THE O. A. C. REVIEW

Published by THE STUDENTS of the Ontario Agricultural College, GUELPH, ONTARIO, CANADA.

APRIL, 1904.

CONTENTS.

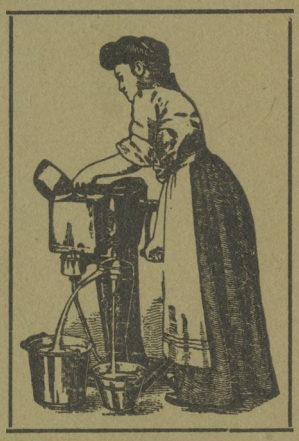
	Page
The Yukon as I Saw It	9
Concerning Forestry and Education	17
History of the Sugar Beet Industry in Canada	20
Practical Economics	26
Agricultural Department	30
Experimental Department	34
Horticultural Department	40
Editorial	48
Our Old Boys' Page	51
Book Review and Exchange Column	54
College Reporter	56
Macdonald Girls' Notes	61
Athletics	63
Locals	65

Four Good Reasons
For Buying
A Tubular Separator.

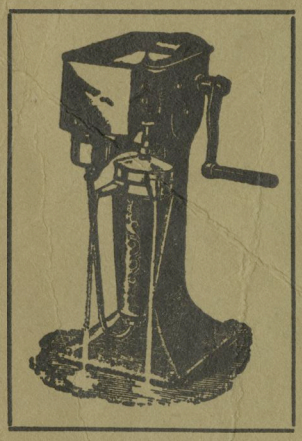


IT increases the yield of cream 25 to 50 per cent., raises the quality of butter 10 to 25 per cent., cuts in two the labor of caring for the milk, doubles the value of skimmed milk as stock food.

Your neighbor's success proves this true.



More Good Reasons For Insisting on a Tubular.



It has the bottom feed. Other separators drop milk in at the top. It has a waist low milk tank. Other separators have tanks five to six feet high. It has **a simple bowl,** containing one tiny removable piece. Other separators have bowls full of contraptions. It has **wholly** enclosed, easy to reach, **self-oiling gears;** not an oil hole, oil tube or oil cup on the machine. It has **a small diameter bowl suspended from a single ball-bearing.** Other separators have a bucket bowl set on a spindle. In addition to the above positively exclusive features—**features found in no other separator**—the Tubular will turn one-third easier, use one-tenth as much oil, wear twice as long, cost less for repairs, and is guaranteed to skim twice as clean as any other machine.

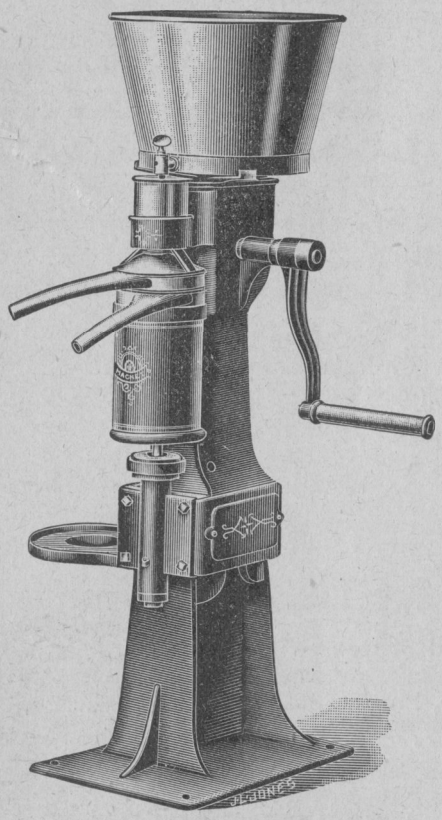
Get Our New Handsome Catalogue.

The Sharples Co.,
CHICAGO, ILL.

P. M. Sha[illegible]
WEST CHESTER, PA.

APRIL 1904

FREE! FREE!



Get a Magnet Cream Separator Calendar for your room

A beautiful, large calendar, 17 x 24, lithographed in eight colors, will be given to each student and ex-student of the O.A.C., and those taking or who have taken any of the special courses in dairying. Write to the factory, giving your name and P.O. address, and the calendar will be mailed to you.

The students in residence at the College can obtain them by personal application at the office

PROF. DEAN'S TESTIMONIAL.

Dairy Dep't Ontario Agricultural College,
Guelph, Ont., July 4th, 1903.

The Petrie Mfg. Co., Limited, Guelph, Ont.

GENTLEMEN:– It gives me great pleasure to testify to the value of your Magnet Cream Separator to the farmer and dairyman. We are using this separator in the College dairy, and it gives general satisfaction, both to the students and instructors. Its chief points are its minimum need of power according to capacity, its general close skimming, steadiness of motion, ease in cleaning and general convenience. We are also pleased that such a good machine has been designed and made in Canada. Canadian dairymen would do well to inquire into the merits of Canadian-made cream separators before purchasing.

H. H. DEAN, Prof. Dairy Husbandry O. A. College.

THE PETRIE MFG. CO., Limited.

GUELPH, CANADA.

Maritime Branch, St. John, N. B. **T. S. PETRIE, Manager.**

FOSTER & FOSTER,

Dentists.

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

TELEPHONE, 14.

W. C. GOETZ,

Reliable Footwear

AND REPAIRING.

Up. Wyndham St. Op. G. B. Ryan.

When you want a Special Feed

Call at McCREA'S for Special Supplies. We make a specialty of choice Candy.

J. A. McCREA,

The Noted Tea Store and China Palace.



Guelph's Big Hardware.

OUR PRICES ARE ALWAYS RIGHT.

J. M. BOND & CO.

The Fit Reform Wardrobe,

WHOLESALE TAILORING.

Suits to measure from $12 to $25. A full line of men's furnishings always on hand. Your money back if not satisfied.

The Fit Reform Wardrobe,

28 WYNDHAM STREET.

THOMPSON & KELLINGTON.

We carry a fine range of Belwarp and Scotch Suitings and Trousers. You will do well to call and see us. We make perfect fitting clothes, and our prices are right. Suits from $15.00 up, Pants $3.50 up.

THOMPSON & KELLINGTON, **Ladies' and Gents' Practical Tailors.**

RA-RA-RA, O.A.C. *RA-RA-RA, O.A.C.*

McKEE'S DRUG and BOOK STORE.

The Best is none too good for the O.A.C.—If you patronize McKee's Pharmacy you get the best. Our name on a label is a guarantee that your package contains the best that money can buy. Something every dresser is unfurnished without

McKEE'S CREAM DENTIFRICE—Elegantly fragrant and refreshing. Makes the teeth pearly white, perfuming the breath with a delightful aroma. Something every athlete should have when training: **McKEE'S MAGIC LINIMENT**—This liniment is far superior to any other liniment on the market. Many have tried it, and all who have tried it found it so. We are out for your trade, and we are satisfied we can please you when we get it. Yours faithfully,

JOHN D. McKEE, Phm. B., **Chemist, Guelph.**

RA-RA-RA. O A. C.

The Leading Drug Store.

Law, THE DRUGGIST.

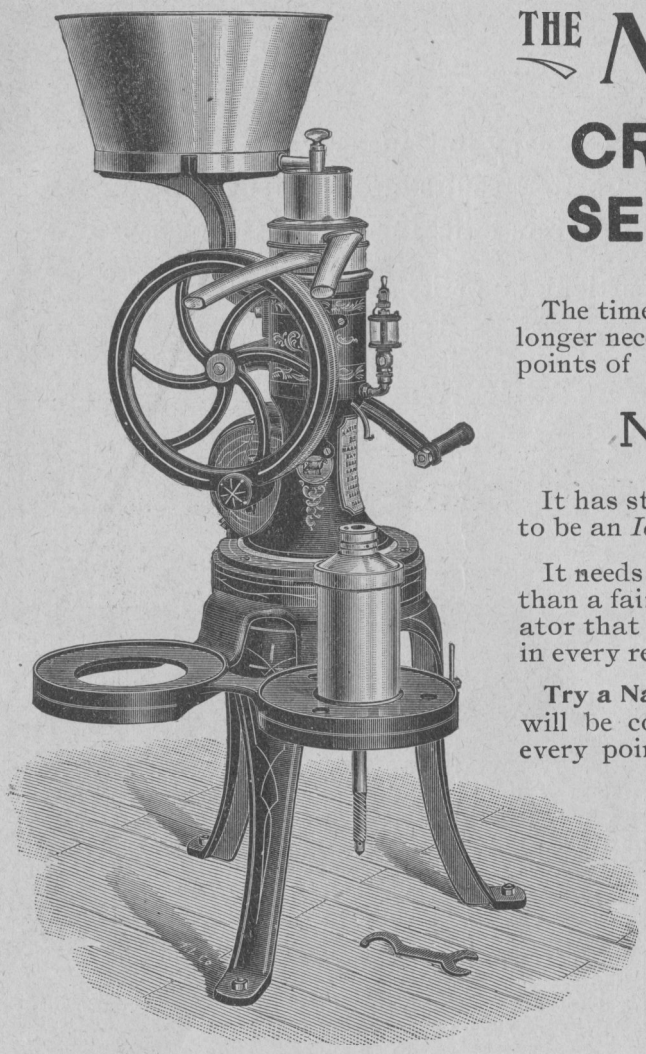
Upper Wyndham Street, Guelph.

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.



THE *National* CREAM SEPARATOR

The time has arrived when it is no longer necessary to mention the many points of merit possessed by the

NATIONAL.

It has stood the the test and proved to be an *Ideal Cream Separator*.

It needs no further recommendation than a fair trial to convince the operator that it is an Up-to-date machine in every respect.

Try a National for yourself, and you will be convinced that it possesses every point of excellence that could

be desired in a

PERFECT CREAM SEPARATOR.

Send for Catalogue and Hints on Butter Making and Modern Dairying.

THE NATIONAL is made in three sizes:

Style	No. 1 A	— capacity	450 to 500	lbs.	per hour.
"	1	"	330 to 350	"	"
"	"B"	"	250 to 275	"	"

MANUFACTURED BY

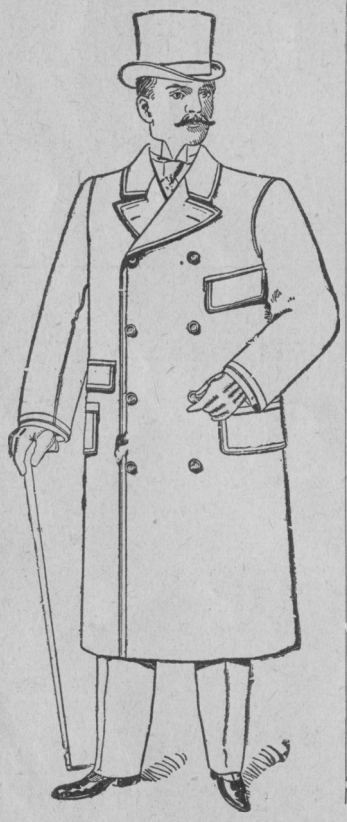
The Raymond Mfg. Co. of Guelph, Limited,

GUELPH, - ONTARIO.

