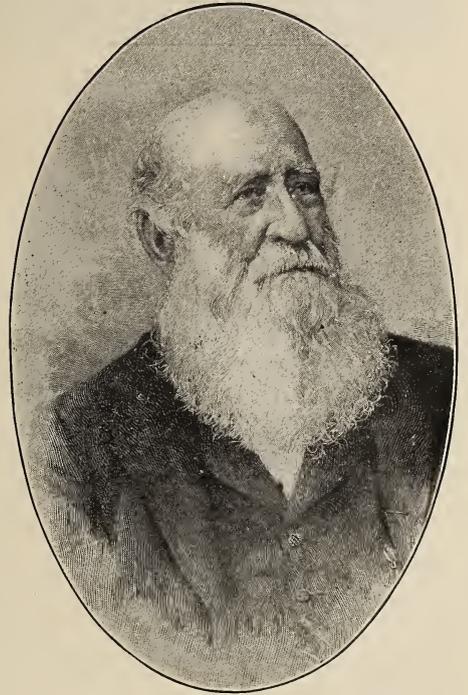
GEORGE HARCOURT, B. S. A.

Experimental

English Experiment Stations.



SIR J. B. LAWES.



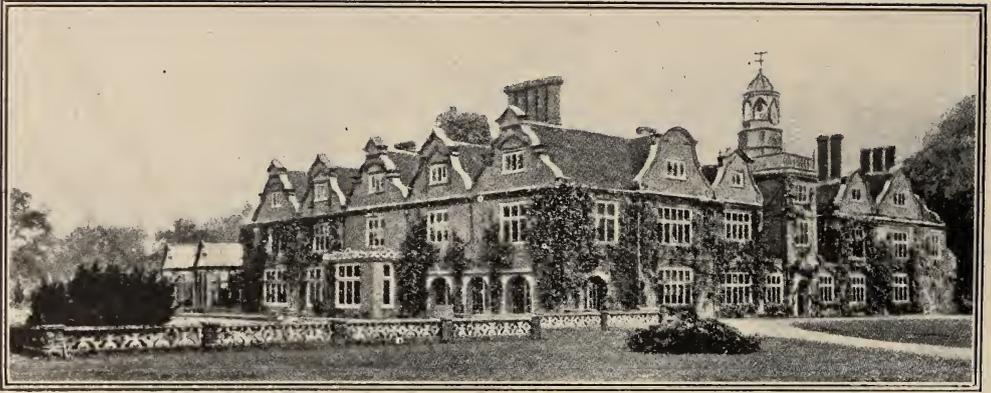
SIR J. H. GILBERT.

IN the county of Hertfordshire, England, about twenty-five miles north of London and four miles north of St. Albans lies Rothamsted Manor, perhaps the most famous Agricultural Experiment Station in the world.

The history of the manor is extended and varied. It was held successively by several different families until the year 1623, when it came into possession of the present owners. Since then the estate

had been handed down by hereditary succession until it was owned by Sir John Bennett Lawes.

The Manor House of Rothamsted, like that of many of the English estates, is very old. Before America was known to the civilized world, this residence, which was destined to become the home of the greatest of nineteenth century scientific agricultural investigators, was in existence. It was built in 1470 and with some modifications made about two



Rothamsted Manor House.

hundred years later, and an extension made by Sir John Lawes, has served as a home for the various owners of Rathamstead during the four centuries which have since elapsed.

Sir John Lawes was born in 1814 and received his education at Eton and Oxford. During his college courses he was greatly interested in science, particularly chemistry, but he said himself that it never occurred to him that there might be any relation between this science and agriculture until years later when he started work on his own farm. This was in 1834, which date marks the transformation of Rothamsted Manor from an ordinary farm into a scientific experiment station.

The innovation of agricultural experiments by Lawes, like many other important movements, had a very simple origin. It was noticed that on some farms bone was invaluable for the production of a crop of turnips, while on other farms it had no effect. This was brought forcibly to the attention of Lawes, as he had spent considerable money at home, with no results. He therefore determined to investigate the cause, and then started a series of experiments which have been continued ever since, and have proven of inesti-

mable value to the agricultural world. The work of investigation soon became too heavy and complex for one man, and in 1843 Dr. J. H. Gilbert was appointed chemist at Rothamsted and since then has shared equally with Lawes in the work conducted.

With an exception Rothamstead is the oldest experiment station in the world. The earliest one was established by Boussingault at Bechelbram, Alsace. The earliest German station dates back to 1852 while the first one in America was started in Middletown, Connecticut in 1875.

From 1843 Lawes and Gilbert worked together for nearly sixty years, and during that time the work accomplished has been such that it demands recognition as the most valuable done by any one station. Sir John Lawes died in 1900 and a little over a year later his death was followed by that of his lifelong colleague.

The investigation work undertaken at Rothamsted covers a large field. An immense amount of work has been done in connection with field experiments for the purpose of determining the adaptability of different crops to different soils, the advantages or disadvantages of various methods of cultivation and

rotation, the effect of different fertilizers upon different soils and crops, the constituents lost in drainage water, and many other features relating to crop production. Valuable investigation has been conducted relating to the evaporation of water by plants, and more important, the assimilation of nitrogen by the legumes.

Experiments have also been conducted with animals with the object of finding the comparative fattening qualities of the different breeds and the rate of gain at different stages in life. The proportion of fat, nitrogenous matter, and ash in the animal at different ages was determined and also the extent to which this is influenced by condition and feed. By careful feeding tests and chemical analysis the functions of the various food constituents in the animal body have been determined. By this method Lawes and Gilbert demonstrated that animal fat may be formed from carbohydrates, a doctrine which until then had found little acceptance among physiologists. The analysis of the whole bodies of animals furnish information as to the loss of ash constituents which a farm sustained by the sale of stock.

In the laboratory much valuable investigation has been conducted in determining the constituents essential for plant growth, the amount and variety most needed by the various crops, the power of the different soils to retain the various fertilizing constituents, the distribution and functions of the elements in the plant, and many other interesting and important points. Among the earliest systematic field experiments were those conducted for the purpose of determining the influence of the different fertilizing constituents upon the various crops. By these experiments the great dependence of the cereals upon the supply of nitrates within the soil has been shown, also the greater influence of artificial supply of phosphates upon barley than upon

wheat; the greater influence of alkali manures upon wheat than upon barley; the extraordinary effect of phosphates upon turnips, and the comparative indifference of mangels to this manure; the want of effect of ammonia salts and nitrates upon leguminous crops and the beneficial effect of potash.

The experiments with the production of wheat under various conditions are among the most important conducted at Rothamsted. These experiments were started in 1834 and have been continued ever since. Wheat has been grown continuously on the same land in three different sections, each section receiving the same treatment throughout the experiment. The sections were as follows: (1) without manure; (2) with farmyard manure; (3) with great variety of chemical fertilizers.

The plots receiving no manure produced an average of of $13\frac{1}{2}$ bushels for fifty years, which is more than the average yield of the United States. For the first few years the decrease in yield was considerable, but soon a stage was reached when the yield became almost constant, varying materially only with weather conditions. The yield from the plots on which farm-yard manure had been applied, averaged $33\frac{1}{2}$ bushels per acre for fifty years, or two and a half times the average produce of the whole wheat land of the world.

The results from the artificially manured plots show that mineral manures alone gave an increase of about 2 bushels per acre; that nitrogenous manures alone gave considerably increased returns, but that a mixture of the mineral and nitrogenous gave by far the best results.

It has been clearly demonstrated in these experiments that wheat can be successfully grown on the same ground for an indefinite length of time. It is also shown by experiments with other crops that wheat will give the largest weight of produce per acre of all the crops grown under these conditions.

In connection with these wheat plots, careful investigations have been made relating to the loss or utilization of the soil nitrogen under these various conditions. An analysis of soil from the plot on which farmyard manure had been applied and the unmanured shows a heavy loss of nitrogen from the manured land. During the fifty years cropping the manured plots yielded about 1600 pounds more nitrogen in the crop produced per acre than the unmanured. Analysis of the first nine inches of soil shows the manured land to contain about 2,500 pounds of nitrogen per acre more than the unmanured. Of the total 10,000 pounds of nitrogen estimated to have been applied 1600 have been recovered in increased crop and 2500 pounds are found in the surface soil, leaving approximately 6,000 pounds to be accounted for otherwise. In the second nine inches the nitrogen content is practically the same, in fact the subsoil of one of the unmanured plots is actually richer than that of the manured plot, and in the third depth all are practically alike.

The analyses of the plots on which mineral manures alone were applied reveal about 200 pounds more nitrogen per acre in the soil in spite of the fact that larger crops have been removed. The difference is to be attributed to crop residue, and the fact that the plot manured with minerals is now richer in nitrogen is due to the storing up in stubble and root residue a portion of the natural soil nitrogen which without mineral manure to aid in its assimilation would have been lost, as in the unmanured plots.

An examination of the plots in which nitrogenous manures were applied shows, as in the other cases, an increase of soil nitrogen with an increase of crop. The whole series goes to prove that an increase of soil nitrogen follows an increase of crop, an increase of crop following an increase of nitrogen applied as ammonium salts or nitrates, provided that plenty of mineral constituents are also present. That this increase is not an actual accumulation of manure is shown by the fact that even when the application of nitrogen is constant the

smaller the crop, the less nitrogen is retained in the soil. The more completely the crops have been enabled, by the supply of minerals, to utilize the nitrogen supplied, the more have they accumulated in the soil; and inversely the smaller the amount utilized by the crop, the less retained in the soil.

From the Broadbalk wheat fields of Rothamsted we see that for a crop to utilize the soil nitrogen to the best advantage, the heaviest possible crop must be produced by the application of sufficient mineral constituent to stimulate the best growth. A small crop in every case means a loss of soil nitrogen while a heavy crop means the greatest utilization and least loss of this constituent.

An outline of some of the work attempted and accomplished at Rothamsted has been given although it is impossible in this space to give anything like a comprehensive idea of the field which the investigations cover. The confidence which the public places in the work is shown by the fact that nearly all of the newer stations take their plans of operation from Rothamsted, and the conclusions arrived at here are considered the highest authority.

Although the institution has lost the services of the two men who conducted the work together for nearly sixty years, there is every reason to believe that the work of the station will continue. Sir John Lawes desired that the work which he started be kept up and for that purpose he converted a private into a public institution and liberably endowed it, so that under the capable management of the excellent men now in charge the work of investigation should continue uninterrupted.

GARTON'S EXPERIMENTAL GROUNDS.

One of the most recent innovations of agricultural science, and one which opens a field of almost boundless possibilities is the production of new and improved varieties of cereals, clovers and grasses by the process known as "plant breeding."

In this, as in other agricultural work, the Britishers are active. They have already produced many valuable new



New Breeds of Farm Plants at Garton's Experimental Grounds.

varieties. The most prominent station engaged in this work is that of the Garton Bros., situated in Warrington, where large grounds are devoted to the work. The process of cross-breeding cereals was undertaken first and has been carried on most extensively by the Gartons. It was Mr. John Garton, who conceived the idea of extending and applying the same methods to forage plants. He has devoted his whole energies to this work with the result that many new and promising varieties of forage plants have been born and are in the process of evolution.

The "Abundance" Oat is one of the valuable varieties produced by cross-breeding. This oat has a simple pedigree being the product of a cross of the "White August" upon the "White Swedish." This new variety has won more prizes than any other at the English shows and has made a very creditable showing in Canadian tests.

New varieties of value are not always produced so easily; some varieties being the result of crosses and re-crosses of six or eight distinct varieties or hybrids. For the production of "Excelsior" black Tartarian oat, "Abundance" and "Black Tartarian" were crossed and also "Pioneer" and "Scotch Potato." The hybrids produced by these two crosses were then crossed and the product was "Excelsior." Some varieties of barley have even more extended pedigrees than this, while most of the valuable varieties of wheat have been produced by the use of several varieties and hybrids.

The work with clovers was started about 1890 and since then many interesting points have been brought out. Experiments were conducted to determine the relationship between common red clover, *Trifolium pratense*, alsike clover, *Trifolium hybridum*, and white clover, *Trifolium repens*.

In 1893 Mr. Garton began his work on grasses. Owing to the great number of grasses he began by selecting those species and varieties which he considered the most useful and most capable of improvement. For the work on grasses he has confined himself to the rye grasses and Fescues.

Many crosses have been tried resulting in a great variety of variation. In these grasses conditions for excessive variation are found; the previous fixity of type, and the wide apart kinship. When fixed types have been developed composite crossing will be applied and other changes will occur, ultimately, however, fixed and settled forms will appear and by selection from these the best will be secured.

The work of "plant breeding," as carried on by the Garton Bros., and from a later date by other investigators is as yet only in its infancy, but sufficient has been done to demonstrate the work. The work has been taken up in Europe, United States and Canada and is now being carried on quite extensively at the different experiment stations. The progress made will be watched with interest and if present expectations are realized the work will be of inestimable value to agriculture.

horticulture

The Apple Industry of Ontario.

THIS subject may be best understood by dividing the Province into four sections :

(1) The Lake Erie counties and the Niagara Peninsula.

(2) The Interior and Northern counties bordering on Lake Huron.

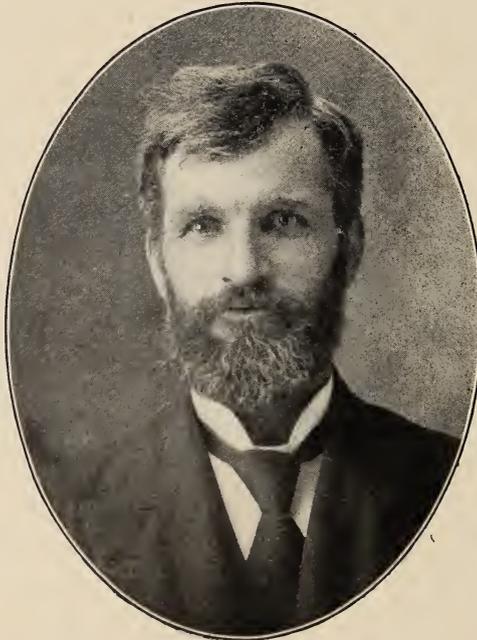
(3) The district north of Lake Ontario and a portion of the Counties of Grey and Simcoe bordering on the Georgian Bay.

(4) The Valleys of the Ottawa and the St. Lawrence.

The most noticeable feature of the industry is the fact that in some districts orchards bearing full crops of the most luscious fruit are being chopped down to make room for ordinary farm crops ; while in other districts, noticeably on Lake Ontario and the Georgian Bay, orchards are being planted with increased rapidity. It will be an interesting task to trace the cause for this difference and make, perhaps, a few suggestions for the improvement of the trade,

The counties North of Lake Erie were planted quite early in the history of the Province, and this district was long regarded as the special apple growing district of Ontario.

Later it was noticed that though apples from south excelled in size and colour they were inferior in keeping qualities. As the Northern orchards more completely supplied the winter market the apple operators abandoned these Southern districts, which could now only place their product upon the precarious market of the summer and fall months. In short, the genial climate, which has made the fortune of this region in growing tender fruits



A. McNEILL,
Chief of Fruit Division, Ottawa.

such as peaches, plums and cherries, was a decided detriment in the case of apples when the keeping qualities became an essential feature. Some of the early varieties are in full bloom in Essex County the first week in May, while in Lindsay they are not in bloom until the third week of May. This

means that the apples are mature the latter part of September or early in October in the Southern counties and not till the latter part of October or first of November in the North. Ripening at this early period the Southern apples, under ordinary circumstances, have to go through three weeks of warm October weather which hastens their maturity to decay and renders them unfit for storing. This, however, is only one cause of the decline.

Another will be found in the varieties which were planted. In the early history of orchard planting it was deemed essential to have ten or twelve varieties covering the entire season. Many of these varieties, of the choicest flavour, are poor keepers, rendering the case still more hazardous. This again did not lend itself to the ordinary system of selling which is in vogue in Ontario. The operators could not harvest such orchards in a wholesale way. It cost too much to move a gang of pickers and packers from orchard to orchard to visit the same orchard more than once or twice at most. Hence this district was abandoned for the most part and given over to the buyer who could get fruit at his own price and who very frequently would manage to get out without paying any price at all.

Added to this came the difficulties of transportation. The increased business of the railways, especially during the fall months, made it very hard for them to supply cars. Even if the freight rate had been moderate, which it was not, it was usually impossible to get cars with any degree of promptness, so that the apples suffered a still further deterioration piled in the orchard, or, worse still, at the railway station for weeks sometimes, unprotected from sun and rain and all the other vicissitudes of weather.

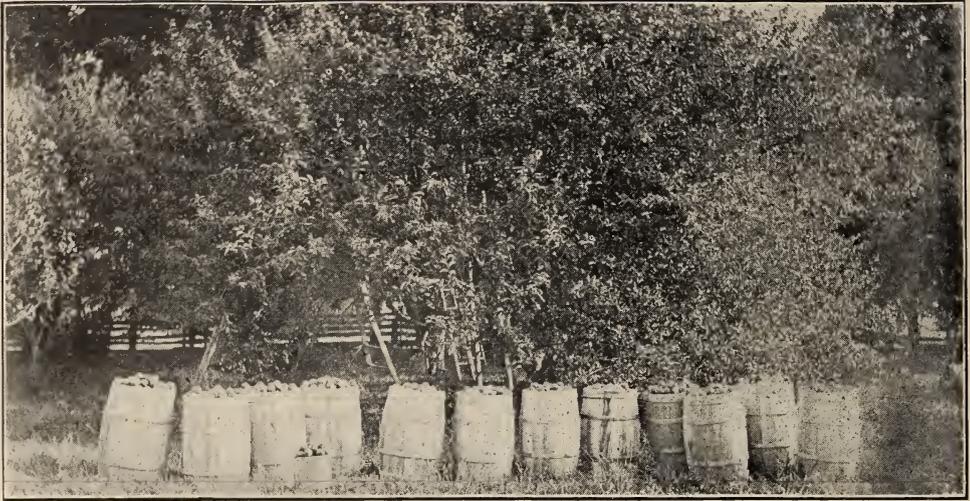
On the top of all this came the scarcity of package material. Barrels that in the early history of the business could be obtained for 20 or 25 cents a piece went up to 40, 50 and even 75 cents each, a prohibitive price for anything but the very choicest stock. Such was the history of the apple business in the Southern counties.

The decline that is to be noted in the Lake Huron and interior counties is the result of very similar causes with this difference that this district has a splendid climate for growing the best keeping varieties. It is far enough North and high enough to be in that happy medium of climate, not so cold as to jeopardize the tree and yet cold enough to retard the apple so that it only comes to perfection just as the cold weather of winter is approaching. Thus the most serious difficulty that threatens the industry in the South is not in evidence in these counties.

They have, however, in a more acute form the evil of small orchards. Every farmer has one, two or three acres; an orchard of five acres in extent is considered a large one and there are very few who have ten-acre orchards. The evil of mixed varieties is also quite as great; and the transportation question is ever present with them, as well as the difficulties with regard to barrels and boxes.

In both districts the reduced revenue from the orchards has led to their neglect, spraying and pruning is not done, and, as a result, the quality of the fruit has deteriorated and what is undoubtedly one of the best apple growing regions in the world is likely soon (unless some remedy is found) to go out of apple-growing altogether.

The Lake Huron and Georgian Bay district is not more favoured in the mat-



Fruit in Western Ontario.

ter of climate and soil than the Lake Ontario district but it has the advantage that the growers went into the business later and corrected some of the mistakes made by the earlier planters in the West and South.

Their climate being right and the soil exceedingly fertile their orchards have yielded well and the apples keep to perfection. They planted fewer varieties and larger orchards. Consequently prices are higher as the fruit can be harvested cheaper and shrinkage in the orchard is less.

Apart from the climatic considerations and the matter of varieties no element has had a greater influence than the size of the orchards, because the large plantings made a specialist of the owner of the orchard. He had a sufficient interest at stake to induce him to secure the best implements and all the knowledge that was available on methods of culture and care of his product. The success of this business attracted a better class of men as buyers and dealers, and the evils of the transportation and package problems, although still serious, were minimized.

When we come to the fourth division of Ontario, the Ottawa and St. Lawrence Valleys, the problem is an altogether different one. In this district the climate is too severe to attempt to grow the long keeping varieties. Only the hardiest trees will stand the severity of the winters, and unfortunately the hardiest trees are not the long keeping varieties. Nevertheless, there are always compensations. If the people of this section cannot grow the long keeping varieties they can grow the most delicious of the fall and early winter dessert apples. The Fameuse and McIntosh Red of this district have a world wide fame, not alone for the beauty of their appearance but also for the delicacy of their flavour. It is safe to say that nowhere else in the world is there a higher flavoured apple than those of the Fameuse type; but unfortunately the evils of Western Ontario are not altogether absent in Eastern Ontario. The Fameuse type is indeed delicious and prolific but it is also very susceptible to the black scab. So delicate too is its texture that the ordinary rough methods of handling in barrels are alto-

gether unsuitable to it. The orchardists have not yet developed the skill which is necessary to handle this apple as it deserves, and consequently it has failed to yield the profits which might well be expected from such a product.

Looking over the whole area of Ontario then the first suggestion that strikes us is that before any improvement can take place in the products of the orchard better care must be taken of the orchards. In Southern Ontario it would look as if they must either secure new markets or do as they have done in the Northern States—develop cold storage. There is every reason to believe that, if the apples of Southern Ontario were placed in cold storage as soon as they were mature in September or early October, their keeping qualities would be little inferior to those of the Northern grown apple. To be sure this would add about 25 cents per barrel to the cost of production but the superior size, colour and perhaps flavour would more than compensate for this increased cost, and once more enable the orchards of the South to flourish. It would seem that with the splendid facilities they have for shipping by steamer from Detroit River points they might again capture the Northern Lake trade for early fruit, and perhaps dominate for the early part of the season the North West market. It is certainly worth trying.

In the case of the Lake Huron district it would appear that in addition to better care of the orchards larger plantings should be encouraged, along with the top-grafting of the inferior varieties of vigorous trees. These improvements, together with the formation of co-operative selling associations, should give the orchards here a new lease of life. Indeed, the reformation has already begun.

At Walkerton and Forest there have been established co-operative associations, which show that as soon as a profit is assured the rest of the problem is comparatively simple. These co-operative associations, by introducing a better method of packing and selling, have induced the farmers to take up the question of pruning and spraying which was before neglected. They have purchased their packages at almost one-half the cost wholesale that they formerly gave when buying as individuals, and the railway companies are dealing much more generously with the co-operative corporations than they did with individual shippers. At the same time, the customers in the North West are ordering with more confidence, so that it is safe to say that many apples were ordered last year by dealers in the North West simply because they were dealing with a large co-operative society whose reputation was at stake. This led to larger and more frequent orders and greatly facilitated trade.

The apple growers of Lake Ontario and the Georgian Bay look more particularly to the export trade, and they have problems, serious ones, which are looming up larger and larger each year—for instance, the transportation problem. Winters similar to this and last winter will call for radical changes in the methods of shipping. Indeed, it is doubtful whether the system of storing at points so distant from the sea port as Colborne, Brighton, Trenton and Belleville will longer be tolerated. For many weeks at a time it was impossible to ship with any degree of safety in the cars that were supplied, and, even if there were no dangers from frost the delays in reaching the vessels render the trade somewhat precarious. There were

grave difficulties in shipping for any particular market and hence an uncertainty about the trade that rendered it largely a speculation. For these reasons it is not improbable that a large store house will be established at St. John, N. B., to which the apples can be shipped in the early fall and where they can be kept under conditions quite as favourable as in Ontario and be shipped as soon as they are packed.

The suggestion that could be made for the improvement of the apple business in the St. Lawrence and Ottawa Valley, where the industry gains ground very slowly, is largely in a better system of packing and selling the product. It is very true that there is the same neglect here in the matter of pruning and spraying that we find elsewhere but a better

method of packing, co-operative perhaps in its nature, and a better method of selling, where their product would be placed upon the market not to compete with the common stock but as a luxury commanding extra prices and put up in packages that would be appropriate for this trade. A Fameuse or McIntosh Red never ought to be packed in a barrel. Not only should they be packed in boxes but only perfect specimens should be shipped, and these deserve to be wrapped separately in paper. When the product of this district is placed in this way there is no reason to doubt that there will be even greater profits in orcharding in the Ottawa Valley and Eastern Townships than there are in Western Ontario.

A. MCNEILL.



C. P. R. Westbound.

I swing to the sunset land,
 The world of prairie, the world of plain,
 The world of promise, and hope, and gain,
 The world of gold, and the world of grain,
 And the world of the willing hand.

I carry the brave and bold,
 The one who works for the nation's bread,
 The one whose past is a thing that's dead,
 The one who battles and beats ahead,
 And the one who goes for gold.

I swing to the land to be ;
 I am the power that laid its floors,
 I am the guide to the western stores,
 I am the key to its golden doors,
 That open alone to me.

—E. Fauline Johnson.

The O. A. C. Review

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After he has studied the elements and practice of a science for four years, applied it during his vacations and contemplated it as a life work, it is only reasonable to suppose that a man with maturing faculties can select some simple problem concerning his special branch of work, and concentrating upon it his own innate measure of originality, as developed by his training, so apply his newly found knowledge that he would be able to show himself as a potent factor by devising such means of wrestling with this question as will provide for it a practical and logical solution. By so doing he is forging the connecting link between his age of development and his age of usefulness. He is strengthening his excuse for going to college, and is proving to those who have spent years of labor in educating him that he was

The Thesis Question.

worth it, is showing how he will deal with the larger obstacles of active life and himself gaining an insight into the methods, discouragements, pleasures and final triumphs of "something accomplished, something done." This is the theory of the thesis.

How it differs from the practice is well known and easily shown. The most prudent student does little worrying about it before the end of his junior year. He is then more impressed by the stack of prescribed work as compared with the magnitude of his ignorance, than he is by the shadowy thesis, which as yet is somewhat intangible and not connected with any well formed ideas. He probably has not yet definitely decided just in what phase of activity he will cast his lot. Yet he has well defined purposes of writing his thesis on some live topic which is the centre of the

profession he will adopt. Finally, the day of reckoning approaches and no subject is yet chosen; there is much work to do, everything is pressing, and overcome more by the shadow of definitely allotted subjects than by the shade of the thesis the unfortunate candidate casts about him for something plausible and easy. There are many subjects which require neither the worry nor the brain wracking concentration which produce ideas, but which pass for original investigation. After a hurried consultation with the head of the department, and a longer and more attentive one with a bulletin thesis work is begun, and finally a product appears which stands for no more than a certain stereotyped knowledge of formulae and routine, a mechanical manipulation of apparatus, a number of hours served in the laboratory, a ready access to the reference library and a stenographer. This is lamentable, and might be taken to show that the men lacked ability. Far from it; those who have shown the most ability in dealing with intricate problems have been the most unfortunate. Unfortunate is used because the fault lies not all with the thesis writers. There are reasons why they have not done themselves justice. The thesis has never been emphasized, and its importance never been brought home. All stress and all class work has pointed toward the written examination, preparation for which has been an outlet for all thought and energy. The choice of a subject has been postponed too long. A satisfactory agricultural thesis should be connected with plant or animal growth, and to be of value requires at least two years rather than one or less. Nor has the choice of a subject received proper consideration. Students have been allowed and even en-

couraged to select subjects for which perfect work would not secure better than second class honors. When doing this work they may accomplish something which is of value to the laboratory in which they work, but this does not begin to compensate them for that which they lost in development of originality, habit of thought, pride of accomplishment and self-reliance; nor is this value recognized by those who judge the thesis as an index of the above qualities in its author.

As students we may not fully realize the difficulties of the situation, nor do we wish to assume a dictatorial role, but we believe a few simple modifications would simplify matters. If the thesis is to be assumed to show a man's inventive and reasoning ability, and prospective value as a thinker, more stress should be laid on it during the course, so that he will worry as much about having his thesis accepted as about passing in the more difficult subjects. Those preparing to take the full course might be encouraged to select subjects of general interest, and begin work on them sooner, so as to leave time to secure results. And the subject chosen should be passed by the committee who are going to mark it, as one for which a maximum mark would be first-class honors, or failing this, the person who presented it might be warned of its low value.

When this question has been satisfactorily settled by men of experience, the thesis will become more of a definite quantity in the graduation year, and it will be still more conclusively proven that the keen and indefatigable research workers on our college staff are transmitting their most important characteristics to our graduates.

April

ON April 1st, a meeting of the Athletic Association was held for the election of officers for the coming year.

The following were the members elected :

Hon. Pres.—President Creelman.
 Hon. Vice-Pres.—V. W. Jackson, B.A.
 President—H. W. Scott.
 Vice-Pres.—H. H. Miller.
 Sec.-Treas.—J. H. Hare.

Committee—D. Weir and J. F. Monroe from the fourth year : J. Baker from the third, and W. A. Kerr and D. McKenzie from the second.

Football Manager—E. J. Zavitz.
 Hockey Manager—N. Foster.

We feel that the Association has made no mistake in their appointments and we wish the new committee every success in its work. The work of the Athletic Committee is not an easy one and never has it been harder than it will be the coming year. Many new propositions have to be dealt with and some very important changes made which will entail a great deal of work. We are quite confident that the committee are capable of this work but they need the hearty support of the other students. They are sacrificing valuable time for your benefit so give them your aid and make their work as light as possible.

THE RINK.

During the past few years, there has been a gradual increase in the interest taken in athletics at this college. Both

students and professors are coming to realize more and more their importance in the training of the "all round man." This is evidenced by the aid given by the government, as well as the staff, to the Athletic Association. The past year, basket ball and base ball have been added to the gymnasium. The coming year, we expect to have a trainer in the gymnasium and coach for the rugby team. Yet after all the progress that has been made, there is one great want which is felt by every student. That is a good covered rink.

We cannot think of a college of any note existing without some proper place where recreation and rest may be had after the hard strain of study and where an opportunity is afforded for the development of a strong, healthy physique. How could we do without our beautiful campus? This institution would not be complete without it and nothing could possibly take its place. Yet, for about three and a half months, half our college year, this campus is covered with snow. During this time, two hundred students are left without any provision for out-door exercise. If it is necessary to maintain an extensive campus for half the year, why is it not just as necessary to make some provision for athletics during the other half?

But you say we are already provided with a rink. True, at the cost of about seventy-five dollars a year, we have been able to keep a small rink in half presentable shape for about six or eight weeks

of the year. About one-third of that time, the ice is either covered with snow or too soft for skating. Such is the fruit of all the efforts put forth by the Athletic Association in the past.

Owing to this drawback the college has not been represented by a good hockey team. There is no doubt as to our being able to turn out a good team ; a team that would uphold the position

Not only is a good rink necessary to uphold our position, but it is absolutely essential to the welfare of every student. Days and weeks pass during the winter when students have no opportunity to take outdoor exercise except by tramping through the deep snow. Such exercise may be very good, but it can never take the place of a game, where the students are brought together in friendly



Love and Rackets.

of this institution and raise her in the eyes of other colleges, as the Rugby team has done. Besides, not having some such common interest among the students, the college spirit has not been kept up as it should have been. All competition during the winter has been among the various years. Among these has existed the keenest strife and often bitter enmity. This feeling breaks up the student body and as a result, all the college spirit aroused during the rugby season is lost during the winter. This may seem a minor consideration, but unless we can keep up a strong college spirit we can never hope to maintain our stand as well against the students of other colleges and upon the stand which we as students take among other students depends to a large degree the position this institution will hold.

contest, and where the heavy brain is rested and refreshed, so that when the student returns to his study, he can do so with renewed vigor and greater concentration.

So the question is, what is to be done? Are we to continue year after year paying out hundreds of dollars to keep up a mere excuse, until we have spent enough to build a first-class rink? Are we to be guilty of burying our talents and hiding our skill until we forget that we ever possessed them and scarcely see our own importance? Are the students of this college to be denied privileges and advantages of culture possessed by all other institutions? The answer rests with the students and ex-students. We need your strong support in this matter.

It may be that a few of us who are here now will not enjoy the benefits of a

good rink but is that to cause us to withdraw our support. Whether we are here or elsewhere we are still bound by the strongest ties to our Alma Mater. It is always in our interest to see her moving forward and keeping abreast of other institutions.

It is the custom in most colleges for the students on graduating to leave some memorial behind them. Until last year, no class made any donation toward the college. We are now taking this opportunity to suggest to the ex-students that each man subscribe something to a fund for the erection of a new rink. There is nothing which could be given to this institution that would be more appreciated by every one. Already one of our ex-students has recognized the need of a rink and has offered his aid. Mr. Dewar, of the class of '04, has offered one hundred dollars to start this fund. Mr. Dewar, during his college course, was a great enthusiast in athletics and literary work and did much to build up the college organizations. On leaving college he has not forgotten his Alma Mater. He has set an example that we can only hope will be promptly followed by all our ex-students. When Mr. Dewar one year after graduating is able to give one

hundred dollars, surely there are many of our older graduates who will be able to do as well.

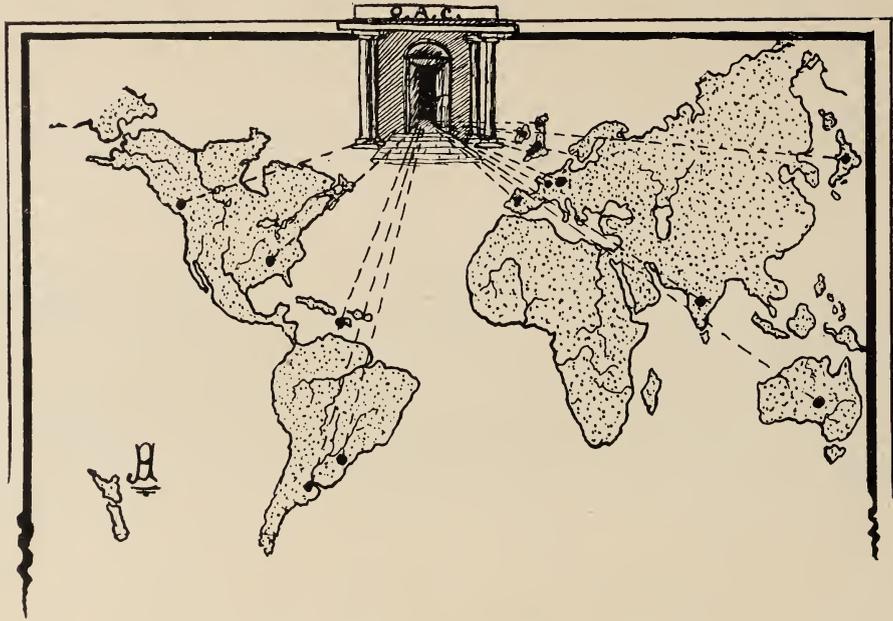
The question which confronts the Athletic Association is purely a financial one. For two hundred students, the problem is difficult, but for two thousand, it is comparatively simple. Consequently, we are forced to turn to our ex-students and ask for help. We can scarcely expect the government to grant all the money required, but we have good reason to believe that, if the students and ex-students will assume their share of the cost, the government will not withhold its aid.