THERE is no company in Canada which offers to young men better results on Money invested than the Manufacturers Life Insurance Company.

Write for particulars of its Guaranteed Investment plan to

THE MANUFACTURERS LIFE INSURANCE CO'Y,
Head Office, Toronto, Canada.



Fit the Form Clothing

This splendid brand of clothing, made up exclusively for our ready-to-wear clothing trade, evidences the perfection of **good honest material and workmanship.**

OVERCOATS at $5, $6, $7.50, $9, $10, $12.50, $14.50, $16.
GOOD TWEED SUITS at $5, $7, $9, $11, $13, $15.
Our guarantee goes with every garment sold.

MEN'S FURNISHINGS

Wool and fleece lined shirts and drawers from 50c. to $2.50 per suit. Are splendid value. White and fancy shirts in beautiful styles. Neckwear, collars, etc. in the nattiest styles.

HATS and CAPS,

The Best and
Cheapest Goods
the
Trade Supplies.

We Solicit Your Patronage.

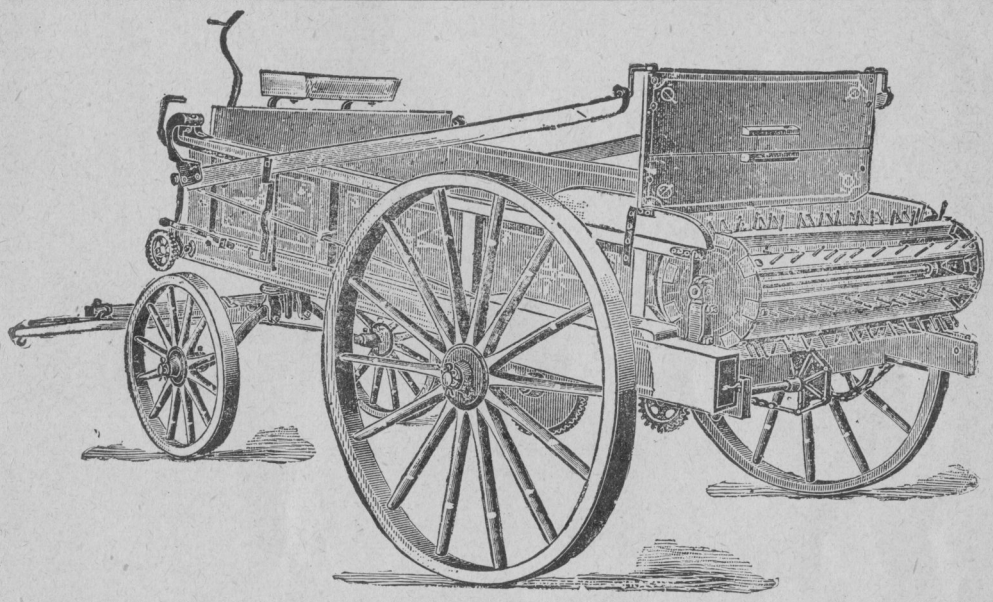


E. R. BOLLERT & CO.,

25 and 27 Lower Wyndham St. **Guelph**

Kemp's 20th Century

MANURE SPREADER.



Spreads all kinds of barnyard manures Also lime, wood ashes, and salt. Send for Booklet, "Multiplying His Acres."

KEMP MANURE SPREADER CO.

LIMITED.

STRATFORD, CANADA.

HIS MAJESTY KING EDWARD VII

Confers a Proud Distinction.

Massey-Harris Co., Limited, have received the Royal Command to instal a

Massey-Harris Binder

ON

His Majesty's Osborne Farm

The Massey-Harris Binder is also in use on the Experimental Farm of the Royal Agricultural Society of England.

The leading Agriculturists of the British Dominions the world over reap their harvests with Massey-Harris Machines.

DO AS THE KING DOES.

BUY A MASSEY-HARRIS.

CANADIAN PACIFIC

Nelson, B. C.	**$39.75**
Rossland, B. C.	
Vancouver, B. C.	**$42.25**
Victoria, B. C.	
Seattle, Wash.	
Tacoma, Wash.	
Portland, Ore.	

From Guelph, Second Class. Until April 30th, 1904. Lower trips to many other points. Apply to the nearest Canadian Pacific Agent, or

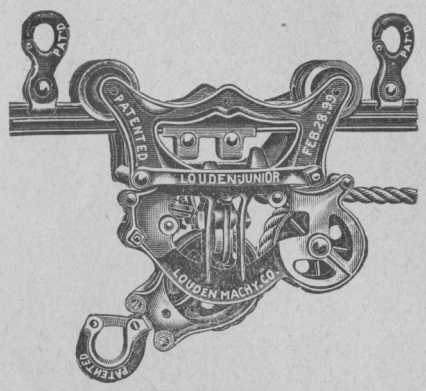
A. H. NOTMAN, A. G. P. A.,
1 King St. East, Toronto.

J. HEFFERNAN,
City Agent.

A. C. BROWN,
Depot Agent.

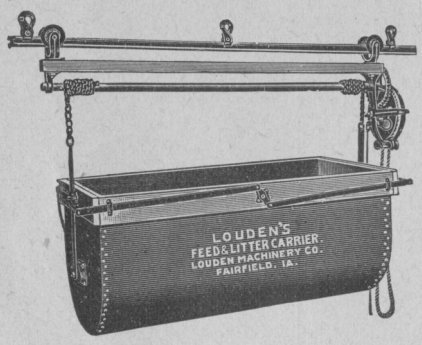
"Louden's Goods are Good Goods."

WE make 15 different styles of Hay Carriers, every one of which is a winner Our carriers are well-known by their *flaring mouth* and *round headed fork pulley.* They never miss, and no matter how many twists there are in the rope, you never need to back down, because the horses will take the twist out.



Our "Louden Sling Carrier"

Has triple draught, and can be used either with self-locking or parallel pulleys, or with a fork.



No modern cow stable is complete without one of our

Feed and Litter Carrier.

A customer, who used one last winter, says: "It saves half the labor and does the work so much better that I would not be without it for three times what it costs."

It can be switched to as many rows of cattle as desired.

We make six styles of flexible Barn Door Hangers, but if you want the best use our

Double Tread Barn Door Hanger.

These can never leave the track, will always run easy, and no matter how much the wall warps it will never bend the track, because the track is hung.



Write for Illustrated Catalogue of Hay Carriers and Circulars of Our Barn Door Hangers, Feed and Litter Carrier and Hardware Specialties.

LOUDEN MACHINERY CO., - Guelph, Ont.

The O. A. C. Review

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

THE DIGNITY OF A CALLING IS ITS UTILITY.

Vol. XVI. ONTARIO AGRICULTURAL COLLEGE, APRIL, 1904. No. 7

BOARD OF EDITORS:

R. J. DEACHMAN, '05, Editor-in-Chief. H. R. MACMILLAN, '06, Asst. Editor.
J. C. READEY, '04, Agricultural.
T. C. BARBER, '04, Horticultural. C. I. BRAY, '04, Personal and Exchange.
A. A. J. LOGSDAIL, '06, Local. H. S. STAYNER, '06, Athletic.
C. W. ESMOND, '05, College Reporter.
D. H. JONES, '06, Artist.
J. B. FAIRBAIRN, '07, First Year Reporter.
MISS JESSIE McCALLUM, Macdonald Reporter.

THE YUKON AS I SAW IT.



Rev. R. W. Ross.

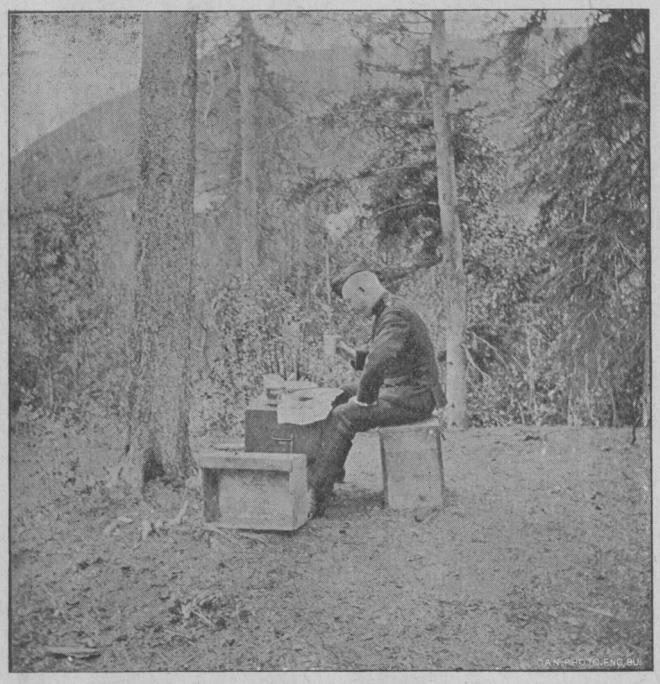
IT is only some six years ago that two Indians, Skookum Jim and Tagist Charlie, and a white man named Jack Cormack, reported a rich find of gold on BonanzaCreek, about a dozen miles from Dawson. The news spread like wild fire, and soon "Klondike" was a household word. Adventurous spirits from all quarters equipped themselves with outfits, and hurried off to stake their claims and make their fortunes. The stampede of '97 and '98, by way of the Edmonton and Teslin trails, rivals anything in the annals of gold seeking, in both tragedy and romance. The story goes that there was some romance connected with the discovery. Jack Cormack was prospecting in the neighborhood and met a sister of the Indian's. She inquired of his success, and then the conversation became affectionate. She told of a rich discovery the boys made, and expressed her feelings for him by saying "I like you pretty well." He evidently reciprocated, for it was agreed, if she told him the secret, he would marry her. The fact is they were married, and Jack and the boys were joint owners of Discovery.

In the "Early Days" it required months of hard and dangerous packing to reach the Klondike. To-day anyone able to sit in an arm chair may, with good connections, in sum-

mer, reach Dawson from Toronto in less than ten days.