This is the first movement in the history of this institution toward which the ex-students have been asked to contribute. We do not ask much but we ask it from every man. A good start has been made. Let it be continued. If the students and ex-students will but realize the importance of this long felt want and the debt which they own to their Alma Mater by giving to the Athletic Association their hearty support, the time is in sight when a large covered rink will grace the campus of the Ontario Agricultural College.

G. G. WHITE, '06.



College Life



WE present in this issue a group of men gathered from the four corners of the earth and meeting within the class room on College Heights. The body of our students of course are Ontario boys, but the number from other provinces is not small, coming as they do from Nova Scotia to British Columbia. The associates of the college, numbering over 3000, are in almost every country under the sun, and it is by means of these men that the institution at Guelph has acquired a world wide reputation, and attracts to her class rooms such a cosmopolitan body of students. During the past we have had men of many different nationalities, and this group taken from the present number on the roll, is a fair sample of

the diversity of features met here. From our neighbors, Newfoundland, and United States, from the Indies, both East and West, from various parts of South America, from England, Scotland, Ireland and Wales, from Sweden, Germany, France, Spain and Switzerland, from Australia, New Zealand, South Africa and the Islands of Japan they come each with his own national peculiarities and each exerting his quota to give a broad substantial character to the student body. The contact with such men is an education in itself. When we realize the efforts they have put forth to acquire their education here, it opens our eyes to the true value of the institution to ourselves, and gives us that incentive to reap the full benefit of her



Jamaica.

Japan.

Spain.

Scotland.

Wales.

learning. These men that come from distant parts are usually men with a purpose, and with a determination to realize that purpose. We welcome such of whatever nationality, for we feel assured that when they return to their homes, the leaven of higher agricultural knowledge will spread and not only themselves but the community in which their influence is exerted will reap the benefits of the ideas acquired here.

SOPHOMORE DINNER.

The closing hours of the Sophomore Course were spent at the tables of The Wellington. The menu and the speeches did justice to the auspicious occasion and the class may well feel proud of such a successful and pleasant banquet. The Menu Card deserves special mention, being a model of tact, elegance and appropriateness.

At the tables were seated some sixty

men and their guests. Mr. Kennedy, President of the Class, occupied the head of the table, and at his side were seated the guests—President G. C. Creelman, Professor Day, Mr. V. W. Jackson, and Mr. F. H. Reed of the staff, Mr. H. McFayden of the fourth year, Mr. F. C. Hart of the third year, Mr. J. E. Smith of the first year, and J. P. Downey, M. L. A.

The menu was rich, varied and full, and received ample justice at the hands of the guests: and if all did not also feel rich, varied and full at the close it was no fault or lack of good things provided.

After the arguments presented on the menu were downed to the satisfaction of all the toasts were in order. Class President J. W. Kennedy acted as toastmaster and in a neat and loyal address proposed the health of Our Good King, Edward VII. "Our Country" was proposed by A. D. Brodrick, and res-



France.

Argentine.

United States.

Transvaal.

Australia.

ponded to by P. M. Ballantine. V. W. Jackson, B. A., ably proposed "Our Alma Mater." To this toast President Creelman responded and spoke of the early days of the institution and of some of his own amusing experiences, when first he made her acquaintance. The virtues of "The Staff" were sung by C. G. Montgomery and humbly acknowledged by Professor G. E. Day. In proposing the toast to "Our Sister Classes," Mr. J. Baker spoke the praises of their friendly rivals in field and on platform, and received a cordial thanks from representatives of "The Brother Classes." "The Class of '07" received justice at

The occasion of the Sophomore Banquet is one of mingled fun and regret. The freedom of "Just Let Loose from School" is touched with the hand given in farewell to college friends and college associations, and though three ringing cheers shook the walls of the banquet hall, the gentle rendering of "Auld Lang Syne" reminded us that "The Best of Friends must Part," and so the Boys of '07 bid farewell to their Alma Mater, some to return to her later, others to move out and show her sterling worth to men of intelligence in the special field of activity.



Newfoundland.

Ireland.

British Honduras.

Chili.

India.

the hands of Mr. F. H. Reed and Mr. J. C. Harkness responded on behalf of his fellows. Mr. J. B. Fairbairn was perfectly at home in dealing with "The Ladies," and our loquacious friend, Mr. Garfield McKinnon convulsed the house with his humour in responding to this favourite toast. In a speech that was neat, clean and polished, Mr. R. S. Hamer proposed "The Press," to which J. P. Downey, M. L. A., responded.

During the banquet Thain's famous orchestra enlivened the moments with stirring music, and the musical numbers of such artists as Mr. Mills, Mr. Riener and Mr. Weir added enjoyment to the toast list.

Nature Study courses are now in order. At any time during the day, and sometimes on starlit evenings, groups of students may be seen seeking out the secrets of nature, and eagerly asking questions of bud, flower and insect. Revelations of the number, beauty and musical qualities of our Canadian birds daily open up to us. We are making the acquaintance of trees, flowers and plants that we shall know in future as friends. The glory and richness of awakening nature can be appreciated only by this close and sympathetic study. The subject too, if rightly approached, has its utilitarian side not only in the training it gives, but in the actual value of the knowledge it



Eight Cents an Hour.

imparts. The recognition of the species and varieties of our common trees, the grasses, the economic insects and orchard pests, and such questions have a direct interest and value to us, and perhaps it is this side of the question that appeals to us most strongly. However, our eyes are opening to the multiplicity of forms, the marvellous perfection of detail, and wonderful adaptations that nature displays in her animal and plant kingdoms.

Altogether there are about seventy-five students at present taking nature study work. About fifty of this number are teachers from the various provinces taking the three months course at the Macdonald Institute, and the remainder consists of the Third Year in the regular college course, this latter class taking a six weeks course, closing about June 1st. The situation here affords an excellent opportunity for studies of this nature. On the campus are all our natural and many horticultural varieties of ever-green and deciduous trees, shrubs of all kinds and cultivated flowers; the orchard and gardens are full of oppor-

tunities for study, and the wild flowers of the woods and river banks within easy walking distance. College Heights is an ideal place in summer.

The Seniors are at present writing the examinations for the B. S. A. degree, and by the time this reaches the readers about two dozen more men will have graduated from the O. A. C. Twenty-five men are writing and we expect twenty-five men will obtain degrees, for the '05 men are not only good as a class but we do not hesitate to say that among the number are some of the best that have ever received a degree from this college. We expect large things from these men; we expect them to use the powers they have acquired and the knowledge they have gained, not only for their own advancement but for the betterment of their country. We trust that not a few of them may aim to have a voice in the legislatures of the Dominion.

We extend the parting hand with regret, but we wish them true success, in the true and deep meaning of the word.



When We Were Freshmen.

Our Alumni

FROM the Eastern edition of the "Farmers' Advocate" to the position of managing editor of the Western edition of the same paper; then Deputy Minister of Agriculture, and now President of the new Agricultural College at Winnipeg, is the remarkably brilliant record of W. J. Black, who graduated from this college only three years ago. Black and his new job are well met; he is a good man for the position, combining, as he does, energy with ability, and marked talent for organization with a love for and thorough knowledge of his subject, he should make, in every respect, an ideal President for a college, where practical agriculture will form such an important feature.

Black's appointment is a popular one in the West; he is the choice not only of the Advisory Board but also voices the sentiments of the leading farmers and stockmen throughout the country. The Province is not acting niggardly toward the new institution; \$250,000 is to be spent on equipment, the President will receive \$2,500 and a free residence, and the Professors of Agriculture and Dairy-

ing will each receive \$2,000 per annum. With such generous treatment on the part of the government, with Black at the head to popularize it with the people, we can only predict for the new College of Agriculture an abundant and well-merited measure of success.



W. J. BLACK.

ing in the management of live stock, and is especially qualified for his new position.

J. J. Ferguson, B. S. A., '94, has resigned the position of instructor in animal husbandry at the Michigan Agricultural College, to enter a more remunerative field of labor. He is now head of Swift & Co's animal food department. We understand that he is meeting with



The Residence of C. F. Bailey, '06, Coldbrock, N.S.

marked success in his work. His address is 46, 53rd St., Chicago.



Another of the early students has been steadily progressing. In 1881, Mr. E. A. Rennie entered this college, staying only one year. Eight years later he again returned and secured his associate diploma. He is reported as having been a particularly strong man in his year and has the honor of having been the first president of the Y. M. C. A., doing very much to stimulate the effectiveness of that organization when it was still in its infancy.

While here Mr. Rennie was not only an active student but a talented nurse, much of his time being spent looking after students, who were compelled to visit the college hospital.

After leaving the college he took up missionary work with Bishop Potter in New York City. In a short time he commenced to study for the ministry at Wycliff College, Toronto, from which he graduated in 1899. Since then he has

been assistant rector in St. Paul's Church, New Orleans. Mr. Rennie has been compelled to leave the south on account of his wife's ill health, and is at present on his way to Toronto. He has been recommended by Rev. G. A. Kuhring, the retiring rector of the Church of Ascension, Toronto, as his successor. On his arrival in Toronto he will be interviewed by the wardens of the church and asked to accept the position of rector.



Another has been added to the myriad homes of earth. On the 26th of April, Howard V. Zavitz, of the class of 1900, took for his wife, Miss Genevieve Wells of Jura, Ont. The new Mrs. Zavitz has been accustomed to wielding an influence both in church and society, while her husband belongs to a family which has done much for Canadian agriculture, so that nothing but progress can emanate from their farm at Coldstream, Ont.



We are this month offering a glimpse of country life in Canada, this instance

being chosen in the far famed garden of the East, the Annapolis Valley, a locality which corresponds in this country to the Lake district of England. The many friends of C. F. Bailey, '06, commonly known as Bill, will hear with pleasure that he is operating this cosy looking farm. While here Bill distinguished himself at stock judging and society in a way which speaks well for his success at Coldbrook, and with this splendid farm as a start he is bound to make things go.



H. B. Leavens will be remembered as a lively supporter of '06, and those who knew him will envy him when they learn that he is at present enjoying himself on a fine old homestead, at Chisholm, Ont., where fruit abounds and stock grows fat. Howard's choice is however, a horse, an animal of which he is a capable judge.



Harry Storey, '93, was not held by the allurements of Colorado, but, knowing of a better place, returned to it, and with rare discrimination fastened upon Bloomfield as his home. At present he is laying the foundation for a fine stock farm, with horses as the hobby.



H. S. Wilkinson, '01, never left his books. He was for a while with the Copp Clark Co., but is now in the book department of the T. Eaton Co's. headquarters.



S. P. Brown, '89, has launched out in business for himself and still shows his predilections for the dairy interests. He is proprietor of the Maple Grove Creamery at Birnam, Ont.



M. Winter, of the class of '05, is faithful to agriculture and is the happy farmer of a happy farm at Grafton, Ont.

In the far West we find them. On May 3rd James Higginson, '01, was married to Miss Anne De Wolf at Chilliwack, B. C. The REVIEW congratulates the country.



The *esprit de corps* of our ex-student body was strongly shown when the painting of the late Professor J. Hoyes Panton was presented to Massey Library. Such movements as this serve to draw the ex-students closer to one another and to the institution and to give the students a better idea of the duties of our ex-students. This eloquent memento is a touching tribute and a loyal appreciation of the strong personality, indefatigable spirit, and successful labors of a good man and a thorough teacher.



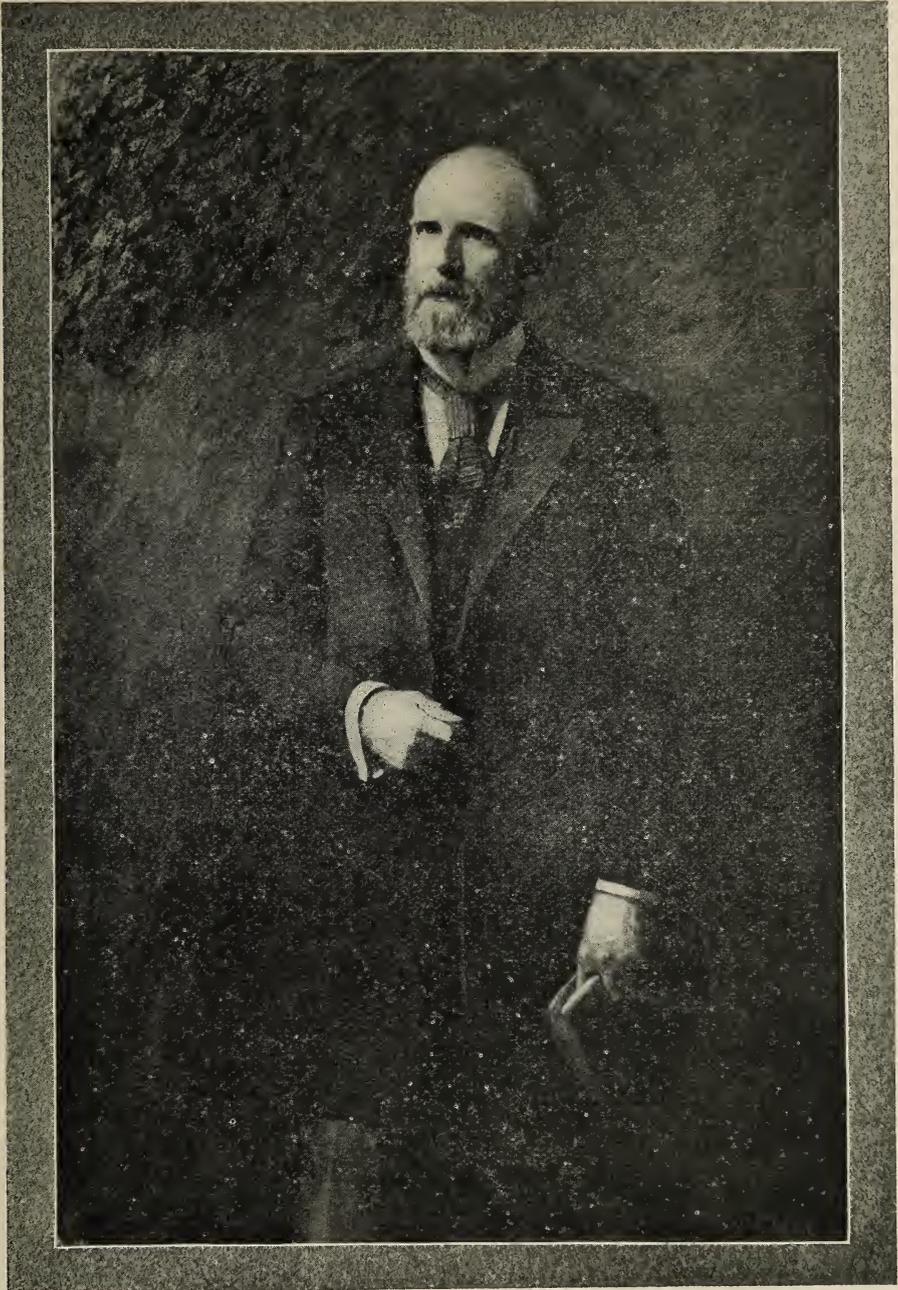
G. W. Morgan, '98, stands for better advertising and more of it. He is at present connected with one of the foremost business colleges on the continent, the Central of Toronto, as superintendent of the course in advertising.



"Andy" Robertson, '06, has gone West to grow up with the country, and is doing it fast. He has a section of good land on the plains near Rosser, Man., which seems to be an ideal summer resort, for during the past season three of the old boys were attracted thereto—R. D. Prittie, '05, H. R. Somerset, '06, and J. C. Hutcheson, '06. These chaps are all charmed with the West and the prospects are bright of sometime finding a ranch, managed and manned by boys from College Heights.



A. F. Wiancko, '00, has migrated still further and is now found trying to convert the far-famed resources of British Columbia into ready cash. Golden butter



PROF. J. HOYES PANTON.

From life size Painting donated to College by ex-Students.

is again the lure, Eden Bank Creamery, of Sardis, being owned and operated by this gentleman.

G. H. Hutton, B. S. A., a graduate of 1900, is one of the men who is making his college training tell on his own farm. After graduating from the O. A. C., Mr. Hutton immediately returned to the farm on which he was raised. While here he took an active part in all the college associations, in his final year being president of the Y. M. C. A. He proved himself to be a thorough student and also one of the ablest speakers of his time. During the last two years he has taken an active part in Farmer's Institute work, the most glowing reports coming from all quarters which he has visited. Last fall he was amongst the men, who were chosen as expert judges at fall fairs. He is at present making a specialty of dairy cattle and hogs. We look forward in the near future, to Mr. Hutton as being one of the leading agriculturists in the Province of Ontario.

"Harry" Bell, '96, is an independent man in an independent profession. He is a practical farmer and may be found at his picturesque home—"The Cedars," Colpoys's Bay, Ont.

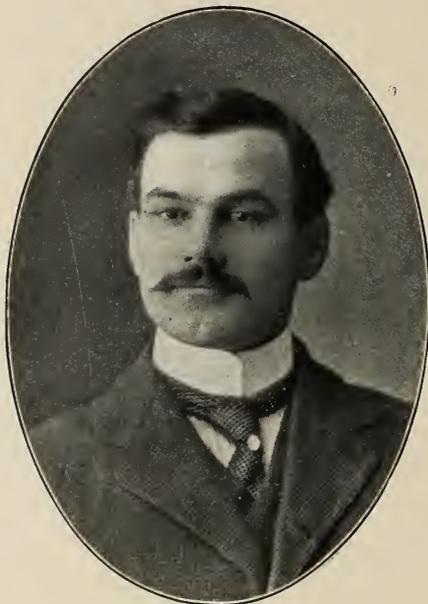
W. T. Macdonald, B. S. A., '03, represents large interests. He is one of our earlier journalistic graduates and is

agricultural editor of the St. Paul Farmer, a journal wielding great influence in a huge field, the Middle West. In addition "W. T." is manager of Professor Shaw's farm at Farmington, Minn.

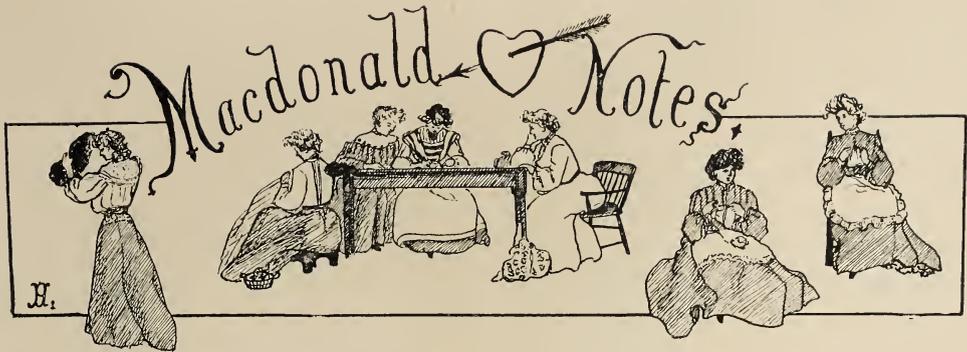
A word might be said of the first action of our freshest alumni. On Saturday night, May 20th, the class of '05 are Old Boys, and on Sunday they begin their graduate days aright by attending a Baccalaureate sermon preached for their benefit by the Rev. Thomas Eakin, M. A. of St. Andrew's Church. In establishing this precedent, as in other things, they have been innovators and it is only fair to suppose that the motive and the spirit of initiation, which originated this very worthy custom, will throughout their course, prompt them to be first and best.

W. J. McCallum, B.S.A., '94, is achieving honor in Chicago as a scientist of repute. Since graduating at the O.A.C. he has attended the University of Chicago and engaged in research botanical work. In addition to a degree from Chicago, fresh honors have come upon him. He has just succeeded in winning a prize offered by a learned Boston Scientific Society for an original thesis, and is now hailed as "Doctor."

"Billy" has studied the flora of many of the States and knows a great deal of Botany.



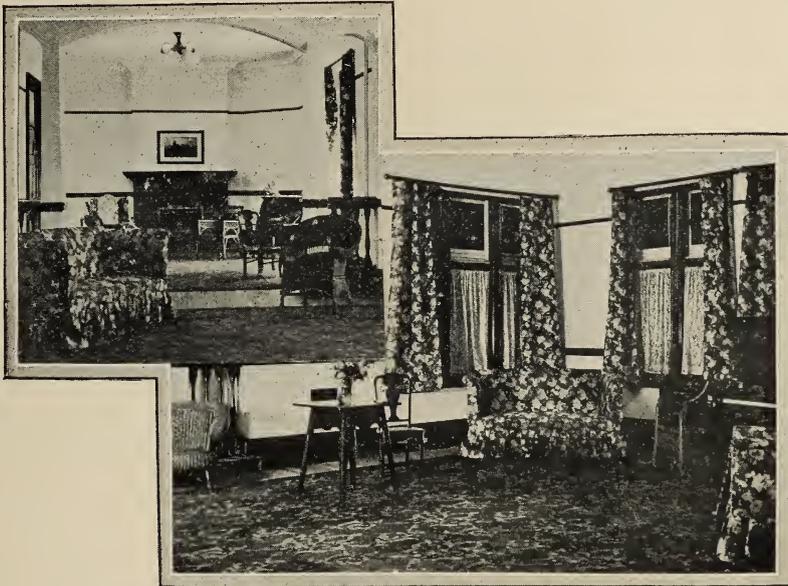
G. H. HUTTON.



ON Friday evening, April 28th, a dinner to the Faculty of Macdonald Institute was given by the Senior Normal class of the Home Economic's Department. Miss Watson welcomed her guests in the Reception

guests' enjoyment of the repast prepared by the other members of the class. Great credit is due to the stewardess to whose tact and executive ability is largely due the success of the dinner.

The usual after dinner toasts were pro-



A Corner in the Drawing Room.

room of the Institute, and at seven o'clock led the way to the dining-room, which was artistically decorated in green and white, the color scheme of the dinner. The waitresses, daintily gowned in white, assisted materially in furthering the

posed and responded to in a most happy manner. Professor Lochhead "opened the ball" ably in his toast to the King, whose absence he regretted. The toast to Macdonald Institute was proposed by Professor Harrison, and responded to by

Miss Watson, who, in a few well-chosen words, gave the aim and scope of the institution. Professor Day, who proposed the health of the President, congratulated those present on having a man at their head, who was so impartially interested in every department. Mr. Creelman, in replying, reflected great credit on the members of his staff. In proposing the toast to the Senior Normals, Professor Harcourt voiced the sentiment of all the guests, when he stated his appreciation of the delicious repast prepared by them. He wished them every success in carrying out their chosen profession. Miss Ferguson, in replying, briefly set forth the ideal the class had before them in their work. Professor Dean, in proposing and Miss Robarts, in

replying, were of one opinion—"The Ladies are *the* important factor in society of to-day." In a gracefully worded and witty speech, Dr. Annie Ross proposed the toast to "The Gentlemen," which was responded to by Professor McCready.

President Creelman, in his characteristic manner, forecasted the future for the staff of the Home Economics Department.

At the close of the dinner, the guests accepted the invitation to inspect the kitchen. It was found scrupulously clean and in perfect order, in spite of the fact that it had been the scene of the preparation of an eight course dinner for twenty-four guests.



Animal Life in Jamaica.

An attempt to give an account of the general aspects of animal life in the tropics presents far greater difficulties than in the case of plants. On the one hand, animals rarely play any important part in scenery and their entire absence may pass quite unnoticed; while the abundance, variety, and character of the vegetation are among those essential features that attract every eye. In this essay I shall endeavour to give a brief account of the various land animals found on the island and some of my experience with them.

Among the reptiles the lizards are by far the most numerous in individuals and the most conspicuous; and they constitute one of the first attractions to the visitor from the colder lands. They literally swarm everywhere. In every garden, road or dry path, they scamper aside as you walk along. The little brown baby lizard is very common in such places and many of them are crushed by the foot of the pedestrian. Some of the little green lizards walk up smooth walls with the greatest ease; while in

houses the croaking lizards cling to the ceilings, along which they run back downwards in pursuit of flies, holding on by means of their dilated toes, which are provided with euctoral discs. Sometimes losing their hold, they fall from the ceiling on the upturned face of the visitor and this was one of the interesting and exciting experiences I had while at Elfam Park, the home of the Hon. Thos. Sharp. The croaking lizard is a spotted, greasy looking creature with a long tail and a pointed head and much resembles a miniature crocodile. An adult measures about 10 inches in length. It is nocturnal in habits and has well developed organs. About midnight I was suddenly awakened by the croaking of what I thought might be the lusty snoring of a sleeping man, rushed for the candle and then for the matchbox.

I forgot that I had caught a living scorpion before and had used the matchbox for a cage and now, when thrusting my fingers into the box the scorpion stung me with his venomous tail, and I forgot all about the croaker

for the time being. I could not find a match but by this time my neighbor in the adjoining room had heard the many noises and came to my rescue. He had no matches and after assuring me that the croaker could do no harm he went off to bed again. The lizard was still croaking and the sounds came from all parts of the room so I concluded it must be some flying beast or else a ventriloquist. After soliloquising for a time I went back to bed only to be aroused in a few minutes by something creeping quite softly over my chest. This was more than I could stand and I rose and dressed and spent the remainder of the night studying astronomy.

The colours of ground lizards vary much, but are usually in harmony with their surroundings and habits. Those that live on foliage are green and those that climb about walls and rocks are mottled or stone coloured. The house lizards are gray or mottled and are hardly visible on a whitewashed ceiling. Most of the ground lizards are brown; but some are of beautiful green colours, with very long slender tails.

One day while sitting in an orange tree I placed my hand within a few inches of one of the large Iguanas. It was a beautiful green creature, a foot long and about the same colour as the orange foliage. It had a serrated back, a deep dew-lap and an enormously long tail. I had a lace-bark whip with me and with it I attempted to kill the lizard. As soon as he was touched he turned black and fierce-looking. I expected he would run from me but to my surprise he ran towards me ready to fight. He looked very ugly and bold in his black suit but I was determined to have him for the museum and I conquered.

Frogs, toads and tree frogs are very common. In roads and gardens one occasionally meets huge toads, 6 or 7 inches long; but the most abundant and most interesting of the tribes are those adapted for arboreal life, and hence called tree frogs. Their toes terminate in discs, by means of which they can cling firmly to leaves and stems. The majority of them are green or brown and these usually feed at night, sitting quietly during the day, so as to be almost

invisible, owing to their colour and their moist, shining skins so closely resembling vegetable surfaces.

I was very much disappointed and surprised that I did not see more snakes on the island. I found only three individuals and these were different species. None of them were venomous. The largest of the three species I found was the Banana or yellow snake, which was about four feet long. The blood-thirsty mongoose is accountable for the scarcity of the snake tribe.

The Mongoose, (*Herpestes griseus*,) was imported from India by the colonial Government and introduced into the island for the purpose of destroying the large gray, white-bellied rat which played havoc with the growing cane on the sugar plantations.

The mongoose belongs to the civet-cat family. In general appearance, except in point of size, it being a little larger, very closely resembles our grey squirrel.

At Hampstead, Mr. Rudolf and myself, accompanied by two good hunting dogs, went on a mongoose chase through the mountains. We were not long gone before the dogs became much excited, and in a few minutes they were face to face with the mongoose. The activity of the mongoose is wonderful and it took about twenty minutes for the dogs to kill it.

The little animal has fairly achieved the object, for which it was imported, but it has also become a universal pest. So long as it kept to the cane fields all went well; but with its rapid and prolific powers of reproduction and its roaming disposition, in a very short time it was found to be in every part of the island from the seashore to the highest parts of the mountains.

In its native habitat the mongoose devours snakes, rats, lizards, and other harmful animals. Out in Jamaica it eats fruits of all kinds—fish, wild fowl, snakes, lizards, crabs and the eggs of birds, snakes and turtles. All young and tender life, both animal and vegetable, is included in its daily *menu*.

I was struck with the abundance of butterflies; not only are they abundant in individuals, but their large size, their rich and varied colours and the number

of distinct species almost everywhere to be met with, are equally remarkable.

There are many brilliantly coloured birds in Jamaica, yet they are by no means conspicuous, and they add very little to the effect of tropical scenery. Doves, parrots, thrushes, fly-catchers, shrikes, warblers and humming-birds are well represented. The large turkey buzzard, one of the best scavengers, is found commonly over the whole of the island.

In the tropics where forests, flowers, fruits and insects abound, the birds have become largely adapted to these kinds of food; while the seed-eaters, which abound in the temperate lands, where grasses cover much of the surface, are proportionately scarce. The bird that took my fancy most was that charming singer, the Southern mocking-bird, locally called the "nightingale." The mocking-bird is a rare visitor to Canada. Mr. McIlwraith reports that a pair spent the summer of 1883 near Hamilton, Ontario, and C. A. McLennan records the capture of one near Truro, N. S. Its home is in the Southern States and the West Indies, and I believe it is more common in Jamaica than elsewhere.

Shortly after my arrival at Lime Tree Garden, a pair of these birds were so kind as to build their nest in a Cashaw tree, within a few feet of my sleeping apartment. Here I had a splendid opportunity of studying its habits. In the morning I have been charmed with the rich gushes and bursts of melody from this admirable songster, as he stood on tip toe on the topmost branch of some orange tree. Amidst the multitude of notes from all the warbling host, his song rises pre-eminent, so that his solo is heard alone and all the rest of the choir appear employed in mere accompaniments to this able leader. Regarding their mimic powers, Audubon, the naturalist, says of these birds—"Their imitative powers are amazing, and they mimic with ease all their brethren of the forest or of the water, as well as many quadrupeds." In the evening they played and sang in the grape-fruit tree beside the tennis court, and judging from their antics and cheery notes they were as much interested in the tennis as we were. At night after

we had retired, this "nightingale" favoured us with many a midnight solo.

When a suitable tree was found for a home, the male bird made frequent visits to the place where the nest was to be built, each time uttering a rapid succession of subdued notes, as he stood over the spot. On the second day nest building commenced, and to my surprise I found the male bird doing all the work. He collected the materials and shaped the nest without receiving any assistance from his mate. During nest building he is literally singing the whole time. Everytime he returns to the nest he perches on a near branch, where he pipes a variety of notes for a shorter or longer period, before flying from the tree to go in search of fresh material.

It was now about a week since nesting commenced and I was getting curious to know what the eggs and the interior of the nest were like. I climbed the prickly Cashaw tree; the birds objected strongly to my interference, and quite often pecked at my head. The exterior I found to be composed of twigs placed crosswise, which, with much moss, forms the base or foundation. I found many nests and brought one home for the museum. The nest is lined with fibres taken from the trunks of trees. I found a few nests lined with horse hair. The bird shaped the nest by placing his breast against the interior. In this nest there were four eggs. They were a little smaller than a robin's, marked with reddish brown spots. When the young birds in the Cashaw tree were ready to fly one of them flew in my window and I caught it and tamed it. I gave it a Hindoo name, "Baboo." For the first three or four days Baboo produced a half hissing, half whistling sound all day long; delightful efforts I dare say, to the fond parents, but decidedly displeasing to me. For the first two days he was much excited but on the third day he would eat from my hand. I fed him a variety of food—boiled rice, raw meat, flies and other insects, bananas and mangoes. Baboo became quite tame at the end of a week, but now it was time to go home, and the morning I left for home, Baboo died.

TENNYSON D. JARVIS, B. S. A.

Examination Results.

THE following are the results of the examinations for the Freshmen and Sophomores. The numbers given after the names refer to the subjects in which a pass was not secured :

FRESHMEN.



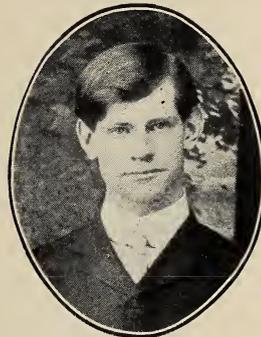
D. M. ROSE.

1, Rose, D. M.; 2, Frier, G. M.; 3, Arkel, R.; 4, Knight, A. A.; 5, Smith, J. E.; 6, Wolverton, H. A.; 7, Austin, H. S.; 8, Row, C. A.; 9, Salkeld, G. D.; 10, Carpenter, J. F.; 11, Kerr, W. A.; 12, Hare, J. H.; 13, Gilmour, J. D., 14, Barnet, W. A.; 15, Patch, A. M.; 16, Landon, M., and Murray, C., 18, Davidson, G. N.; 19, Walker, W. E.; 20, Hayes, J. A.; 21, Curran, G. B.; 22, Peer, W. M.; 23, Slater, A. C. (5); 24, Taylor, W. R.; 25, Cameron, D.; 26, Brown, W. A. (18); 27, Wheaton, R. R.; 28, McKenzie, D. A.; 29, Weaver, J. B.; 30, Warren, F. B. (4 and 10); 31, Hodson, R.; 32, Wright, L. W.; 33, Sirett, A. W.; 34, Steckley, J. C.; 35, Winslow, R. M.; 36, Langley, J.; 37, Herbert, G.; 38, McDonald, E. C. (18); 39, Jewson, J. E. (e8); 40, Dunkin, A. L.; 41, Leach, J. D.; 42, Foster, N. (7); 43, Owen, W. C. (5); 44, Evans, N.; 45, Bowes, L. A. (14); 46, Galbraith, A. C. (8, 14 and 17); 47, Gregory, C. G. (14); 48, Ballantyne, N. (7); 49, Williams, A. L.; 50, Young, W. H. (3, 5 and 19); 51, Bengough, W. L. (18); 52, Goulding, G. (4 and 5); 53, Lawson, E. V. (19); 54, Treichler, M. W. (4 and 14); 55, Nag-Tany, B. (10); 56, Hamilton, W. D. (12 and 14); 57, Emmett, A. J.,

(3, 4 and 10); 58, Harvey, J. (7); 59, Sheahan, T. A. (4); 60, Jenkins, R. (4, 5 and 14), and Newman, R. H. (1, 4 and 18); 62, Moodie, C. (5, 11 and 19); 63, Clancey, R. H. (3).