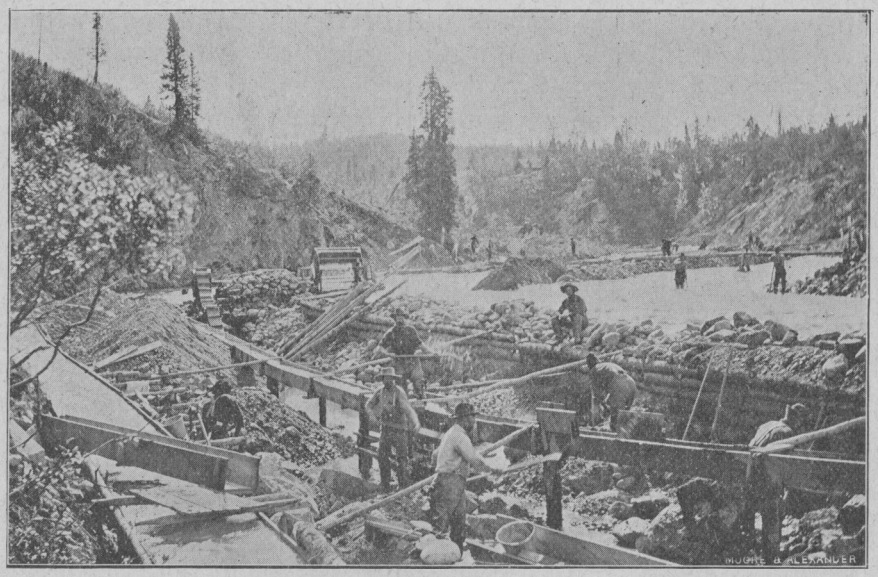
It may be wise to assume that such a trip is as little known to the reader as it was to the writer previous to his visit of last summer.

From Vancouver to Dawson, the trip falls into three natural divisions:—An ocean voyage of more than 900 miles to Skagway; a railway journey over the coast range of mountains to White Horse, in the Yukon, a distance of 110 miles; and a sail of 460 miles down the Yukon waters to Dawson city. The ocean voyage is the Paradise of travellers, who dread sea-sickness and delight in magnificent mountain scenery. The steamer's course is not in the open sea, but through what seems a great natural canal, which winds among innumerable islands. Only twice, first at Queen Charlotte's and then at Dixon's entrance, do you get a view of the open ocean, and feel its mighty swell. The magic touch of man is scarcely visible on the Pacific coast. All is primeval. Great wealth of unbroken forest covers islands and shore alike. Now and again we get sight of a cannery village, or Indian settlement, but the sea is alive with porpoises, seals, spouting and fin-back whales. It is in the Alaskan waters, however, that the mountain scenery is most impressive. The panorama on the Lynn Canal is really awe inspiring; there one is surrounded by the loftiest mountains and highest snow-clad peaks, and wedged in between are the great glaciers, from which cascades leap and rush in fleecy foam down the bare rocks, through the lower wooded slopes, to the deep blue sea. There is almost constant rain and fog on this coast; but the fog, sometimes resting on the rugged shoulders, sometimes rising above the peaks, only enhances the Creator's glorious display.



Trees nearly 100 feet High.

The Indian villages along the way have large, fine looking houses, but scarcely any furniture within; near by are their queer burying places, with carved totems, and little cabins raised over the graves. Mis-



Washing on the Creeks.

sion work is carried on at all these places. One of the best missions is at Metlakatilla, where Mr. Duncan has reserved the whole island for the Indians. The following incident shows that the Indian of the north is capable of civilization. The missionary's wife had trained a number of them to sing, but on one occasion the choir refused to either go to church or sing, without remuneration; the reason given for the strike was that the choristers in Victoria, so they were informed, received pay for their services, and they desired the same treatment.

The Indians are very fond of sleight of hand, and such tricks. A rather artificial whiteman undertook to satisfy this curiosity. He gathered them together into a little hall; the show began with song and dance; then, quick as a flash, his right eye was snatched from its socket; a few more fantastic movements, and his teeth and gums dropped from his upper jaw; there he stood gaping with empty eye socket and mouth. The Indians started to go, he uttered a wild scream, whipped his knife from his belt, and with one stroke his scalp was off, and so were the panic stricken redmen.

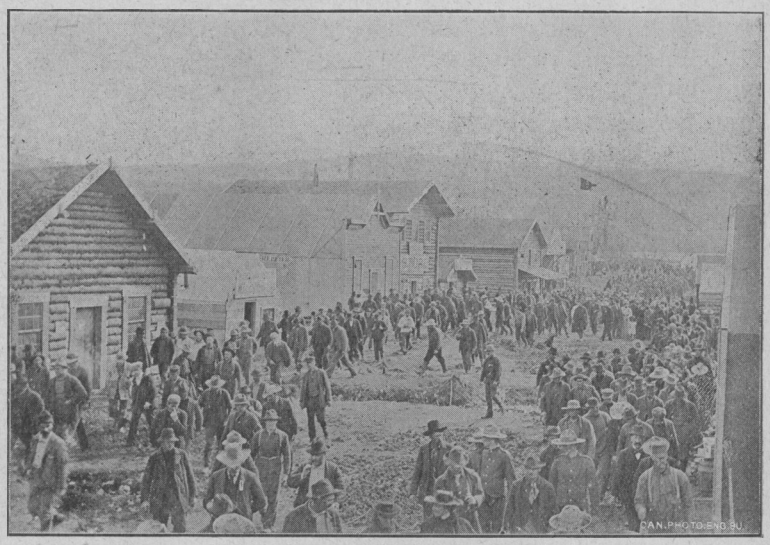
Skagway is the present port of entry to the Yukon; though a large amount of shipping goes round by St. Michaels, and up the lower river. In the boom days Skagway was a remarkable City; but now it is like a deserted village; and the soldiers are to be removed as soon as the new frontier camp at Haines' Mission is completed. Skagway has a splendid water system; the reservoir is a mountain lake, fed by a glacier, thousands of feet above the town. The town has been the scene of many ex-

citing incidents. A year or so ago, a dynamite burglar entered the Bank of Commerce, and gave the clerks their choice of either handing out the cash, or being blown into eternity in a second. They took to their heels instead; he fired after them; and the third shot exploded his dynamite; he was blown into eternity in less than a second, the Bank was a wreck, but the brave boys were unhurt. The noted Soapy Smith terrorized the town for a few months. When the first miner came out from Dawson, with his yellow dust, he was robbed by the gang. Some of the best people held an indignation meeting on the wharf. Soapy and the gang heard of it, and went down to break it up; but were stopped by a sentry. Soapy deliberately shot him with a little Colts' gun concealed in his hand. The sentry retaliated, and fired five shots into the outlaw; both were mortally wounded. They died soon afterwards, and were buried by Mr. Sinclair, the Yukon Missionary, who received the gun as a gift from Soapy's wife. This ended the reign of terror.

The White Pass Railway from Skagway, is narrow gauge; and crawls up the steep grade of the White Pass by a long loop around the mountain side At the summit, are the Custom Houses; and the two flags are peacefully flung to the breeze together. The grade on the eastern side of the coast range is much easier; and a quick run brings us to Bennet, at the head of Lake Bennet. It was here the gold seekers prepared their crafts for going down the Yukon waters. In these ship yards the most curious bottoms afloat were constructed; patterns never dreamed of at Belfast or on the Clyde; iron-clads, heavier with nails, than timber. Many navigators had their first experience on Lake Bennet. Two of these were discovered sitting face to face, awkwardly pulling at their oars, trying in vain to get off from shore. About 70 miles run along these waters, brings us to White Horse Station. White Horse is a busy place, with stores, churches, school, hospital, and mounted police quarters. At the large railway freight sheds along the river, the goods for Dawson are stored during the winter. Navigation opens about the middle of June, when the freight is carried down in the big flat bottomed steamers, with stern paddle wheels. These boats ply up and down the river for about three months in the year, the usual navigation period. There are some two dozen of these boats, the majority of which belong to the White Pass people. It takes less than two days to go down to Dawson; and about three and a half to come up; so the current must be quite swift. With the exception of Five Fingers, where a cable is necessary to come up the rapids, every part of the way is easily navigable. At Five Fingers coal was taken out last summer. In June the Yukon is a beautiful summer land. The air is warm and dry; the roses, and a hundred other varieties of flowers are in bloom. The purple willows paint the hillsides just as beautifully as the heather paints the Scotch hills in August. While hundreds of varieties of plants and mosses, indigenous to Southern Canada, have been found, no Arctic plant grows in the Yukon. The shores of the river vary from high rocky bluffs,

sand hills, mossy marshes, poplar and birch groves, to fine spruce forests, with trees more than a foot in diameter and 90 or 100 feet high. Coming up the river we saw a fine pair of moose quietly feeding in a grassy nook; empties more water into the sea than does the Mississippi.

Dawson has a population of about 5,000. It is a sort of processional town. The churches often have to select managers two or three times a

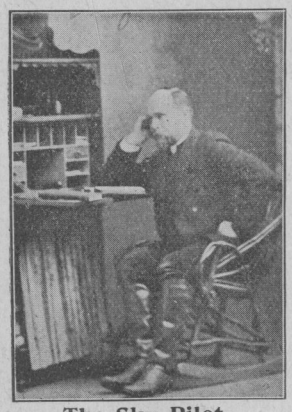


Typical Street Scene in Dawson.

besides moose, cariboo and mountain sheep, the bear, lynx, fox and rabbit, the martin, otter and beaver, the grouse and partridge, all find a good hospitable home there. Currants raspberries, blue-berries, and cranberries grow in abundance. There is an interesting seam of volcanic ash about a foot thick, and only a few feet from the surface of the ground; this runs along the river for miles and tells its story of a violent convulsion in the not very remote past. Large rivers, such as the Lewes, McMillan, White, Stewart, Indian, Klondike, unite their forces, and at Dawson we have the "Mighty Yukon," a river worthy of the name; but it rolls on and on for 1600 miles further, and year to secure a quorum for business. The city lies in the valley, at the junction of the Yukon and Klondike rivers, and is not unlike any other capital frontier town. It was built in a hurry and for business; the houses and cabins are for the most part log, but the newer buildings, such as Administration, Governor's residence, Postoffice, School, Athletic buildings, the Presbyterian and Anglican churches, are frame. Dawson is notable for its many warehouses, and a number of these are of corrugated iron. The hardware stores, the nugget jewelry in the shop windows, and the mining machinery and provisions moving up the creeks on wagons, drawn sometimes by seven-mule

teams, give the place all the touches of a gold mining camp.