1. Grammar and Composition.
2. English Literature.
3. Bookkeeping.
4. Arithmetic.
5. Mechanics and Mensuration.
6. Soil Physics.
7. Manual Training.
8. Chemistry.
9. Geology.
10. Botany.
11. Zoology.
12. Horticulture.
13. Field Husbandry.
14. Animal Husbandry.
15. Dairying.
16. Poultry.
17. Apiculture.
18. Veterinary Anatomy.
19. Veterinary Materia Medica.

SOPHOMORES.



R. M. WINSLOW,
Silver Medallist.

1, Winslow, R. M.; 2, *Mills, R. W.; 3, Kennedy, J. W.; 4, Hamer, R. S.; 5, Diaz, P.; 6, Harkness, J. C.; 7, Wheeler, H. C.; 8, Hartman, W. J.; 9, Thompson, W. J.; 10, Bunting, T. G.; 11, Clowes, F. A.; 12, Stewart, W. F.; 13, Willows, H. J.; 14, Hudson, H. F.; 15, Sanders, G. B.; 16, Dennis, F. H.; 17, Montgomery, C. G.; 18, Baker, J. W.; 19, Jacobs, W. S.; 20, Brownlee, M. C.; 21, Hosmer, S. A.; 22, Twigg, C. B.; 23, Bell, G. R.; 24, Ballantine, P. M.; 25, Lowes, H. C.; 26, McVicar, G. D.; 27, Broderick, A. D. (1) and Whetter, W. E. (1); 29, Jull, M. A.; 30, Byers, W. E.; 31, McBeath, R. J. (1 and 3); 32, Clark, C. P.; 33, Binnie, T. H.; 34, Porter, E. H.; 35,

Reeves Palmer, T.; 36, Knight, G. E.; 37, Miller, H. H.; 38, How, L. M. (3); 39, Jordan, H. A.; 40, Fairbairn, J. B. (1 and 2); 41, McKinnon, G. (1 and 3); 42, Greenshields, J. M. (4, 5 and 6).

* Pro Tanto standing in English.

1. Bacteriology.
2. Agricultural Chemistry.
3. Electricity and Magnetism.
4. Botany.
5. Entomology.
6. Veterinary Pathology.

FIRST YEAR.

HONORS IN DEPARTMENTS.

English and Mathematics (including English Grammar, Composition and Literature, Bookkeeping and Arithmetic).

Class I.—1, Frier; 2, Rose; 3, Smith, J. E. and Wolverton; 5, Salkeld; 6, Carpenter; 7, Arkell; 8, Curran; 9, Austin; 10, Knight, A. A.; 11, Gilmour; 12, Murray; 13, Kerr; 14, Row.

Class II.—1, Landon; 2, McKenzie; 3, Davidson and Hare; 5, Cameron; 6, Barnet; 7, Brown; 8, Hayes; 9, Peer; 10, Weaver; 11, Ballantyne; 12, Foster; 13, Hodson and Wright; 15, Walker; 16, Winslow; 17, Gregory; 18, Patch; 19, Hebert, G. and Slater; 21, Wheaton; 22, Galbraith.

Physical Science (including Physics, Manual Training, Chemistry and Geology).—Class I.—1, Frier; 2, Rose; 3, Wolverton; 4, Knight; 5, Arkell; 6, Warren.

Class II.—1, Row; 2, Hare; 3, Austin; 4, Smith, J. E.; 5, Salkeld; 6, Peer; 7, Gilmour; 8, Carpenter; 9, Walker; 10, Hare; 11, Kerr; 12, Patch; 13, Slater; 14, Landon; 15, Barnet; 16, Taylor; 17, Brown; 18, McDonald; 19, Weaver; 20, Cameron; 21, Wheaton; 22, Murray; 23, Davidson.

Biological Science and Horticulture (including Botany, Zoology, and Horticulture).—Class I.—1, Rose; 2, Arkell; 3, Patch; 4, Knight; 5, Row; 6, Frier; 7, Goulding.

Class II.—1, Hare; 2, Salkeld and Carpenter; 4, Austin and Kerr; 6, Bangley; 7, Murray and Peer; 9, Davidson; 10, Curran; 11, Wolverton; 12, Winslow; 13, Sirett; 14, Brown; 15, Hayes; 16, Hebert, G., Taylor and Wright; 19,

Landon; 20, Bengough; 21, Barnet; 22, Steckley; 23, McDonald; 24, McKenzie and Wheaton; 26, Hebert, P.; 27, Gilmour; 28, Owen; 29, Hodson; 30, Young; 31, Bowes; 32, Jewson; 33, Leach.

Agriculture and Veterinary Science (including Field Husbandry, Animal Husbandry, Dairying, Poultry, Apiculture, Veterinary Anatomy, and Veterinary Materia Medica).—Class II—1, Rose; 2, Arkell; 3, Frier; 4, Austin and Barnet; 6, Salkeld; 7, Knight; 8, Carpenter; 9, Gilmour; 10, Kerr; 11, Row; 12, Davidson; 13, Curran; 14, Murray; 15, Smith.

SECOND YEAR.

HONORS IN DEPARTMENTS.

English and Economics (including English Thesis, and Economics).—Class I.—1, Kennedy; 2, Winslow; 3, Hamer.

Physical Science (including Agricultural Engineering, Electricity and Magnetism, Engine, Agricultural Chemistry, and Animal Chemistry).—Class I.—1, Mills; 2, Winslow.

Biological Science (including General Botany, Plant Physiology and Economic Botany, Bacteriology, Entomology, and Horticulture).—Class I.—1, Mills; 2, Winslow; 3, Hartman.

SCHOLARSHIPS.

FIRST YEAR.

1. English and Mathematics—G. M. Frier, Shediac, N.B.
2. Physical Science—H. A. Wolverton, Brandon, Man.
3. Biological Science and Horticulture—D. M. Rose, Working, Eng.

PRIZES—SECOND YEAR.

First in general proficiency, first and second year work, theory and practical—R. M. Winslow, London, Ont.

Essay—"Implements on the Farm and their Uses."—J. W. Kennedy, Apple Hill, Glengarry, Ont.

MEDAL—SECOND YEAR.

Governor-General's Silver Medal—First in general proficiency, 1904-1905, R. M. Winslow, London, Ont.



Since the latest ultimatum has been issued at the Hall, this has been the Macdonald slogan :

Naughty men go a-boozing,
But we girls go a-twoozing,
In the good old summer-time.

This paragraph is about a man, who is no joke. He is Mr. Springer, who springs our board bills on us once a month, or oftener and gives us receipts for our money. He gets the money, whether we have any left or not, and he does it so easily that we feel happy, even when we are broke or very badly bent.

It is this happy feeling, combined with his genuine interest and valuable assistance for our organizations and efforts, which makes us like the genial bursar. His personality and business methods are such that in getting what he wants, he makes every person else like him too, and is one of the men who have been largely responsible for the smooth advance of uninterrupted improvement around the O. A. C.

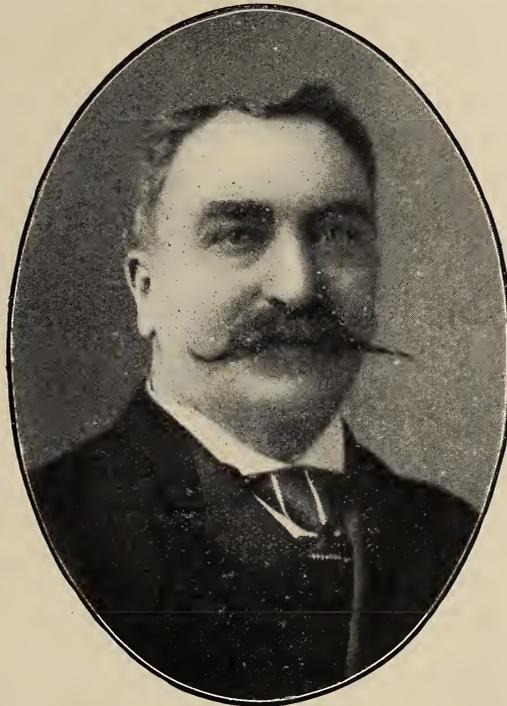
When our Seniors get their degrees, they may feel pretty big, and the rest of us may feel pretty small but just let us run over a few of the condoling features of the aspect and we shall soon decide that they are only human.

R. Wade, B. S. A., was seen speaking to a freshman, and is actually addressed as " Chummy " by some people.

W. C. McKillican, B. S. A., (perhaps), often misses going down to breakfast, a very human trick, which shows he is only a plebeian.

R. J. Deachman, B. S. A. (maybe), is often seen lurking around the printing offices — something anybody can do.

C. W. Esmond, B. S. A. (?), had a notice on the bulletin board the other day in which he openly offered to dis-Card an old pair of



S. SPRINGER,
The Man who gets our Money.

hockey shoes.

From these instances it is safe to suppose that there will be more graduating classes and that one is all we need each year.

Hudson, his face all breaking out in a fresh smile, as plodding homeward from

his work he describes a new trunk in the hall, with the marks of a trans-oceanic passage—"Another victim for to-night!" Accept this as a warning all ye new ones.

Several finishes have been proposed for "Little Willie," but none have proven satisfactory or final, and in consequence there has been considerable anxiety on the part of his admirers as to what really befell him, therefore we feel justified in producing the following sequel to his checkered career:

Little Willie fell down the elevator,
And when they found him, ten days later,
They said, "Gee whizz!
What a spoiled boy Willie is."

If Willie could possibly have recovered from this serious attack, here is the certain remedy which had been advanced for his existence:

Little Willie, in silks and sashes,
Fell in the fire and was burned to ashes.
By and by the room grew chilly,
Yet no one cared to stir up Willie.

"Miss" Horace Craig and "Miss" John Monroe were observed "skirting" their way to the city the other evening, and it is reported that Miss Monroe "waisted" a great deal of time, but this "Glimmer" is evidently the reflection of Miss "Jason's" Golden Fleece.

It was noticeable that after the tennis tournament, the midnight oil was burned in the laboratories. Was it a midnight vigil praying for better luck next time, or was it only the usual penance atoning for hours lost, which goes to show that all government "sits" aren't cinches.

Nature Study develops the reasoning power. This is the only explanation which can be accepted for the following observation, which was recorded in the Macdonald Class Record Book, by a student of keen perception—"I saw a

Continued on page xx, advertising.

Rode 7,000 Miles on One Pair of Tires



MR. JAMES THOMAS DEWEY is Canada's champion steady bicycle rider. He is a collector for one of the big telegraph companies in Toronto, and he rides a wheel all the year round making collections over a wide district. His record is 12,000 miles a year. Mr. Dewey's bicycle is fitted with Dunlop Detachable Tires,  a single pair of which have carried him over 7,000 miles of good, bad and indifferent roads. Dunlop bicycle tires are famous as the kind that may be attached, detached and repaired when necessary by the two hands, unaided by any form of tool. Every pair is guaranteed for a year.

THE DUNLOP TIRE COMPANY, Limited

304 ST. JOHN
VANCOUVER

Toronto

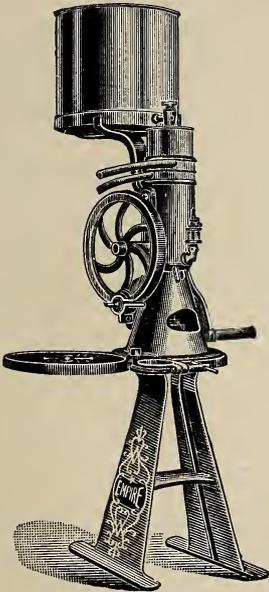
MONTREAL
WINNIPEG

— THE —

— EMPIRE —

— CREAM SEPARATORS —

Though not the oldest is the most popular Separator in the world to-day Why? Simply because it is doing better work and giving greater satisfaction than any other can.



It will pay you —————>

<————— To get the Best

Send for our free books on the
 “Empire Way”
 of dairying. They will give you
 information that is worth to you
 \$10.00 per year for every cow
 you own.

Empire Cream Separator Co., of Canada, Limited.

28 Wellington Street West

Toronto, Ontario

Carnefac

Gives Quick and Permanent

Results

To the Carnefac Stock Food Co.:

West L'Ardoise, Cape Breton, Jan. 27th, 1905.

Dear Sirs—Enclose please find balance due on "1 Pail" Carnefac, which duly arrived here on Dec. 24th, 1904. Must say that Carnefac has proven very satisfactory. As a matter of fact, do not think I shall ever be without it again. I have recommended it and you shall certainly hear from me when this pail is empty. Yours truly,

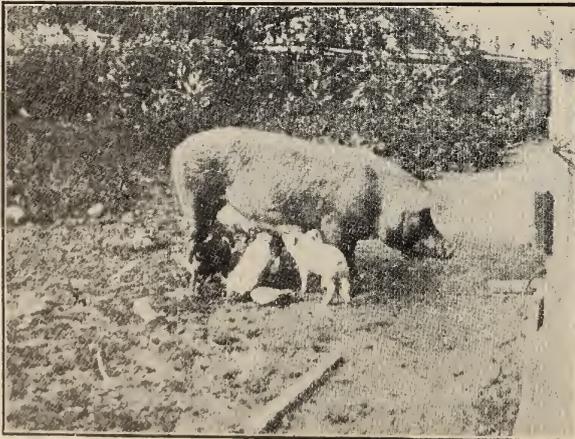
(Signed) JEFFREY MAUBOURQUETTE.

THE above is but a sample of letters we receive every day from farmers who have had 25 lbs of Carnefac on trial. A few points in these are worthy of especial notice, namely, the short-time use, the small quantity, the trifling cost, and the satisfactory results. If any of these points concern you in the feeding of your stock a few weeks use of Carnefac will satisfy you that it does all claimed for it. We would particularly invite you to try it, if you have any stock seriously out of condition.

The Carnefac Stock Food Co.

WINNIPEG

TORONTO



IMPROVE YOUR STOCK
and
SAVE HAY and OATS
by using
International Stock Food

THIS FOOD "THREE FEEDS FOR ONE CENT," is a purely vegetable, medicinal preparation, composed of nature's remedies such as roots, herbs, bark, seeds, etc. It is entirely harmless, even if taken into the human system, and is fed to stock in small quantities in addition to the regular grain ration in order to promote digestion and assimilation.

FREE A \$3.00 Stock Book and Colored Lithograph of Dan Patch 1561-1.

We will pay you \$10 if Book and Lithograph are not as described. The cover of the Stock Book is a beautiful live stock picture printed in six brilliant colors. Book is 9 1/2 inches long by 6 1/2 inches wide. It costs us over \$3,000 to produce the engravings. It contains an up-to-date veterinary department, which will save any farmer or stockman hundreds

of dollars, as it treats of the ordinary diseases to which livestock are subject, and tells how to cure them. The large colored lithograph of Dan Patch is 2 feet 11 1/4 inches long by 11 inches wide, printed in six colors. It shows the International Stock Company's model barn in the background, and is worthy of a place in any home.

Write to us to-day and answer the following questions:

- 1st—Name this paper.
- 2nd—How much stock have you?

Capital Paid in
\$2,000.00

International Stock Food Co. Largest Stock Food Company in the World
Toronto, Canada.

London Fence

**THOR, (Greek God of Thunder and Friend of Man.)
To the Farmers of Canada.**

These coiled steel strands of famous "London" Wire, Secured to end posts anchored firm as earth herself, And tightened independently, do perfectly to hill or dale conform. These are the girders. In their great strength and resilience Doth mostly lie the endurance of the fence. In this no chances take, but purchase only "London" spring steel wire—coiled, not kinked, (warranted by the makers.) These strands or girders, each to each, so solidly secured by this machine, With tough steel wire automatically prepared or spooled, Thereby produce a barrier so perfect that well do ye exclaim, "Eureka!" "This London Fence Machine no equal hath on this broad earth, "That doth in speed or perfect product bear comparison."

London Fence Machine Co
LIMITED.
LONDON AND CLEVELAND.

Western Agents—A. E. Hinds & Co., 602 Main St., Winnipeg,
Quebec and East, Ont.—PHELPS & SMITH, 60 McGill, Montreal.
Maritime Agent—J. W. Boulter, Summerside, P. E. I. 203

bird's egg on the grass and concluded that there must be a nest some place near."

—

Sing a song of street cars
 Seats all full mit chaps,
 Four and twenty ladies
 Hanging by der straps.
 Ven der door was opened
 Der men began to read
 All der advertisements
 About new breakfast feed.
 All der vimmen cussing
 Hopped from feets to feets,
 But der Muscilage Brothers
 Stuck fast to der seats.

—

The Phrenologist, who visited the college and was tendered such an enthusiastic reception, is still feeling his bumps.