The life in Dawson is stirring. Social functions, with richly and gayly dressed ladies and gentlemen are common. Athletics are represented by lawn tennis, football and baseball. I was present at the Fourth of July celebration, when events in jumping, running, climbing the greasy pole, and catching the greasy pig, were followed by a pugilistic encounter between Uncle Sam and John Bull, represented in uniform by two little brothers, five and six years old. Their seconds were Bowley and Choinski, two professionals who entertained Dawson a few evenings before at a prize fight in the Athletic Buildings. Chief Isaacs and a number of his subjects gave an Indian dance, notable for its monotonous singing, violent, jerky gestures of all in concert, which kept increasing in convulsiveness until all fell down apparently exhausted; then the silver coins, the sign of approbation, came flying from the grand stand. These were eagerly snatched and pocketed, and the program came to a close with a shower of rain.



The Sky Pilot.

On Sunday, June 21st, the Methodist minister held a service at midnight on the mountain above Dawson. His text was "There was no night there." How like the New Jerusalem is this city; gold in the streets, no need of candle, nor stars, (I saw no star in the sky while in the Yukon), and no night there.

A trip up the creeks is a surprise. We drove in a rubber-tired-buggy along most excellent roads, which follow the course of the streams. Log cabins, road houses, large steam mining plants, net work of tram rails, and sluice boxes, and heaps of mining tailings, bear witness to the amount of money spent in getting the coveted gold. The Dome is the highest part of the Klondike, and from its slopes, like the spokes of a wheel, the gold bearing creeks, Gold Bottom, Hunker, Dominion, Sulphur, Quartz, and Bonanza, have their origin.

Bonanza, or the Forks, is a mining town at the junction of Bonanza and Eldorado creeks. It gets its water supply from the famous "Gusher." Gold Hill is just across the creek; and already more than six millions of gold has been taken out, largely by hydraulic methods. On the top of Gold Hill are the athletic grounds, and just across the gulch is the Bonanza Farm. Within a radius of two miles from Bonanza fifty millions of gold have been mined. The work in the Klondike has only begun; prospectors are constantly making new discoveries; and though there is sometimes deception through "salting the mine," excellent discoveries are constantly being made. "Salting the mine" means that an ounce or so of gold dust has been shot into the dirt; an excellent "pan" is then washed, and advertised, and the claim sells at a big figure. Quartz, too, may be salted by the clever use of a gold coin. A duped shareholder, after a couple of

assays which showed the claim full of yellow promise, piously exclaimed "Thank God I have enough;" he thought himself a rich man; but when the fraud was exposed, he declared with less unction "Another fake by jingo." They have this saying up there, "the gold is where you find it." Some find it, others lose all in the pursuit. Four miners of the lucky sort, took out a "dump" last winter, which cleaned up $108,000. The first part of the winter they were "up against it" as they say; the bed rock was sloping upward, and the dirt was panning out worse and worse. They were discouraged, and requested the manager of the big company, for which they were working on the lay system, to allow them to operate the adjoining claim; the request was refused, so they kept on, until the bed rock began to dip downward, then they saw the colors, and knew they had struck it rich. Great excitement prevailed for the rest of the winter, and especially at the "clean up," after which each man had $24,000 for the season's work. But many a miner was poorer after his "clean up" than before he began operations in the autumn. The manager of one of the largest mining plants on Bonanza took me into his "open cut" mine at midnight. It was broad daylight; the men were working, and we were able to pick out the flakes of gold from the dirt. "There it is" he would say, "the good God put it there for us." Here they were washing the dirt day and night, seven days in the week, so long as the water was running. Will the camp last? is a common question. When we are told that only one hundredth part of the country is explored; that several years will be required to clean up the creek claims; and when we see the hills, all of which contain gold, waiting for hydraulic power, the question ought to be an easy one.

The climate of the Yukon is a great surprise to everyone. It is almost inconceivable that a district so near the foggy coast, and so far north, could have a climate so dry, and warm, and delightful. The explanation given for this condition is, that the moisture of the western air is condensed, while crossing the mountains, and falls out as snow or rain; this leaves the atmosphere dry. Then the Yukon itself is a large sheltered valley lying between the Coast Range and the Rockies; and further, in summer time, the sun is shining the greater part of the 24 hours of the day; and its great warmth is evident from the luxurious growth of forest and field, wherever there is good exposure to its light. The two or three months of severe winter, is the period when the sun goes into hiding.

There is nothing that shows the real character of the climate so well as the Klondike gardens. Some of the vegetables raised there are superior to anything grown in Ontario. Indeed, a good garden in the Klondike Valley, is more to be coveted than a gold claim. A gardener came into Dawson early last spring with a few green onions in his coat pockets, for which he received $13.00. A lady purchased a box of strawberries at the rate of ten cents a piece.

Here are a few snatches from the prize list of the Dawson Industrial and Horticultural Fair, held last September:—Prizes and diplomas will be

given for the following exhibits:— Early and late cabbage, cauliflower, carrots, cucumbers, lettuce, onions, radishes, rhubarb, parsnips, beets, celery, turnips and potatoes: For the best sheaves of oats, wheat, barley and hay: For native fruits, and flowers; and the prettiest baby, weight and age considered.

It is quite true that some places the frost goes down two or three hundred feet in the ground, but this is not due to the frosts of winter; but to the freezing of the dirt at the time of deposit. However, this much is clear, that we have a heritage in the Yukon, worth looking after. In 1902, the total customs collected at Dawson, nearly reached the half million mark. Today 75 per cent. of the trade is held by Canadians, as against 5 per cent. a few years ago." Good materials, lightly and strongly put up, with bright, catchy labels, is what we want here," said a man who knows.



"Mushing."

The people of the Yukon are genial and respectable. Their religious interests are well cared for by such men as the Pringles, who "mush" up and down the creeks, wherever the men are at work, and by Mr. Wright, at White Horse, the threshold of the Yukon. Families residing in the north now, have the advantage of excellent schools and Christian Churches. The staff of teachers in Dawson will compare very favorably with any staff in the Dominion; and the school is well equipped, from the Kindergarten to the High School. The Presbyterian Church has a magnificent pipe organ, which is a real friend to many of the musical people of the city. In the case of sickness there is the "Good Samaritan" Hospital, established by the Rev. Dr. Grant, the stalwart Presbyterian minister at Dawson; it has been recently taken over by the city. This institution, has been all its name indicates; and is worthy of generous support, both from church and state. Life and property are as safe in the City of the North as in Guelph. The Canadian spirit is yearly becoming more dominant. The people are patriotic; and the alien and his family are now singing "God Save our King, and Heaven Bless

The Maple Leaf Forever."

R. W. Ross.

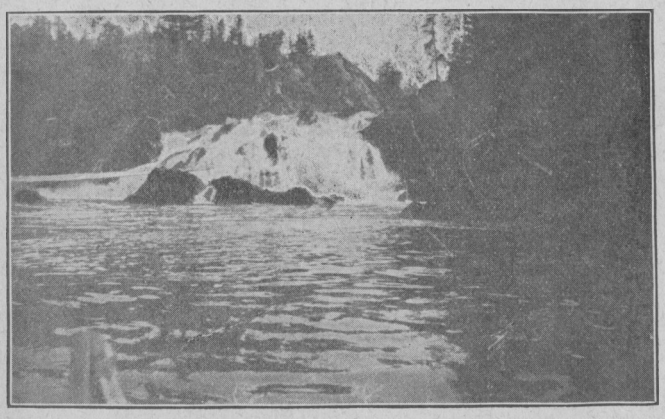
CONCERNING FORESTRY AND EDUCATION.

TO trace the development from acorn to oak, as determined by inner nature and outer conditions; to feel that the knowledge thus gained has given power to direct a century's growth to a useful end; to appreciate a good that cannot be attained within the limits of a single generation; these surely are important steps in the education of a man or of a nation. And these are the lessons that must be learned by the man or the nation that would approach the problems of forestry in a rational spirit.

From the very nature of the case, the planting and care of forests must rise above the local and the temporary. The subject is essentially unselfish, and finds its justification in seeking a good because it is good, without regard to person or time or place. In the same way the effect of neglecting nature's "forest laws" is seldom confined to the offending place or person. The evils resulting from the over clearing of farm-lands, or the desolation of the northern forest, are never merely local or temporary. The "cities of the plain" are suffering from floods to-day, because the hills a hundred miles away were denuded of trees in the middle of the last century.

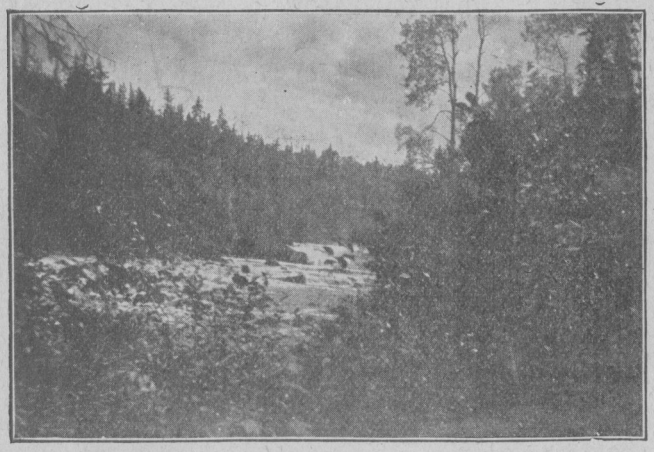
For such reasons it might well be claimed that the educational influence of forestry problems is hardly less important than their economic aspect. The permanent systems of forestry that are practiced on the continent of Europe, have given a stability to municipal and national life and character that might well be imitated on this side of the Atlantic. The forests of Wurtemberg have been harvested continually for a thousand years; and are now more valuable than ever before. The permanence of such an asset binds together the past, the present and the future, and furnishes an object lesson in thrift, far different from that supplied by the waste and destruction of Canadian woodlands.

But whatever the effects that follow the development of this important branch of agriculture, it is certain that education is necessary before its practice can become a possibility. The growing of trees on a commercial scale, from seed, is an art that has been nearly lost on this continent. A leading lumberman stated at the recent Forestry Convention in Toronto, that on entering his profession in middle life, he had no idea that pine-cones con-



The Beginning of the Flood.