—

Has anybody seen Willie Boddy's coat? If neither Anybody, nor Every-

body, nor Willie Boddy, has seen it, then Nobody must have seen it, and if Anybody wishes to save Nobody from Everybody, or Willie Boddy, or the Heavenly bodies, then Somebody with a body should do it.

We are sure that if this skilfully worded advertisement were embodied in THE REVIEW, Willie Boddy's body would soon be coated with replies.

—

We should be getting along very well tracing the birds of this locality, we have such a good Klugh to the different species.

—

In some of the note-books, under the head of Curious Pond Life, several ingenious and enthusiastic students had drawings of strange looking objects, with long appendages and queer coverings, consisting for the most part of huge rubber shoes and apparently belonging to genus Homo.

Continued on page xxiv, advertising.

The **WHITE** Challenge Separator Defies Competition

| | |
|---|---|
| WIND STACKER SELF FEEDER | CUTTING BOX ATTACHMENT |
|---|---|

Farmers patronize the man with the **WHITE** outfit and make the amount of your threshing bill in **LABOR SAVED** and **TIME GAINED**.

—

Send for 1905 Catalogue and Learn about Threshing.

—

Geo. White & Sons Co., Limited.
LONDON, -- ONTARIO.

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

MELOTTE

CREAM SEPARATORS

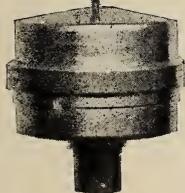
EASY TO TURN

Owing to the suspension of the bowl from a spindle turning on ball bearings and to the admirable arrangement of the gearing, whereby the entire weight is thrown on the lower bearings, which all turn in oil, the "MELOTTE" is probably easier to turn than any other Separator in the world.

So easily does the Machine run that it has been found necessary to introduce a brake, which is now a feature of all "MELOTTE" Cream Separators, and of no others.



EASY TO CLEAN



Melotte Self-Balancing
Self-Emptying Bowl

In the manufacture of the "MELOTTE" special care has been given to this matter. The simple skimming device here illustrated can be cleaned with facility, whilst the thickly-enamelled surface of the bowl casing in sizes 1 to 5, is specially provided as being the easiest possible surface to clean.

The "MELOTTE" has no long tubes or complicated devices of any kind to be cleaned. The bowl itself is self-emptying, and every part is easily accessible.

AND DURABLE

The durability of the "MELOTTE" is shown by the fact that we have never yet had occasion to replace a single worn bearing, notwithstanding that these Machines have been on sale throughout Ontario, Quebec, and the Lower Provinces for the last seven years.

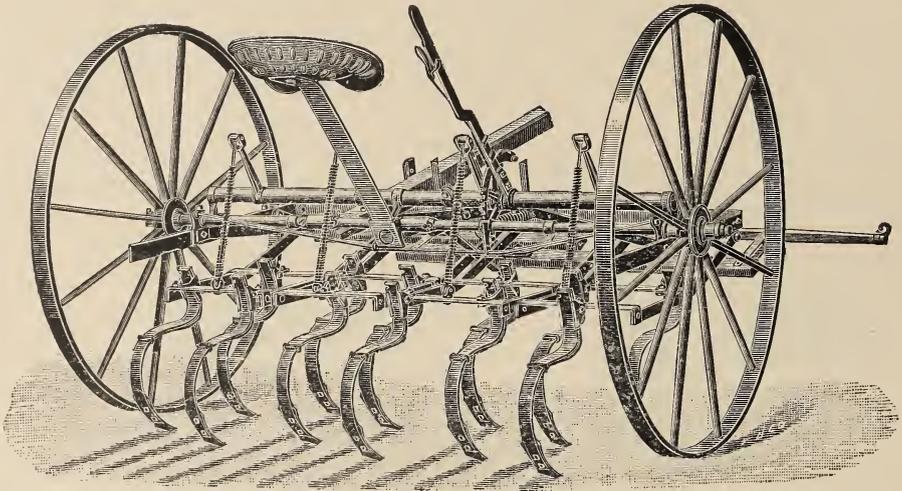
R. A. LISTER & CO., Limited
MONTREAL

The Frost & Wood Co., Limited

Have built for 1905, a line of

Seeding and Cultivating Machinery

That will increase the production on your farm, and at the same time lighten your work.



Champion 12 Tooth Cultivator

This Cultivator may be equipped with grain and grass seed boxes and be used as a broadcast seeder.

The teeth are of steel; the proper size and shape to do the best work. They are arranged in sections and will adapt themselves to any condition of land.

FROST & WOOD HOE DRILLS, SEEDERS, CULTIVATORS and HARROWS

always satisfy the prosperous farmer; they are good machines. There's a reason for it—See our Catalogue.

THE
Frost & Wood Company
 LIMITED.

HEAD OFFICE AND WORKS

SMITH'S FALLS, ONT.

Winnipeg, Toronto, Montreal, Quebec, St. John, Truro, Charlottetown.

LOVE'S ATHLETIC SUPPLIES

OF EVERY DESCRIPTION

Agents for
SPALDING'S
CRICKET BATS,
BALLS, WICKETS, &c.

Agents for
THOMLINSON'S
PATENT OFFICIAL
FOOTBALLS.



Agents for
SPALDING'S
TENNIS
RACKETS & BALLS.

SWEATERS, JERSEYS
KNICKERS,
STOCKINGS, &c.
UNIFORMS OF ALL
KINDS.

COLLEGE
FLAG AND CAPS
A SPECIALTY.

CLEVELAND BICYCLES.

CANOEES

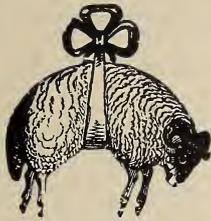
Ask for Students Discount.

Ask for our NEW CATALOGUE.

HARRY H. LOVE & CO.

189 Yonge Street, Toronto

Keleher & Hendley's Tailor Store



The Charm
of
Refinement

To the discriminating people the
elegance and charm of good clothes
is always apparent. Our hand-
some suits and overcoats are dis-
tinctive in design and finish giving
to the wearer that quiet air of
refinement. :- :- :-

Golden Fleece

There was apparently a slight mixture of love and rackets in the tennis tournament.

During the latest Nature Study Course the following Bulletins and Publications have been issued by the Mileage Club of Far Afield Naturalists, and may be obtained from Sister J. R. Dickson, Secretary of the Society, at an exorbitant price.

Wild Men I have Known—J. F. Monroe.

Trains I never met—H. B. Smith.

Alone with the Dicky-Birds—H. W. Scott.

Nature with the Children—C. R. Klink.

Curious Mud Life—H. A. Craig.

Jumping insects—W. A. Munro.

The Mystery of the Morning—G. A. Mulloy.

A Sunday evening with the Constellations—(In duplicate)—F. C. Hart.

TRUTH IN VERSE.

(For the first time.)

Breathes there a man with soul so dead,
Who never to himself has said,
"My trade of late is getting bad;
I'll try another ten inch ad.
If such there be go mark him well;
For him no bank account shall swell;
No angel watch the golden stair
To welcome him a millionaire.
The man who never asks for trade
By local line or ad. displayed,
Cares more for rest than worldly gain
And patronage but gives him pain.
Tread lightly friends, let no rude sound,
Disturb his solitude profound.
Here let him live in calm repose
Unsought except by men he owes.
And when he dies go plant him deep
That naught may break his dreamless
sleep;
Where no rude clamor may dispel
The quiet that he loved so well.
And that the world may know its loss,
Place on his grave a wreath of moss;
And on a stone above "Here lies
A chump who wouldn't advertise."

The Traders Bank of Canada.

Assets Twenty Millions, (\$20,000,000.00.)

IT IS THE FARMERS' BANK.

Next
Door
to
Post
Office



W
Y S
N T
D R
H E
A E
M T

Special Attention Paid to
FARMERS' BUSINESS.

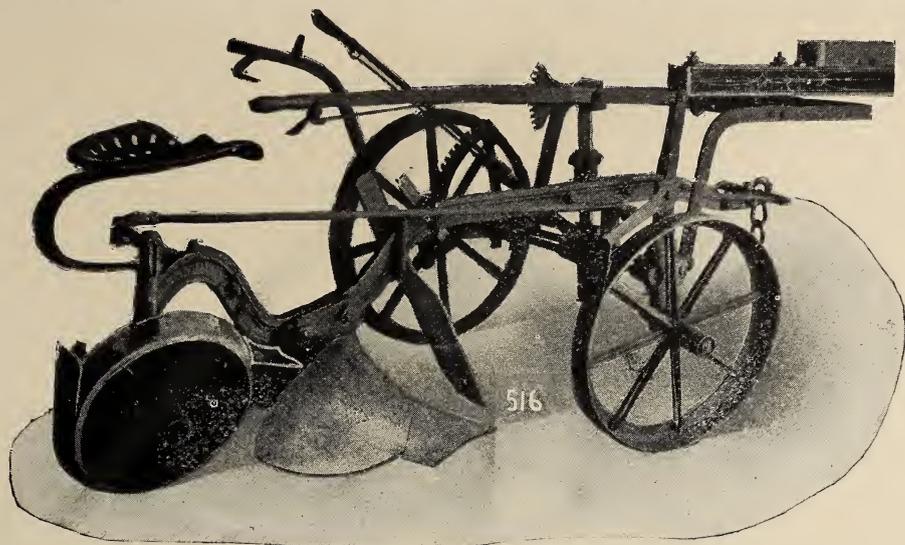
LOANS MADE

DEPOSITS RECEIVED

The Most Favorable Rates and Terms Given.

A. F. H. JONES * * * * * MANAGER

"THERE ARE NO PLOWS LIKE FLEURY'S." This is said by Hundreds of Plowmen.



"GOOD-LUCK" SINGLE SULKY PLOW.

This cut shows our "Good-Luck" Single Sulky Plow which we furnish with wide bottom 21A, or with narrow bottom 13A. This plow is the result of long experience in making Sulky Plows and combines EVERY CONVENIENCE for handling easily with VERY LIGHT DRAFT and most PERFECT WORK. Where these plows came into competition with others in the fall of 1904 they drove others out of the field.

Walking Plows. Gangs, large and small. Sulky Plows.

LETTERS—From West and East.

"I have had another field trial with the P— Sulky Plow in Chatham Township and have sold your plow. The P— Plow was not in it in any way" C. W. Peters, Dresden, Oct. 7th, 1904.

"I have some good plowmen operating your Sulky Plow and they claim it is ahead of any other Sulky Plow they ever used. It has beaten the — and the P— Sulky Plow here by letting a good plowman take them all into the field and test them. He has taken a FLEURY Sulky Plow.

J. Fleury's Sons, Aurora, Ontario, Canada
MEDALS AND DIPLOMAS, WORLD'S FAIRS CHICAGO AND PARIS

Education Department Calendar for 1905.

AUGUST:

1. High School Trustees to certify to County Treasurers, the amount collected from county pupils.
21. Rural, Public and Separate Schools open.
25. Applications for admission to County Model Schools to Inspectors, due.

SEPTEMBER:

1. Last day for receiving applications for admission to the Ontario Normal College. High Schools first term, and Public and Separate Schools in cities, towns and incorporated villages, open.
4. LABOR DAY.
5. County Model Schools open.
12. Provincial Normal Schools open.
30. Notice by Trustees of cities, towns, incorporated villages and township Boards to Municipal Clerks to hold Trustee elections on same day as Municipal elections, due.

OCTOBER:

2. Ontario Normal College opens. Night Schools open (session 1905-1906.)

NOVEMBER:

9. KING'S BIRTHDAY

DECEMBER:

1. Last day for appointment of School Auditors by Public and Separate School Trustees.

Municipal Clerks to transmit to County Inspectors statement showing whether or not any county rate for Public School purposes has been placed upon Collector's roll against any Separate Sch'l supporter.

EXAMINATION PAPERS

Circulars giving list of Departmental Examination Papers, with prices, free on application. Single copies, 25c. Five copies, \$1.00. One dozen copies, \$2.00. Trade supplied Address:

THE CARSWELL COMPANY, LIMITED,
30 Adelaide St. E., Toronto,

Most People Have No Idea

of the size of our establishment. Call in some time and let us show YOU through Visitors are Always Welcome.

John M. Bond & Co.

CONCLUSIVELY

“ THE ”

Hardware Store

of

Guelph and Wellington County

We

Largest Premises

4 Stories and Cellars

Have

Largest Staff of Clerks

And Most Important of All

The

Largest Stock for You

To Choose From

John M. Bond & Co.

GUELPH

Wholesale & Retail

Two of a Kind



The Ontario Agricultural College is the best of its kind in the world.



The Clothes made here are in keeping with the College.



The Best, only, is good enough for the boys of the O. A. C.

J. A. Scott

MAKER OF MEN'S CLOTHES

**26 Wyndham Street
GUELPH**

FOSTER & FOSTER

Dentists



Office and Surgery: Corner Wyndham and Macdonnell Sts., over Dominion Bank.
Residence, "Sunset," Paisley Street.

Telephone, 14

We Lead

Them all in Oil, Gas, Coal and Wood Heaters, Graniteware, Tinware and Sheet Metal Goods of every description.



H. Occomore & Co.

Stoves, Tinware and House Furnishings, Etc. Etc.
**86 Upper Wyndham St.
GUELPH**

The Authorized College Pin



Adopted March 30th, 1903, by Joint Committee of Students and Faculty elected by O. A. C. A. A. Design Registered at Department of Agriculture, Sept. 17th, 1903.

For sale at

Pringle's Jewellery Store
Sterling Gilt, Price 50c.

2nd Year O.A.C. Group of

"47"

Was taken at—

D. H. BOOTH'S Photo Studio,
95 Upper Wyndham

Our large operating room is specially suited for large or small college or family groups.

J. A. McCrea

Invites You

To inspect his beautiful display of China, fancy Art Ware, and Cut Glass on the second floor. It is one of the sights of Guelph and as such should not be missed. We consider it a pleasure to show our goods and do not ask you to buy. We supply the O. A. C. and Macdonald Hall with groceries and can deliver anything you might require. Fresh Oysters, Oranges and Chocolates are our specialties.

Noted Tea Store
and China Palace

J. A. McCrea

'PHONE 48

Lower Wyndham St. - GUELPH

John D. McKee, Phm. B.

The above name on your package stands for

“Quality”

We Keep no Inferior Goods and our Prices are Always Right

SOME THINGS WE MANUFACTURE

McKee's

Aperient Salts, Cold Cream, Camphor Ice, Liniment, Pain Reliever, Carolina Pine Balsam, Witch Hazel and Benzene Cream, Household Ammonia, Antiseptic Toothwash, Orris Tooth Powder, Toothache Gum, Carbolic Ointment, Kidney Pills, Antibilious Pills, Iron Tonic Pills, Emulsion of Cod Liver Oil, Worm Syrup, Dyspepsia Tablets, Florida Water, Shaving Cream, Tasteless Castor Oil, Little Liver Pills, Liquid Corn Cure.

Smith's

Blood Tonic, Sarsaparilla, Headache Powders, Hair Restorer, Cherry Balsam, Neuralgia Powders and each above preparation is a winner.

YUNORA PERFUMES

Our three specials—"Princitia," "Wild Lily," "Vesta Violet." These odors are unexcelled.

Wampole's Fermolid Cream

Every O. A. C. Student should have a tube of this excellent dentifrice. We recommend it because it is positively superior to all others

25 Cents Per Tube

John D. McKee, Phm. B.

THE CONFECTIONER'S SECRET



is his ability to please the customer. The result of our work is seen in the popularity of the candy we sell.

BOYS REMEMBER

when down town, we have Hot Soda, in 10 different flavors, also

Oysters as you like them,

15c., 2 for 25c.



Ice Cream Every Day in the Year.

The Kandy Kitchen

STUDENTS...

Please make note of the fact that we have THE MOST COMPLETE and BEST STOCK of

Sporting Goods
IN THE CITY



WE are agents for the FAMOUS SPALDING ATHLETIC GOODS and the CELEBRATED FORSYTH FOOTBALL. We carry a full line of FOOTBALL, BASEBALL, LACROSSE, TENNIS, GOLF and HOCKEY GOODS. We stock BOXING GLOVES, PUNCHING BAGS, WHITELEY EXERCISERS, SANDOW DUMBBELLS, CLUBS, FENCING FOILS, MASKS, SABRES, Etc., and we have an extensive stock of GUNS, RIFLES, REVOLVERS and AMMUNITION. Anything we do not have in stock, we will be glad to procure for you.

Come in any time and see our Sporting Goods Department, we will not expect you to buy.

G. B. MORRIS,

**HARDWARE,
22 LOWER WYNDHAM.**

The Guelph Cartage Co. deliver baggage and do General Cartage Work,

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

Robert Mitchell,

The Grocer

Fruits and Fancy Groceries,
Chocolates, Coconos, Etc.

No. 22 LOWER WYNDHAM STREET.

The Tysons

Wholesale and Retail

BUTCHERS AND CATTLE DEALERS

J. & A. Tyson, Stall No. 1,
Guelph Market, 'Phone 78.
Tyson Bros., Shop cor Green
and Norfolk Sts., 'Phone 152.

NEILL THE ... SHOE MAN

SOLE AGENT FOR

**THE
SLATER
SHOE**

GUELPH, - ONTARIO.