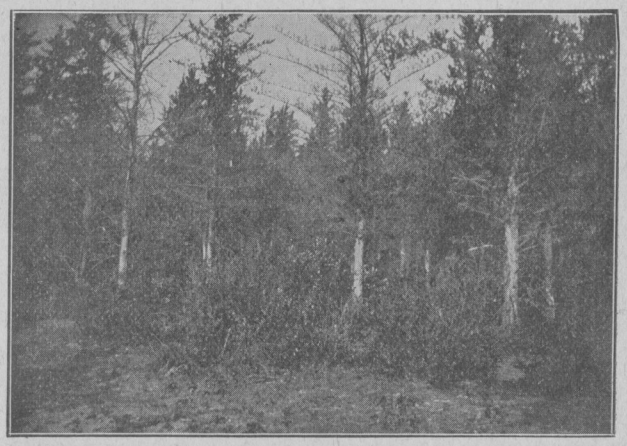
tained seeds from which future trees might be produced. Yet this gentleman is one of the ablest members of the Forestry Association, and his speeches showed him to be a most acute and intelligent observer. In view of this experience, which was shared, no doubt, by many who heard the confession, it would be interesting to determine what the average Canadian knows, or does not know, about the reproduction of forest-trees. Here surely is one corner of the vast field of Nature Study that could be exploited with profit in our schools.



The Reproduction of Forest Trees.

It seems clear that the proposed work in forestry at the O. A. C. must be very largely of an educational nature. The aim must be less to extend help than to show to all who are interested, how to help themselves. A thrifty plantation of seedlings, growing in some conspicuous site, that had been sold for taxes or had failed to produce beans or buckwheat, would not fail to interest all who saw it. One such object lesson in every township, under proper care and management, would do much to turn the attention of farmers towards re-covering their waste lands by artificial planting.

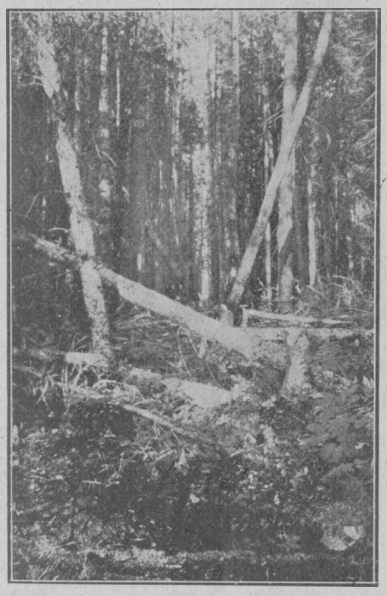
Then, gradually, as success might warrant, materials, in increasing quantity, might be supplied to responsible applicants under careful conditions as to care, reports and inspection. A plot of rough or sandy land, planted with seedlings, and protected for a few years from weeds and cattle, becomes of permanent and increasing value. To give the farmer's boy a living and growing interest in the homestead, what better investment could be made? What is now a barren field may well be worth a fabulous amount of money fifty years



A Thrifty Plantation of Seedlings.

hence, and such a prospect should do much to counteract the feeling that the farm is continually lessening in value.

The question of the School of Forestry for Ontario has been settled for the present by the adverse decision of the Provincial Government. This fact,

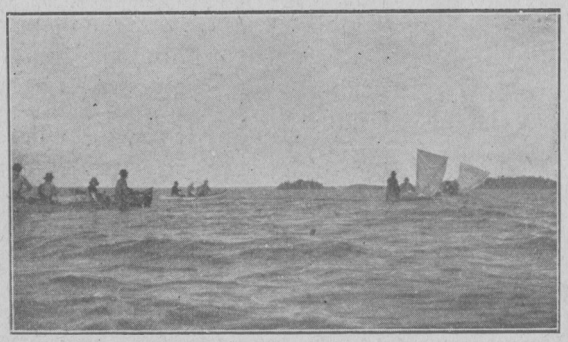


The Forests of the North.

coupled with the encouragement to be offered towards reforesting waste farm-land, must make Guelph the real centre of Forestry Education in this Province. So far as the agricultural and educational aspects are concerned, no one will question this result. Students of the O.A.C. will be able to take advantage of the practical work to be done in propagating forest trees, along with the theory of this subject as already taught. The general scientific basis of Forestry is identical with that of Agriculture, of which, indeed, it is a branch. The special applications to the problems of both using and conserving the forests of the North may demand an added course of special work along these lines, but only those with a general preparation, such as is outlined above, would be able to undertake such a course with advantage.

The Premier has suggested the advisability of sending abroad young men to learn the elements of this special Forestry. When the time is ripe for such a movement it is to be hoped that future graduates of the the O.A.C. will be prepared to do credit to their Alma Mater, in this, as in other departments. Where else, indeed, could our legislators look for men already trained in silviculture, and thus fitted to profit fully by experience in the schools of the neighboring Republic or of Germany?

W. H. MULDREW.





A Scene in the Fields near Guelph.

HISTORY OF SUGAR BEET INDUSTRY IN CANADA.

R. HARCOURT, B. S. A.

THE cultivated beet originated from a slender-rooted variety, indigenous to the shores of the Mediterranean Sea. By careful and scientific selection and cultivation a fleshy root has been developed, which is now grown extensively for the production of sugar and as a food for cattle.

In 1747, Margraaf, a Prussian Chemist, proved the existence of cane sugar in beet roots, but owing to the low percentage of sugar and the crude methods of extracting it, not much progress was made in manufacturing sugar from beets until the early part of the next century. At first not more than one or one and a half per cent. of sugar was recovered from the beets. Later, by improved methods of cultivation, judicious selection of mother beets, from which the seed was taken, and by the use of better machinery, the percentage extracted rapidly increased and the sugar beet industry developed wonderfully and spread throughout the greater part of Europe.

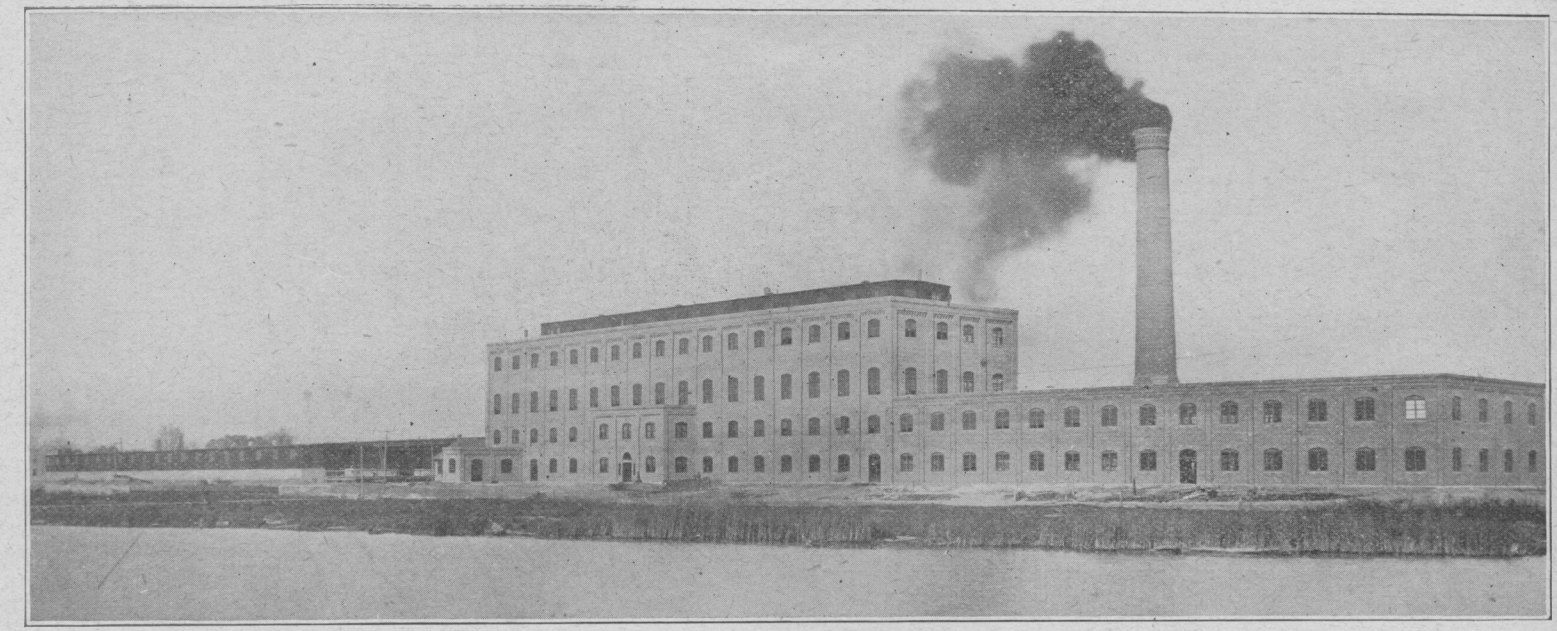
The first attempt to manufacture sugar from sugar beets in the United States was made in 1830, but it was not before half a century of experimenting was done that it became a success.

In Canada, it appears a factory was started in Paris about 1850. The Globe, November 1st, 1851, gives an

interesting account of a lecture delivered in Galt by Dr. Naphegyi, owner of the Paris factory, on the cultivation of sugar beets, and incidentally throws some light on the conditions prevailing at that time. "The doctor called the attention of his audience to the sugar beet—a specimen of which, weighing 25 pounds, he exhibited—which from experience, he assserted could be raised with profit in Canada." . . . "Fifteen tons from an acre he considered a small crop, and had no doubt but 25 or 30 tons could be raised with ordinary care and attention. He would give three dollars a ton for as many as could be brought to his factory." . . . "The doctor concluded by making the following proposal to the farmers in the neighborhood of Galt: If any number of farmers will agree to raise among them 200 acres of sugar beets he will supply them with seed, establish a sugar factory at Galt, and purchase the beets at the rate of three dollars a ton, delivered at the factory. This proposal was received with a good deal of satisfaction, many of the farmers expressing their willingness to give the beet root a trial." When we remember that one and a half pound beets are now thought to be as large as can be properly matured, and that a guarantee of 5000 or 6000 acres is required to secure a factory, it will be seen what radical changes have taken place in the past 50 years.

In 1872 the Department of Agriculture in Ottawa sent Mr. Barnard as a special agent to Europe with instructions to make inquiries concerning the industry and to secure seed. Seed for 50 acres was forwarded to Ottawa and a report was made embodying the results of his inquiries. In 1876 Mr. Oct. Cuisset, of Quebec, "Industrial chemist and manufacturer of beet root sugar," wrote a "Popular Treatise on Beet root Culture and Sugar Fabrication in Canada," in which he says: "It is now by experience incontestably shown that the soil in Canada is favorable to the cultivation of the sugar beet."