T. H. GEMMELL & CO.

STEAM DYERS AND CLEANERS

No. 70 Wyndham Street, West Side

Suits Cleaned, Dyed and Pressed
Pressing Done on Shortest Notice
Also Agents for Parisian Laundry

FOR YOUR SKIRT AND TROUSER HANGERS

GO TO —

JAMES STEELE'S
Woolwich Street,

Opposite Wellington Hotel.

Surely truly,

JAS. STEELE.

SAM LEE HING.

* * *

Me Want your Washee!

Do it Quickee!

* * *

Call on

MONDAY.

WEDNESDAY

AND FRIDAY.

* * *

SAM LEE HING,

St. George's Square.

DR. COGHLAN, DENTIST

Co. Cardigan and Woolwich Streets.

TELEPHONE 223.

W. A. CLARK

Watchmaker

Jeweller and Optician

79 Upper Wyndham St., Guelph

Issuer of Marriage Licenses

STUDENTS

If you want SHOES that fit well, look well, and wear well, go to

Rowen's Shoe Store,

WYNDHAM STREET.

WATERS BROS.

Wyndham Street

Supply all you need in Mounting Sheets, Seed Bottles, Scales, Compasses, Squares, Entomological Supplies, Artists' Supplies.

Picture Frames and Souvenir Presents,

For
Convenience of
Students



Our driver will be at the main building of the O. A. C. MONDAY, WEDNESDAY and FRIDAY mornings from 7.15 to 7.45 to collect your Laundry. A Thorough Wash and Perfect Finish Guaranteed.

Guelph Steam Laundry

D. W. HUNTER,
Manager.

FINCH EYEGASSES PLEASE THE PARTICULAR

Finch Eyeglasses please particular people. Note how these glasses are handled. No smearing of lenses. They have all the security and comfort of the spectacle with greater neatness than in any ordinary eyeglass. We can adapt them to almost any nose.

**SAVAGE & CO.,
Jewellers.**

Robert Stewart

Limited.

The Pioneer Industry of Guelph

Manufacturers of

**SASH
DOORS
BLINDS**

And all House Furnishings
for over half a century

Largest dealers in Canada of

**B. C. Shingles and
Hardwood Lumber**
Telephone 26 Guelph, Ont.

Central Bookstore

Opposite where the Street Cars stop



Text Books. Exercise Books. Foolscap. Writing Pads. Up-to-date Note Papers and Envelopes. Papeteries, 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

THORNTON & DOUGLAS, LIMITED

Makers and Importers of wearing
apparel for men and boys ❁ ❁

Dairy Suits
a Specialty

Stratford, Chatham,
Guelph.

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.

Masonic Block, - Guelph, Ont.

C. Henry Burgess

| PHOTO ARTIST |

Special Scenery—For Groups.
Platinum and Carbon Finish.

The Leading Drug Store

LAW, The ❁
Druggist

95 Upper Wyndham St. - - Phone 61

When you Want ❁ ❁

Material to Smoke or Chew Call at the
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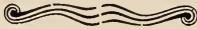
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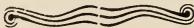
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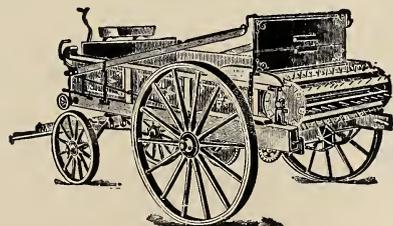
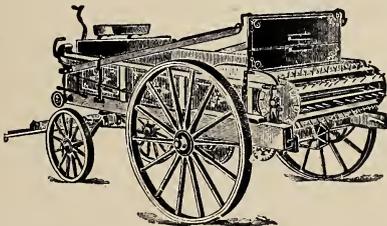
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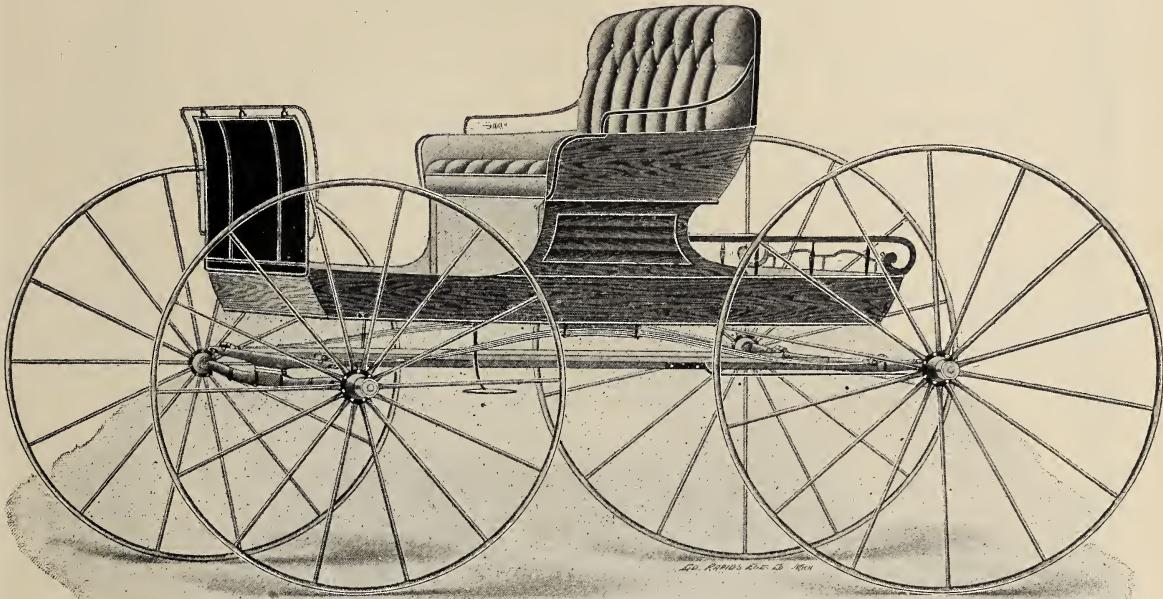
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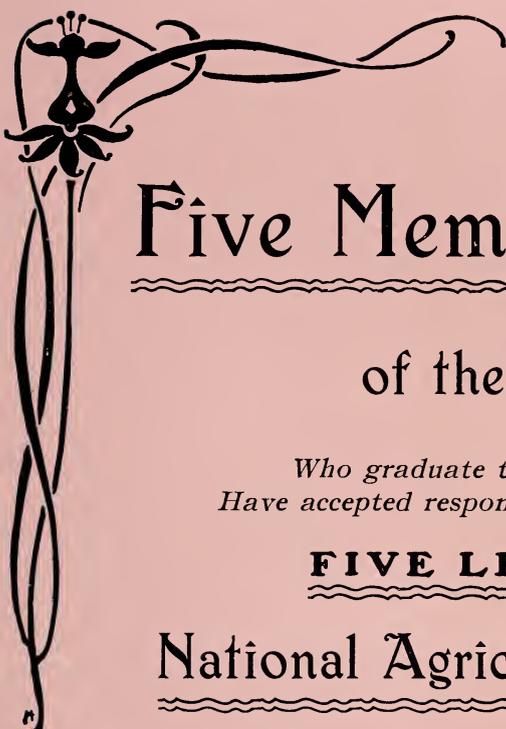
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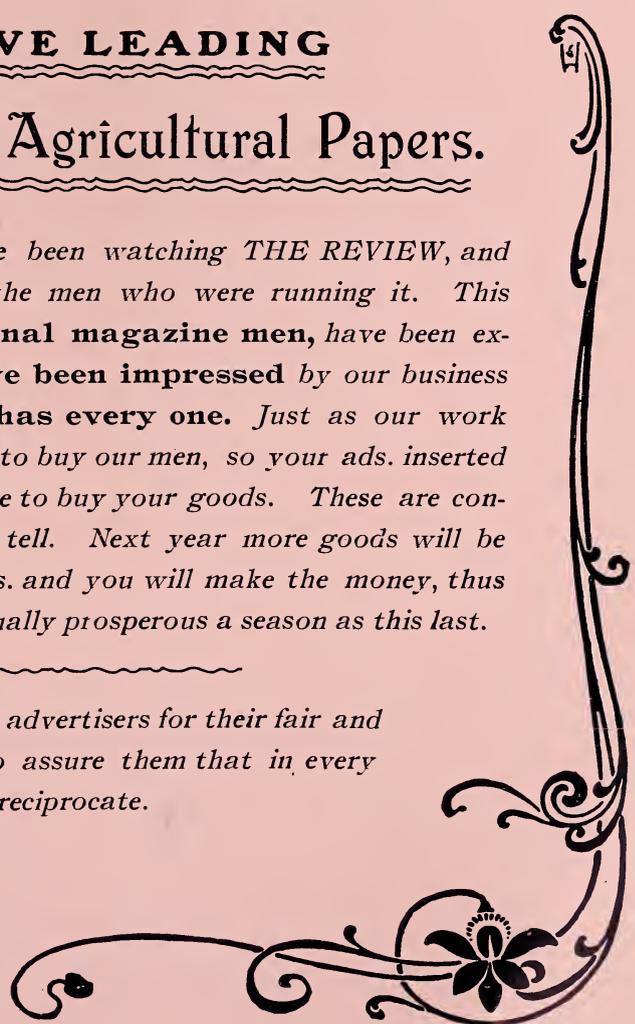
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| Paid Sick and Funeral benefits..... | 192,163.71 |
| Increase in membership..... | 14,123 |
| Membership December 31st, 1903..... | 219,492 |
| Increase in accumulated funds during the year..... | 1,234,236.97 |
| Total accumulated fund December 31st, 1903..... | 7,453,308.14 |
| Total benefits paid to December 31st, 1903..... | 16,290,991.78 |
| Total accumulated funds February 1st, 1904..... | 7,518,852.09 |

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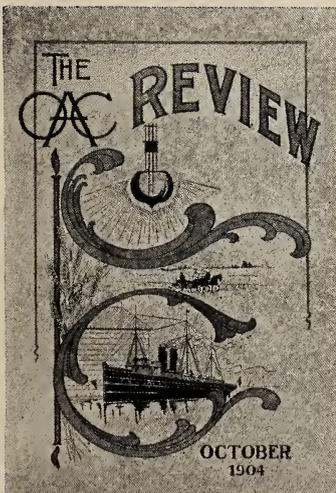
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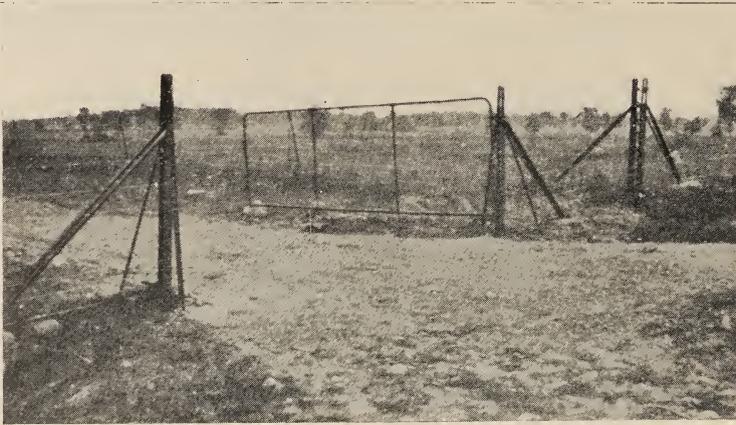
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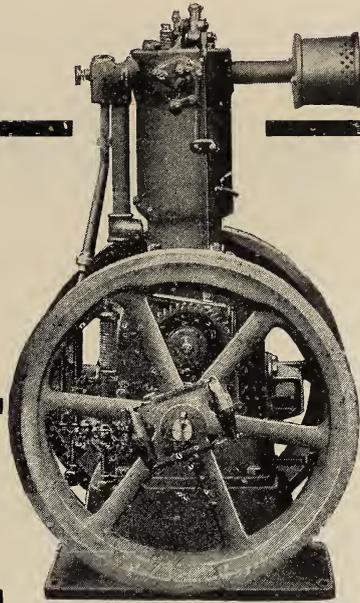
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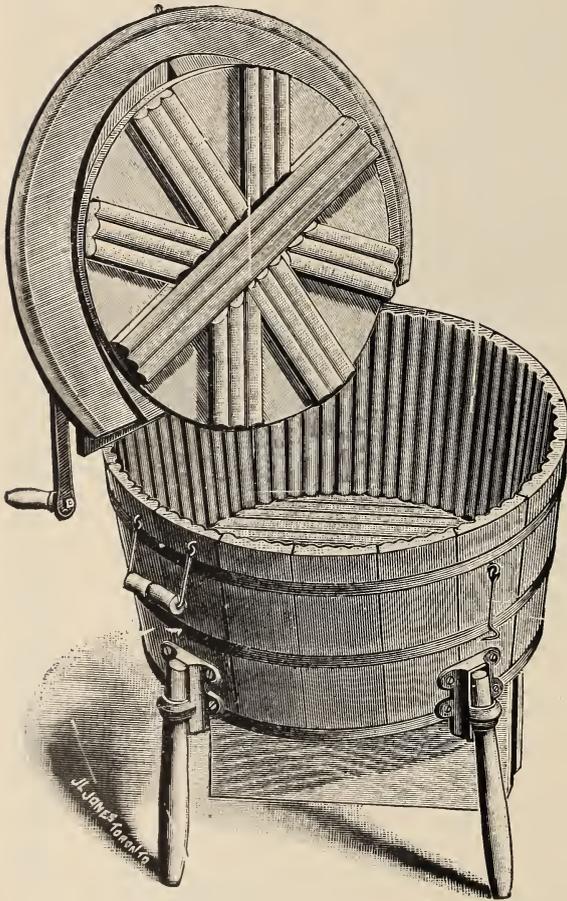
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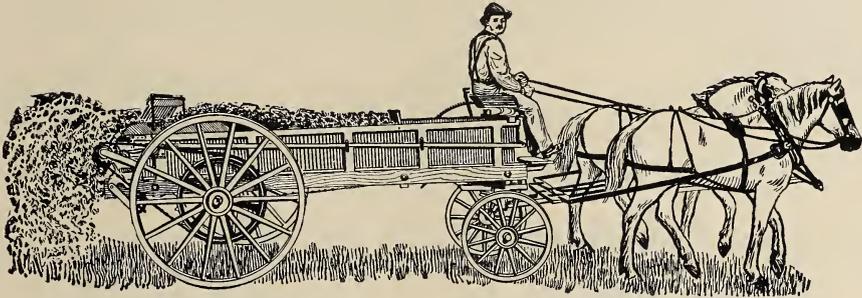
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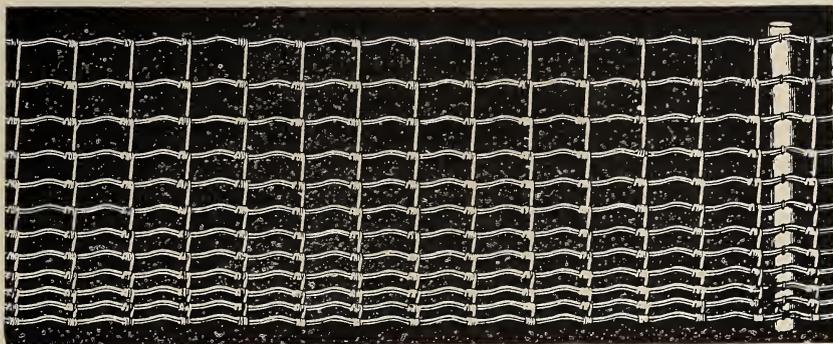
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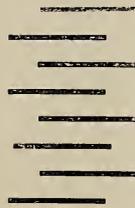
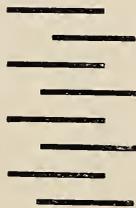
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The Kingdom of Denmark's mighty success at home, and with its products in the great markets of the world, is allowed to hinge wholly on true co-operation, properly operated.

Joseph Stratford, General Manager

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

LADDERS!



Pruning comes in March and April.

Painting and Repairing April and May.

Hay Fork work June and July

Fruit Picking
August to November

Storm Sash April and November.

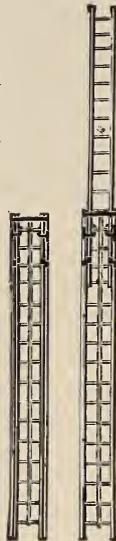
Fire Protection January to December.

For all these you need a good ladder. The qualities of a good ladder are: *First—Safety*
Second—Handiness

The Waggoner Extension Ladder combines these qualities better than any other. There are lower priced ladders, but no other so really cheap. Our steel safety lock and our steel wire reinforcement enable us to combine strength and lightness in the highest degree.

Send for free descriptive circulars, prices, etc. When writing ask about our CLOTHES LINE REEL for the yard. The women want it—so do the men.

The Waggoner Ladder Co., Ltd
London, Ont.



MAXWELL'S

FAVOURITE CHURN

LIST.

| NO. | HOLDS | CHURN |
|-----|--------|---------------|
| 0 | 6 gal. | 1/2 to 3 gal. |
| 1 | 10 " | 1 to 5 " |
| 2 | 15 " | 2 to 7 " |
| 3 | 20 " | 3 to 9 " |
| 4 | 26 " | 4 to 12 " |
| 5 | 30 " | 6 to 14 " |
| 6 | 60 " | 8 to 20 " |



Patent Foot and Lever Drive
Patent Steel Roller Bearings

Improved Steel Frame

Bearings Bolted No Screws Used

Easy to Operate

Superior in workmanship and finish

If not sold by your dealer, write direct to

David Maxwell & Sons

St. Mary's, Ontario, Canada.