In 1875 the Quebec Legislature offered a bounty of $70,000, payable in ten yearly payments of $7,000 each, to the first factory established in a location approved by the government and of a certain capacity. This stimulated prompt action, and several companies were formed. The first sugar was manufactured in the fall of 1881, when three factories, located at Berthier, Coaticook, and Farnham, were operated. The machinery for these factories was brought from France, and each factory was capable of working 200 tons of beets per 24 hours. The price paid for beets was from $4.00 to $5.00 per ton. Unfortunately, the beet crop was a failure the first year, and all of the factories had a very short campaign. The Berthier factory changed hands in 1882, and in 1883 about 800 tons of beets were sliced. A few years later another unsuccessful attempt was made to operate the plant, but it was finally abandoned. In August, 1883, the Coaticook factory was closed and all the movable machinery sold. The factory at Farnham was operated for three years and closed in 1884. It remained closed until 1890, when 6000 tons of beets were worked. The campaign in 1891, lasted from Oct. 9th to Dec. 6th, and 10,500 tons of beets were sliced. Later, this fac-



FACTORY OF THE WALLACEBURG SUGAR CO., WALLACEBURG, ONT.

This factory has a capacity of between 600 and 700 tons of beets per day, and during its first season nearly 18,000 tons were cut. It is a typical factory in every respect, and several of very similar construction have been erected over Ontario.

tory was sold to a company in Rome, in the State of New York. The quality of beets grown throughout the Province was fairly good, as they were said to contain from eleven to thirteen per cent. of sugar. The failure of the industry at this time seems to have been due to an insufficient supply of beets and lack of capital.

During the years 1889-91, beets grown from seed imported from Germany, and supplied by Mr. Wilfred Skaife, of Montreal, were analysed by Mr. F. T. Shutt, Chemist at the Experimental Farm, Ottawa, and by Mr. Skaife and Mr. James, Deputy Minister of Agriculture, Toronto, then Professor of Chemistry in our own institution. The work of distributing the seed among the farmers of Ontario, and of collecting and forwarding the roots for analysis, was done by Mr. Robt. H. Lawder, of Toronto. The results obtained at this time showed that the beets contained an average of about 11 to 12 per cent. of sugar, which was considered quite satisfactory.

From 1891 to 1900 comparatively little interest was taken in the growing of sugar beets. Mr. Lawder continued to strive to arouse interest in the industry, but he did not live to see the sugar factories in actual operation in Ontario. W. D. Forrest, of the Owen Sound Sugar Beet Mfg. Co. and, later, of the Wiarton Sugar Beet Mfg. Co., also interested himself in the industry during the greater part of this period, and from time to time sent samples to Guelph for analysis. The greater number of the samples analysed during this period were grown from seed which had been planted and the crop cultivated much as farmers commonly plant and cultivate root crops grown to feed stock. The result was that most of the beets were of a large, rough, immatured type and gave unsatisfactory results when analysed.

In the fall of 1899, in response to numerous and pressing requests, the Hon. John Dryden, Minister of Agriculture, decided to have experiments conducted on a larger and more systematic scale in which it would be possible to control the methods of planting and cultivating. Among the special requests for more definite experimental work there was one from the Canadian Sugar Beet Syndicate, Limited, of Glasgow, from whom, through their secretary, Mr. Wm. J. Stewart, proposals were received to furnish free four pounds of beet seed to every one of fifty farmers in the neighborhood of Aylmer, Elgin Co., to the same number in the neighborhood of Welland, and to offer in each place six cash prizes in consideration that the farmers receiving the seed would plant the same upon one-quarter of an acre of land and cultivate under the directions of Dr. Shuttleworth, then professor in chemistry in the Ontario Agricultural College. Further, the syndicate proposed giving the sum of $240. in payment of certain inspections of these plots. The proposal of the syndicate was accepted and arrangements were made to carry out the experiment in 1900. Later, another experiment was placed at Newmarket. In so far as it was possible, the most approved methods of cultivation were followed, but the results were not satisfactory to the Glasgow Syndicate. The average per cent. of sugar in the juice for

the three districts was 14.4, with co-efficient of purity of 85.4, and an estimated yield of nearly 17 tons of tared beets per acre. The same fall nine car-loads of sugar beets were shipped from Wiarton to a Michigan factory, and the product of six hundred acres grown on the Canadian side of the St. Clair River was shipped to Marine City, Michigan.

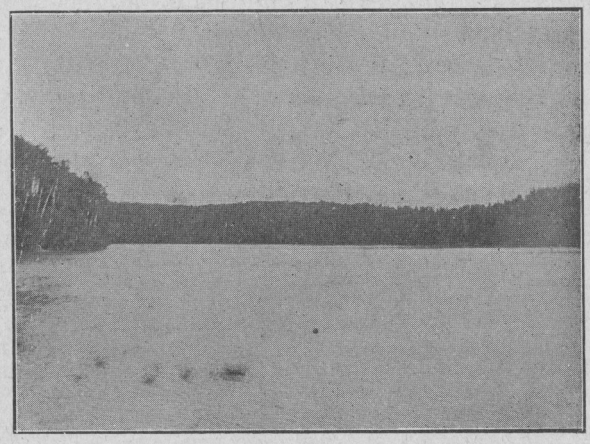
The sugar beet experiments of 1900 were popular, and the farmers in so many districts were anxious to prove that their soil was suitable for the growing of sugar beets that in 1901 experiments, similar to those of the previous year, were placed in thirteen districts. The following year, 1902, six other districts were tested. Thus the suitability of the soil for growing beets in twenty-two different sections of the Province was more or less thoroughly tested. The average percentage of sugar in the juice of beets grown in 1900, was 14.4; in 1901, 16.4; and in 1902, 16, while the co-efficient of purity for the three years averaged 87. These were looked upon as good results.

Early in 1902 the Ontario Legislation set aside $225,000.00 to be paid to sugar manufacturers as a bonus. This was to be paid out at the rate of one-half a cent a pound of sugar manufactured the first year, and one-fourth a cent a pound for the next two years, the amount to be paid out as bonus in any one year not to exceed $75,000.00. The manufacturers accepting this bonus agreed to pay the farmers a flat rate of $4.00 a ton for beets the first year, and $4.00 per ton for beets containing 12 per cent. of sugar the second and third years, with 33⅓ cents per ton additional for each per cent. of sugar over 12. The Dominion Government withdrew all duties on machinery imported for use in sugar factories for a specified length of time.

This bounty, together with the results of the previously mentioned experiments, and the the good quality of the beets shipped to Michigan factories, drew the attention of capitalistic interest to the sugar beet industry. As a result, four factories for manufacturing sugar from the sugar beet, were erected and began slicing beets in the fall of 1902. These factories were located as follows: Wallaceburg Sugar Co., Limited, Wallaceburg, capacity 600 tons per day; Dresden Sugar Co., Limited, Dresden, capacity 600 tons per day; Ontario Sugar Co., Berlin, capacity 600 tons per day; and the Wiarton Sugar Beet Mfg. Co., Wiarton, capacity 400 tons per day. None of the factories had sufficient beets for a full campaign the first season, but they sliced in the aggregate about 100,000 tons of beets. The Wiarton and Dresden factories sliced even less beets the second season, while the other two factories worked more. The same circumstances that were assigned as the cause of the failure of the Sugar Beet Co's. in Quebec twenty years ago, have operated more or less against the success of the Wiarton Sugar Beet Mfg. Co., and it is now reported that they are not accepting contracts for the coming campaign. Unfortunately for the success of an enterprise requiring such a large amount of home grown raw material, the Dresden and Wallaceburg factories were placed too close together. After a two years'

fight for supremecy, the Dresden Sugar Co. have decided to withdraw, and are now moving their factory to Jamesville, Wisconsin. Both the Wallaceburg Sugar Co. and the Ontario Sugar Co. have secured contracts for a large acreage for the present season and fully expect to have a good campaign. A factory has also been built and operated one year with partial success at Raymond, Alberta, and the Peterboro Sugar Co. have one in course of erection at Peterboro, Ontario.

The quality of the beets received at the factories has, on the whole, been very satisfactory, and fully verifies the conclusions drawn from the extensive experiments conducted by the Ontario Government. The average per cent. of sugar in the beet, for the whole of the last campaign of the Ontario Sugar Co., was considerably over 15, and they paid some farmers as high as $6.00 per ton for their beets and over $100.00 per acre for their crops. In the Peterboro district the average percentage of sugar was 16.5. Twenty-five car loads shipped averaged over 17 per cent., several reaching 17.8 per cent. of sugar in the beet. There is no doubt about the fact that sugar beets of very high quality can be grown in Ontario, and it is just as certain that the yield will be satisfactory, provided the cultivation is thorough. From the farmer's standpoint, the one great difficulty in the way of the successful introduction of the industry at present, is the scarcity of labor. This, labor saving machinery is partly over-coming, fuller knowledge of the requirements of the crop is also assisting, and it is hoped it will not prove an insurmountable difficulty.



Practical Economics.

WALTER JAMES BROWN, B. S. A.

TO CANADIANS the study of practical economics is at present of the greatest importance. This young nation is growing rapidly, and is calling into being difficult economic problems, faster, apparently, than our citizens are acquiring the knowledge and ability to solve them. Our natural resources are awaiting development, while the amount of capital, and the number of men at our disposal are limited. Geographically, politically, and socially we lack unity and compactness. Inhabited Canada has ample length, but comparatively little breadth. Our Farthest West is bound to our Farthest East by a ribbon of steel, yet each has its own individuality, purposes, tastes and interests. Our provinces are federated by law; but differ materially in race, origin, language, institutions, aspirations and ideals. We are self-governing, yet subjects of the greatest Sovereign in Christendom. We are independent, yet part of a world-wide Empire. We are isolated in our destiny and individuality, yet stretch our whole length on the borders of a mighty, aggressive and ambitious Republic, whose people speak the same language, read the same books, observe similar laws, and practice the same political economy. These are conditions co-ordinate with our birth and inseparable from our existence. It is with such problems and others like them, arising out of our expansion, stability and security, that we have to deal. Therefore, to Canadians economics is essentially a practical science which should be studied by practical men. Academic discussions and theories have their place, but the sooner we devote our attention to the study of facts and actual conditions, the compilation of practical data and the solution of our present difficulties, the fewer mistakes we shall make, and the greater probability is there of our future prosperity, permanence and national greatness.

Circumstances sometimes thrust upon a nation's attention problems of the first magnitude, and temporarily the whole people go to school. If they discover the real difficulties, and grapple with them until they are solved, then design new plans to meet the requirements of the new conditions, the nation survives, while its people advance a step in civilization. On the other hand, should they fail, as so many have done and are doing, to meet the national crises, their days are numbered. The social problems of Greece and Rome were too difficult for the ancient philosophers and statesmen, and like a strong acid

dissolved the Greece of culture, and the Rome of civil and military power, until they were without form or substance. Only the aroma of their glory remained.

When the thirteen colonies severed their connection from Great Britain, the dispute was a matter of law. The principles involved should have been argued out in the Courts, instead of by appeal to arms. National and constitutional law became the topic of common conversation. In consequence of the struggle, every thinking man in the young Republic became a lawyer in fact, if not in name. The United States was "a nation of lawyers." Later, during the Civil War, it was a nation of soldiers, and still later a nation of business men; but to-day its social problems have the ascendancy. They have the same problems, only greater in variety and more complex in character, that have wrought such havoc in the past. Canadians may well ask, with feelings of the deepest concern. "Are our neighbors equal to the emergency?" We can do but little to help; yet dare not remain indifferent.

In Great Britain two years ago the people were studying the art of modern war. They discovered their own weaknesses, and the fact that they no longer stand alone as an Island Kingdom, but are part of an United Empire whose powers and resources are almost unlimited. To-day they are studying economics with their usual determination to take advantage of the opportunity of the hour. The virility of the Briton is better exemplified as a citizen than as a soldier. He seems to be standing at the forks of the road, thinking hard. He knows what he wants, but is undecided which road he should take to obtain it. He is studying facts, making forecasts, working out theories, deciphering the signs of the times, and listening to voices from beyond the seas. Few minds are sufficiently trained, and few are great enough to comprehend the significance of a world-wide Empire, with 400,000,000 of people of a great variety of races, religions, and standards of civilization. Is it possible that Imperial Federation will mould, blend and solidify all this great variety of parts into one stupendous whole? To many Canadians it seems a simple thing for Great Britain to give our produce a preference in her markets, and to invite our statesmen to sit in her Councils; but we forget that our interests are comparatively small when we consider the other parts of this vast Empire.

Canadians are vitally interested in all that transpires in the neighboring Republic. For the purpose of self-preservation, if for no other reason, we must study United States history, institutions, govern-

ment, commercial, industrial, economic and social problems. The lessons to be learned from their successes and their failures should be equally valuable to us. It is already clear that we shall never form a political union with our southern neighbors, and judging from past experience as well as present indications it would be disastrous to form a commercial union of any character whatsoever. We are a peace-loving and independent people, and prefer to be left alone to work out our own destiny.

As we turn in thought to the subject of British connection we find that we are not bound by sentiment alone. Even the ties of blood are not sufficient. We are British and shall remain British because we are joint heirs of British history and institutions; we are absolutely free and secure. In case of armed attack, the World's most powerful navy and the resources of the greatest Empire in history are at our command. Moreover, we enjoy the privileges of the highest civilization yet attained. Destiny has made us British: self-interest will keep us so. Canadians are as loyal to the Empire, its institutions and its Sovereign as the people who sit under the eves of Westminster Palace.

The system of economics which we are trying to master is exceedingly comprehensive. Our first step is to make ourselves familiar with the history of the race in its development from the savage state through all the various stages of industrial and social evolution. We should ascertain what have been the sources of strength and the causes of disintegration in the various nations which have from time to time occupied a place in history. We should study our own conditions, first in relation to other nations and peoples, and secondly in relation to our own resources and probable destiny. It is only by taking this broad view at the beginning that we shall learn to see things in their true proportions and in their proper perspective.

In the study of sociology one must of necessity start with the individual, or at least with the social unit, i. e., the family; but there is a danger in the study of economies of our over-emphasizing the individual and his private interests. This is amply illustrated in the present condition of the United States and in the recent history of Canada. Both are essentially agricultural countries. The amount of capital invested and the annual wealth produced from the farms in each of these countries are so much greater than that of all other industries combined that there is hardly any basis of comparison, yet we find, "the tail is managing the dog." Legislation is passed, customs duties

fixed, money expended, and national policies determined to please the manufacturer, merchant and transportation company, regardless of the effect upon the interests of the farmers, who are producing the actual wealth of the country. Private interests should give way to the interests of the nation as a whole: therefore, in our study of private economics in the production, distribution and consumption of wealth, we must consider the larger problems of public revenues and expenditures. In Ontario, for example, by means of agricultural education, the revenue from our farms during the past six or seven years has been increased by about $50,000,000 a year, or nearly doubled. This is the best explanation of our present prosperity. Would it not be a short-sighted policy for the Canadian Government to so fix its tariff regulations, its transportation facilities, etc., that the farmer will be handicapped and a few manufacturers and railway corporations be more prosperous? The farmer in Canada competes with the farmers in Russia, Denmark, Egypt, Australia, the United States and South America. He must study these countries and their products as well as the requirements of the world's markets, that he may meet his competitors on equal terms and produce the highest quality of goods at the lowest cost. Yet, in spite of his skill and his industry, a greedy, selfish and short-sighted transportation company may shut him out of his best markets and turn millions of dollars annually into the pockets of his competitors, and so into the revenues of the competing countries.

There are many practical problems awaiting the solution of the Canadian economist. How shall we develop our resources, increase our population, secure farm labour and domestic help, find avenues of advancement for our young men, keep our boys and girls on the farms, improve the social and intellectual attractiveness of the country, educate the farmers, artisans and unskilled workmen, remove the drudgery from the rural home, avoid industrial conflicts, abolish pauperism, intemperance and crime, control transportation facilities, monopolies and trusts, govern our cities, maintain our friendly relations with the United States, improve our status as a nation within the Empire, etc., etc.? Surely the time has come when we can forget our political differences and devote our energies to the solution of problems affecting our individual prosperity and our national development.

Agricultural Department.

EDITED BY J. C. READEY.

Leaving College.

BEFORE the April "Review" has been given to the public, the Freshmen, Sophomores and Juniors will have finished their respective examinations. The majority of our numbers will have gone out to practice the principles of science in their relation to agriculture.

The reputation of the College and our own success depend largely on our conduct during the next few months. There is no doubt but that every student will look with pride on the institution in which he has spent from one to four years. Granted that this is true, there are many of us who seem to forget that we are the men by whom the College will be judged, on whose testimony the reputation of the institution must rise or fall. Before we go to our work for the summer, therefore, it is necessary that we should compare the extent of our knowledge with the boundless regions of science over which we have taken a glimpse; and, further, we should learn to appreciate the wealth of knowledge which experience alone may have given to others.

A due amount of modesty and a proper estimate of our ability will be the result of such a contemplation, and these essentials, combined with that of intelligent application of principles, will bring success. The further the thoughtful student is permitted to travel over the field of science the more conscious does he become of the insignificance of his own attainments, and the more carefully he seeks to study the so-called ruts of ordinary practice in the light of scientific teaching, the more fully will he be convinced of the accuracy of many of "our fathers'" deductions. Of course many of the old methods are being laid aside. A scientific education used by a thinking man will help him to advance more rapidly and more safely than will practical experience alone, but the soundness of many common practices should be a warning to the college-bred beginner, that wisdom would not die with him. A true estimate, therefore, of ourselves and others may save the College from many a reproach, and save ourselves likewise from humiliation and failure.

How then shall we act? In the same breath we may answer, say little but do much. The student who would inspire the confidence of others in himself and in his training must be very reserved in volunteering information, thoughtful in answering questions, but never-tiring in his interest in the farm operations. There is perhaps no other one quality that a practical farmer will appreciate more in a student than an increased and intelligent interest in the care and management of the stock. The college student who says little about his theories, but sets about proving the soundness of his practice, will soon be given ample opportunity to "talk." Dilligence, willingness, and manliness will soon break down prejudice or indifference, and bring their own abundant reward in public favor and financial success.

The National Stockmen's Convention.

In the last number of THE REVIEW, there appeared an article from the pen of Prof. G. E. Day, discussing the importance of, and the questions to be considered at the National Stockmen's Convention, to be held in the City of Ottawa, March 7–12. This convention has since passed into history, and, in order that our readers may keep in touch with its issues, we will briefly refer to the resolutions that were passed.

The attendance at the convention was a most representative one, there being present breeders from every province of the Dominion. Questions were discussed in a most lively manner, and, if no other benefit should accrue from the meeting than that of a better understanding of subjects of common interest by delegates from distant parts of the Dominion, it will have served a good purpose.

The first and most important matter dealt with was that of nationalizing the live stock records. At present there are a large number of Provincial records for the various breeds of live stock in Canada, a state of affairs which leads to a great deal of confusion, makes it very difficult for the ordinary farmer or breeder to defend himself from frauds, and renders inter-provincial trade a very difficult matter. Besides, many of the local records are not recognized abroad, and hence the desirability of national records, stamped with the approval of the Dominion Government, is very evident.

With but a single hesitating voice from the Province of Quebec, where it was felt the language difficulty would be in the way of transacting business, the convention unanimously agreed to the one record idea. It was further unanimously agreed that the record should be controlled by the breeders representing the different breeds. The one point upon which a difference of opinion was expressed was the location of the offices at which the different records should be kept. The delegates, outside of Ontario, strongly favored Ottawa as the proper place for national records to be kept. The Ontario delegation, almost to a man, favored Toronto. The question had finally to be left over to a board of directors of the different breed associations and the Dominion Minister of Agriculture.

The next question discussed was: "Should the Canadian Government be asked to take steps to regulate the further importation of horses, cattle, sheep and swine into Canada?" There was a most animated discussion upon this question. Here again the convention was almost unanimously in favor of further restrictions to this trade. It was pointed out by one of the delegates from the west that over 16000 horses had been brought into Manitoba last year at an average valuation of about $26 a ahead. The majority of these were brought by poor settlers who do not know what a good horse is. As a result of this the class of horse bred by a large number of the western farmers is almost useless trash. So that these farmers, although temporarily saving money, will ultimately be placed at a very great disadvantage on account of the inferiority of their horses. On

the other hand, those who championed the cause of the poor settler, claimed that, in many cases, he was better off in having access to this inferior stock than in having to mortgage his property to buy first-class animals. The large majority, however, agreed that it was desirable to keep out this useless stock, and, in order that this be done, recommended that the minimum valuation on horses coming into Canada be raised. The Ontario men were in favor of a minimum valuation of $150 a head, while the Western men thought $50 would be sufficient. A compromise was effected and a resolution passed asking the Government to place a minimum valuation of $75 a head on all horses coming into Canada. It was further recommended that, under no conditions whatever, should grade stallions be permitted entry as settlers effects.

The matter of extending Canada's live stock trade was most enthusiastically discussed. The desirability of opening up a trade with Mexico and the South American Republics, was especially emphasized. In this connection, the convention heard with a great deal of interest a talk given by I. Panelo, of the Ontario Agricultural College, in which he expressed himself, as an Argentino, thoroughly in accord with the idea of developing a Canada-Argentino trade. The convention were decidedly of one mind in regard to this matter, and passed a resolution strongly urging the Government to develop a trade in live stock with those other countries.