We Pay Special Attention

To the making of Suits, Overcoats and Trousers for O. A. C. Students.

Our stock is always new and up-to-date. We buy only the best material and employ only the most skilled workmen.

Our prices are such that you can save money on every garment we make for you.

R. J. Stewart

The Little Tailor Store

Quebec St., opposite Knox Church

WALTER E. BUCKINGHAM, B.A., LL.B.

Barrister Solicitor

Notary, Conveyancer, Etc.

Douglas Street, Guelph

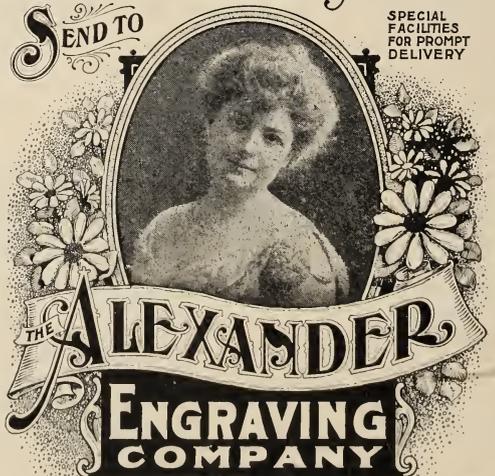
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Residence Phone 404

WHEN YOU ARE IN NEED OF CUTS IN HALF-TONE, ZINC & WOOD.

SEND TO

SPECIAL FACILITIES FOR PROMPT DELIVERY



16 ADELAIDE ST. WEST
TORONTO

DESIGNERS.
ILLUSTRATORS.
COMMERCIAL PHOTOGRAPHERS.

The Goldie & McCulloch Co.

Limited.

Galt Ontario Canada

Extensive Builders of

Wheelock Engines, Corliss Engines, Ideal High Speed Engines, Gas and Gasoline Engines, Boilers, Pumps, Water Wheels, Flour Mill Machinery, Oatmeal Mill Machinery, Gyrotors, Emery Choppers, Wood Working Machinery, Shingle Machinery Heading and Stave Machinery, Wood Rim Split Pulleys, Iron Pulleys, Shafting, Hangers, Friction Clutch Couplings, Friction Clutch Pulleys, Safes, Vaults and Vault Doors.



Should you be interested in any of the above we shall be pleased to furnish you Catalogues, Etc., if you will write us.

Reliability

Has been our motto in everything we sell whether for the

Garden, Field, Farm, or Dairy

Farm Seed Catalogue, Field Root Grains, Fodder Plants, Etc.

Flower and Vegetable Seed Catalogue, giving full particulars of the best Seeds for the Garden.

Market Gardeners' Catalogue, for the use of those who are raising Vegetables and Flowers for Market.

Bee Supply Catalogue, for Bee-Keepers.

Poultry, Dairy and Creamery Supply Catalogue, for Poultry Keepers, Cheese and Butter Factories and Home Dairies.

Wheat Catalogue, issued in the Fall.

Flowering Bulb Catalogue, also issued in the Fall.

We will be pleased to send any of these Catalogues to interested parties.

Darch & Hunter

"Seedsman to the Canadian People."

London

Canada

Founded 1863

Waterloo, Ontario.

The Waterloo Mutual Fire Insurance COMPANY

42ND FINANCIAL STATEMENT

| RECEIPTS. | | EXPENDITURE. | |
|--|---------------------|--|---------------------|
| Balance brought forward..... | \$212,433 35 | Losses..... | \$160,829 67 |
| Premiums..... | 220,217 66 | All other Expenses..... | 89,869 38 |
| Interest, Rent and Re-Insurance... | 26,262 68 | Balance..... | 208,214 64 |
| | <u>\$458,913 69</u> | | <u>\$458,913 69</u> |
| ASSETS | | LIABILITIES, ETC. | |
| Real Estate..... | \$ 17,475 72 | Unadjusted Losses..... | \$ 5,284 38 |
| Bonds, Mortgages and Cash..... | 178,121 12 | Re-Insurance Fund..... | 111,882 37 |
| Other Assets..... | 16,040 58 | BALANCE..... | 94,470 67 |
| | <u>\$211,637 42</u> | | <u>\$211,637 42</u> |
| Cash Balance over all Liabilities...\$ 94,470 67 | | Unassessed Premium Notes..... 249,049 92 | |
| Total of Assets..... 460,687 34 | | | |

Audited and found correct

(Signed) J. M. SCULLY, F. C. A. }
 (Signed) BENJ. DEVITT } Auditors.

WATERLOO, January 21st, 1905.

FRANK HAIGHT, GEORGE RANDALL, President. T. L. ARMSTRONG }
 Manager. WM. SNIDER, Vice-President. R. THOMAS ORR } Inspectors.

Chas. A. Cyphers' Announcement.



SINCE my withdrawal from the Presidency and General Managership of the Cyphers Incubator Co., a year ago, my "Model Incubators and Brooders" have become as well known as the "Cyphers," my older invention. That the newer invention, the "Model," has been doing better work than the older has also become well known.

The progressive poultryman needs the best, and will have it at any cost, but, at the same time does not like to pay a premium over that which another has to pay who is situated perhaps only across a river. To place my Canadian customers on an equal footing with their brother poultrymen across the border, avoiding the duty and giving them the machines at the same price at which they are sold in the States, I have decided to manufacture in Canada. I have made arrangements with Mr. C. J. DANIELS, of Toronto, to take charge of the manufacture, and the Canadian branch will be entirely under his management. Mr. Daniels is too well known to Canadian Poultrymen to need any commendation from me. I place the Canadian business in his care with full confidence in his integrity and ability, and the assurance that my Canadian customers will receive courteous and honorable treatment at his hands.

CHAS. A. CYPHERS
 Manufacturer,

BUFFALO, N. Y.

TORONTO, CANADA

Please address all Canadian business communications in the future to

C. J. DANIELS, 196-200 RIVER ST., TORONTO, CANADA

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

HON. JOHN DRYDEN SAYS

"We have been permitted to use at Maple Shade during the last year, your disinfectant known as ZENOLEUM. I am glad to say that we found it all that you represent. It is an admirable mixture for the purpose for which it is intended, and may be put to so many uses on a stock farm that no advanced stockman should undertake to carry on his business without keeping a supply constantly on hand. As a destroyer of vermin on cattle and as a general disinfectant, I cannot recommend it too strongly."

Zenoleum for all Stock Raisers

ZENOLEUM is the stockman's standard remedy. It prevents cholera, destroys all disease germs, kills lice, cures mange, purges the stomach and removes intestinal worms. It gives a clear healthy skin and a wholesome, vigorous body.

Zenoleum is absolutely non-poisonous, non-irritating, non-inflammable and non-explosive. It is perfectly safe for use. It is absolutely certain in results.

**Don't wait for trouble. Head it off. Use Zenoleum.
Order to-day and take no chances.**

| | | |
|---|---|---|
| Prices of ZENOLEUM Duty Paid | } | 8 ounce tin, making 6 gallons of fluid, \$ 25 |
| | | 1 quart tin, " 25 " " " 50 |
| | | ½ gallon tin, " 50 " " " 90 |
| | | 1 " " " 100 " " " 1 50 |
| | | 2 " " " 200 " " " 3 00 |
| 3 " " " 300 " " " 4 50 | | |
| 5 " " " 500 " " " 6 25 | | |

Special rates on larger quantities. Freight paid on orders of one gallon or more

Send for free famous Zenoleum Booklets, "Piggies' Troubles," "Veterinary Adviser" and "Chicken Chat."

**Zenner Disinfectant Co., BRAMPTON, ONT.
DETROIT, MICH.**

Avoid Disappointment

Buy Bruce's Seeds

Bruce's Re-Cleaned Farm Seeds

Farmers all over the Dominion are awakening to the fact that it pays to buy the very best seeds that can be procured, and our long connection with the best growers in the seed-producing districts gives us exceptional advantages in securing the best samples offered, while our cleaning facilities are unequalled. The large annual increase in our trade with the farmers of the Dominion is an evidence of the superiority of our stocks and of the personal attention we give to the interests of our patrons. Our first grades of Clovers and Timothy are in all cases export seed.

We offer as follows for early orders, subject to being unsold:

Clover Seeds

| | Per bushel 60 lbs |
|-------------------------|-------------------|
| Alsike, 1st Grade..... | \$ 8 00 |
| do 2nd Grade..... | 7 50 |
| do 3rd Grade..... | 7 00 |
| do and Timothy..... | 3 50 |
| Crimson, 1st Grade..... | 6 00 |
| Lucerne, 1st Grade..... | 8 00 |
| do 2nd Grade..... | 7 75 |
| Red, 1st Grade..... | 9 50 |
| do 2nd Grade..... | 9 00 |
| Mammoth, 1st Grade..... | 9 50 |
| do 2nd Grade..... | 9 00 |
| White, 1st Grade..... | 13 20 |
| do 2nd Grade..... | 10 80 |
| Yellow, 1st Grade..... | 6 50 |

Grass Seeds

| | Per bushel, 14 lbs |
|---------------------------------|--------------------|
| Blue Grass, Canadian Fancy..... | \$ 1 10 |
| do Kentucky, Fancy..... | 1 75 |
| Bronus Inermis, Fancy..... | 2 00 |
| Meadow Fescue, Fancy..... | 1 75 |
| Orchard Grass, Fancy..... | 2 25 |
| Red Top, Fancy..... | 1 75 |
| do Common..... | 1 25 |
| Lawn Grass, Bruce's..... | 2 80 |
| | Per bushel, 48 lbs |
| Hungarian..... | \$ 1 00 |
| Millet, German..... | 1 25 |
| do Common..... | 1 00 |
| Timothy, 1st Grade..... | 2 25 |
| do 2nd Grade..... | 2 00 |

Prices of Seed Grains, Feeding Stuffs and Poultry Supplies on Application

Remit 20 Cents Each for Two-bushel Cotton Bags

Our Beautifully Illustrated Catalogue of Seeds and Supplies—88 pages—mailed free to all applicants.

LITTLE GIANT GEARED HAND SEED SOWER

The best Seeder offered; gives universal satisfaction; \$1.75 each; smaller size, \$1.50 each.

John A. Bruce & Co.

SEED MERCHANTS

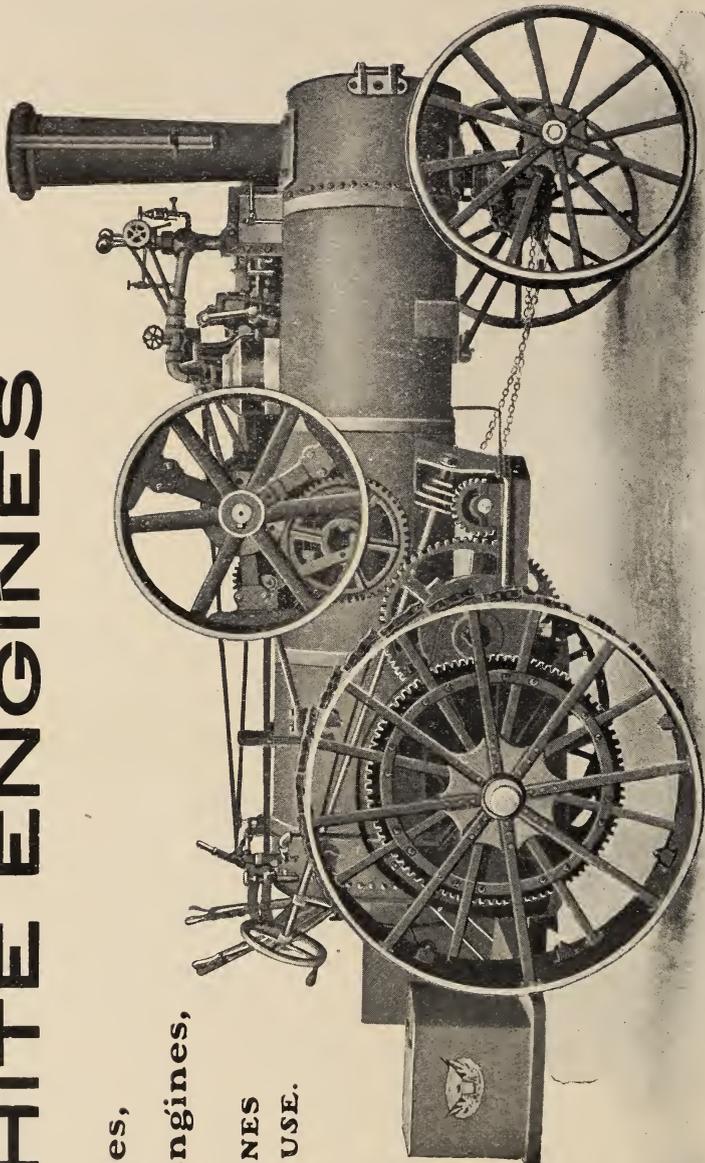
HAMILTON, CANADA

Established over half a Century.

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WHITE ENGINES

Portable Engines,
 Traction Engines,
 REBUILT ENGINES
 FOR FARMERS USE.

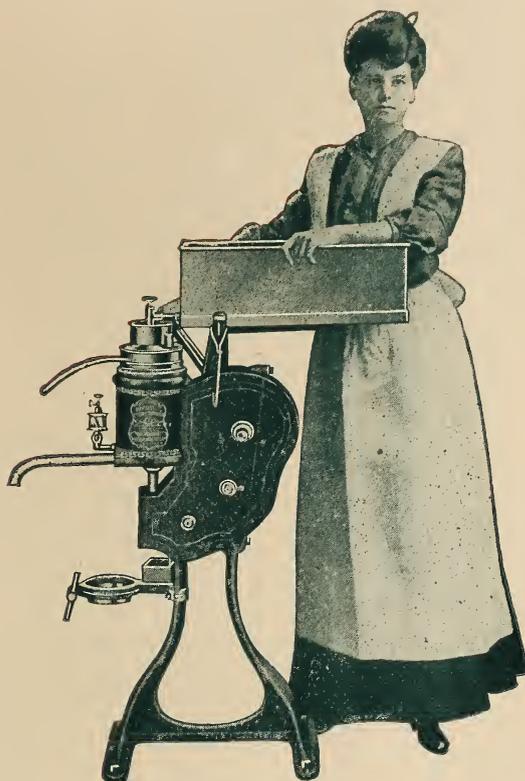


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 AND
 PARTICULARS.
 HAVE YOU
 OUR
 1905
 CATALOGUE?

The George White & Sons Co. Limited

LONDON, - CANADA.

THE
Economy
OF A
CREAM
Separator



"Cast not your pearls before swine," is good advice, but rather lacks application. For the benefit of many dairy farmers it may well be changed to "Cast not your CREAM before swine—when butter is selling at 20 cents a pound." That's what you are doing every day of your life if

you skim your cream by the old fashioned setting system. May be you think "Well, the hogs and calves get it, so it isn't wasted." Now look here, Mr. Dairyman, cream is as valuable to you as pearls were to the ancients—you can't afford to "Cast it before swine." One cent's worth of oil meal mixed with skim milk is equal to one pound of butter as a food for stock. What you must have is a

UNITED STATES CREAM SEPARATOR

Then you won't waste any cream—you won't have to set your milk down cellar and your wife won't have to wash crocks and pans. All you need to do is to let one of the children turn the separator crank for a few minutes, giving you the fresh warm skim milk to feed your young stock, and the rich smooth cream ready to ripen and churn. That sounds easy doesn't it—and it's as easy as it sounds when you have a U. S.

Down at St. Louis World's Fair last summer every highest score on dairy butter was awarded to butter makers who use the U. S. Cream Separator—that's good solid proof of its unapproached superiority.

Lay this paper down now, and write us for our valuable looklet "The Dairy."

ADDRESS—

VERMONT FARM MACHINE CO.

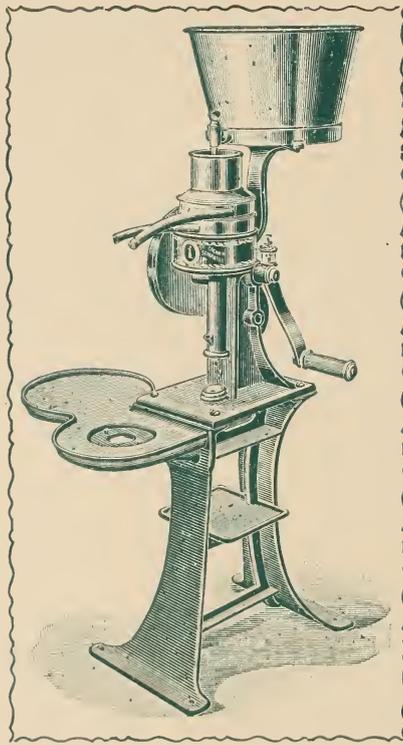
BELLOWS FALLS, VT.

**Transfer Warehouses at Hamilton, Ontario,
Montreal and Sherbrooke, Quebec.**

De Laval Cream Separators

Are enough better than the best
of the others to make it
Business to get the

DE LAVAL



Grand Prize Winner

The De Laval Separator Co.

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