Another matter which was considered, and upon which a resolution was passed was that the Government adopt such regulations as would require the manufacturers and dealers in textile fabrics to state whether their fabrics were wholly wool or not, and that the sale of substitutes for wool as "all wool," should be made an indictable offence. This matter, it was shown, is not only in the interests of the general public who wish to buy good cloths without fear of being swindled, but also in the interests of the sheep breeder, who would thus have a greater demand for wool.

The last subject brought before the convention was the advisability of developing a dead meat trade with Great Britain. It was pointed out that such a trade would improve the market for cattle, would prevent any danger of Canadian cattle being shut out from the English markets should contagious disease break out; would to a large extent prevent the present shrinkage and loss of weight of the live animals; would mean a lowering of freight rates, and would finally give room for development of allied interests, especially in the utilizing of by-products. A motion was unanimously passed, asking that this question be taken up next year, and that arrangements be made to secure all the information possible in the interim.

The conclusions reached and resolutions passed upon these various questions were, upon the last day of the convention, presented by a large delegation to the Minister of Agriculture, who promised to give them his most careful attention. No doubt issue will be taken upon several of the matters at once, and upon the others as soon

as further information can be secured. This first convention is therefore likely to result in much aggressive work in the development of the condition of the live stock industry.

M. C——G.

Our Jolly Western Boys.

The first annual meeting of the Western O.A.C. Association was held in Winnipeg at the time of the Live Stock Conventions in February. The President, George Harcourt, B.S.A., Superintendent of Fairs and Institutes, North West Territories, presided, and the guests of the evening were Prof. J. H. Grisdale, Agriculturist, Experimental Farm, Ottawa, and A. P. Ketchen, Deputy Live Stock Commissioner, Ottawa. Among those present were:—Vice-President Jas. Duthie, Hartney; A.G. Hopkins, D.V.M., and W. J. Black, B. S. A., Editors of the Farmers' Advocate, Winnipeg; A. R. Douglas, D. V. S., Winnipeg; Warren Rothwell, Wesley College, Winnipeg; F. N. Donaldson, Allan Lea; T. R. Willans, Eden; F. R. Wilkin, C. P. R. Construction Department, Winnipeg; W. J. Carlow, Carman; O. Gibson, Foxwarren; R. W. Greig, McKenzie; T. T. Gadd, Winnipeg; Jas, Oastler, B. S. A., Crookston, Minn.; and the Secretary, George H. Greig.

A banquet was held in the Fort Garry Court Cafe, and a very enjoyable and profitable evening was spent in reminiscencing and in renewing acquaintances. Speeches were delivered by several of the noted graduates of the O.A.C. who were present.

Some phases of the work of the proposed Agricultural College for Manitoba were discussed, the consensus of opinion favouring short practical courses. It was felt that the O. A. C. boys who had made their homes in the west, should do everything in their power to assist in making the Manitoba College a success, and in interesting the farmers of the province in the work of the institution.

Letters of regret from several members, at not being able to be present, were read, and a friendly greeting from the students at the O.A.C., to the Western Association of ex-students, was received with applause.

In view of the fact that a great many ex-students are living in Alberta and British Columbia, it was decided to hold a semi-annual meeting in Calgary at the time of the Live Stock Conventions there in May.

The election of officers for the ensuing year resulted as follows:—

President—W. J. Black, B. S. A. Winnipeg.

Vice-President—E. L. Richardson, B.S.A., Calgary.

Secretary-Treasurer—George Harcourt, B.S.A., Regina.

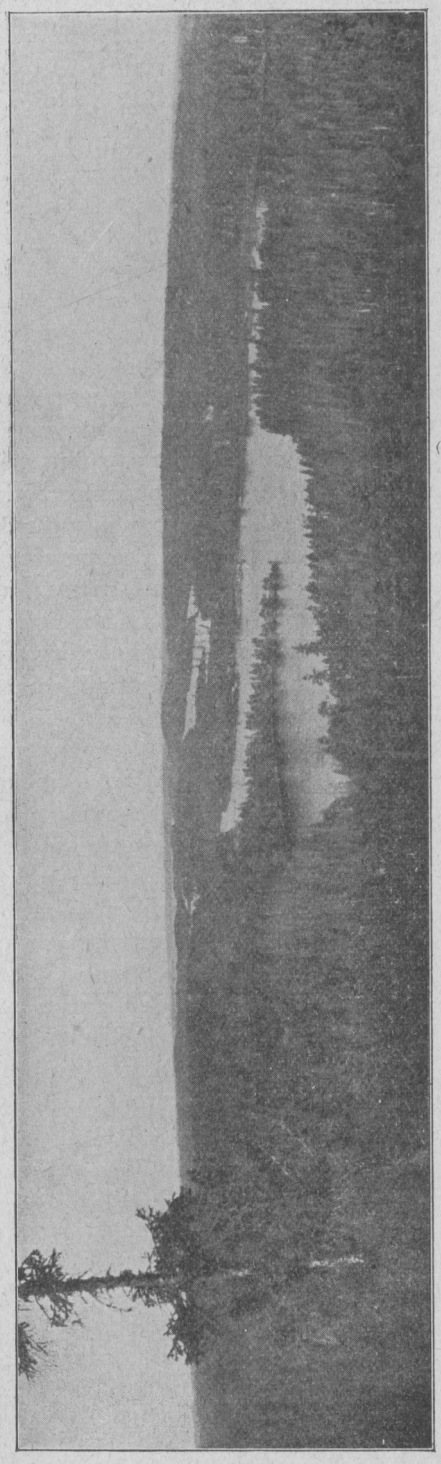
Experimental Department.

Agricultural Forestry in Ontario.

THE Forestry Problem in Ontario presents itself under two heads:—(1) The care and preservation of the great timber lands of the north, as a source of provincial revenue, and, (2) the preservation of a proper proportion of woodland in older agricultural Ontario, as a means of maintaining proper climatic conditions, and of affording a local supply of forest products. In the present paper, avoiding all reference to the first of these, we wish to deal with the question of agricultural forestry in Ontario, explaining, as far as possible, the conditions at the present time, and the causes which have led to these conditions, and making some suggestions as to the remedies required. In doing so we feel that we are not going beyond the limitations of a strictly agricultural paper, or trespassing on the larger subject of the preservation of Government forests. This is a purely agricultural subject, and as such we shall deal with it.

In order to properly understand the conditions at the present time in regard to agricultural forestry, it is necessary to go back to the early days, understand the conditions of the early settlers, and see what effect these conditions had in moulding the popular mind on this question. At a not very distant date, the Western Peninsula of this province, where today the evil effects of deforestation are most apparent, was one unbroken stretch of woodland. The first settlers coming to this country, found the land, where they hoped to farm, covered with a thick forest covering. To them the forest was an enemy, occupying their land, a thing to be got rid of as soon as possible, that its place might be taken by fields of useful grain. Timber, at this time had no value, and every acre cleared was an acre gained. The value of a farm, in these early days, was largely measured by the number of acres of clearing there were in it. It was during this long, hard struggle of the early pioneers with the forest, that the idea took root that the forest was a useless cumberer of the ground. This idea, firmly fixed in the popular mind, has lingered till the present day, and is responsible for much of the apathy of our people on the question of forestry.

It is doubtful, however, if this motive would have led to excessive deforestation if another motive had not been added. As time went on, timber became valuable, and people destroyed the forests for the value of the timber, at the same time clearing their land. Not only did the increasing value of timber hasten the clearing of farm lands, but much land, too poor to farm, but covered with valuable timber, was slashed through by lumbermen, to be burned over by the first fire that came near it, so thoroughly that in many cases no trees were left to again seed the waste. In this way originated the barren "pine plains" found in so many sections of the country, where the infertile soil scarcely supports a scanty growth of grass, insufficient to have any usefulness as pasture, and where the dead



The Forest Primeval.

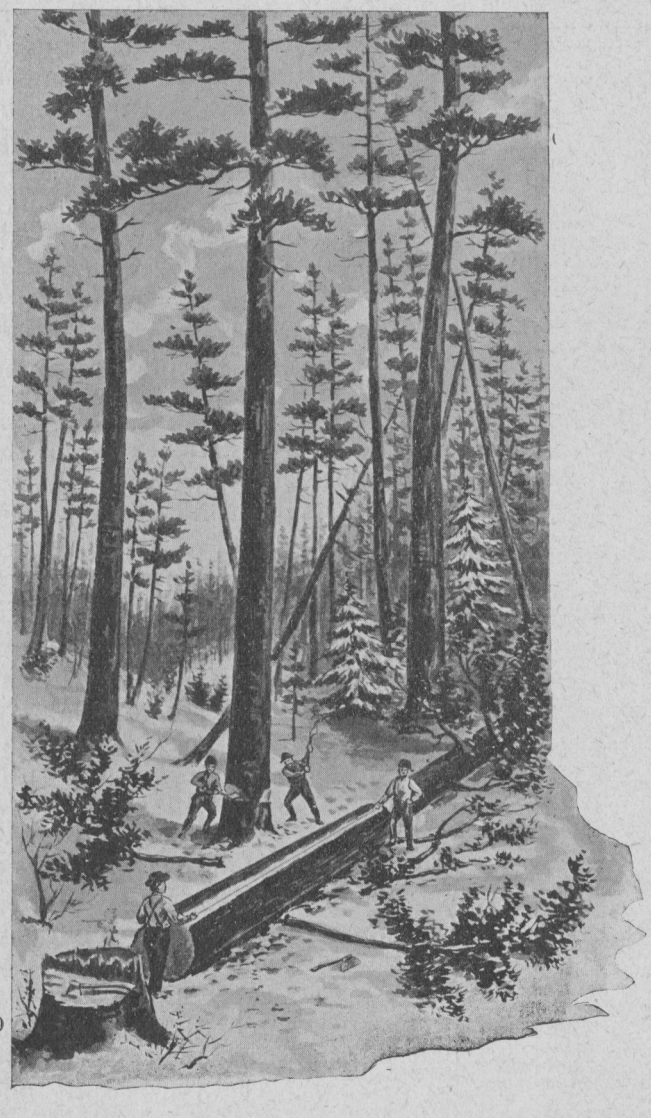
pine stubs look down like ghosts, on the scene of desolation.

Still the people, retaining the old idea that the forest was an enemy, continued to clear their farms, in many cases already over-cleared. They looked with indifference upon the deforestation of lands which never could have an agricultural value. No steps were taken to stop the destruction, and it was only when the evil effects of this destruction became very apparent, when it was too late to prevent this excessive clearing, that any attention was paid to the matter, and even now, when every one recognizes the evil, the destruction of the little remaining woodland continues, hastened, doubtless, by the present high price of timber products.

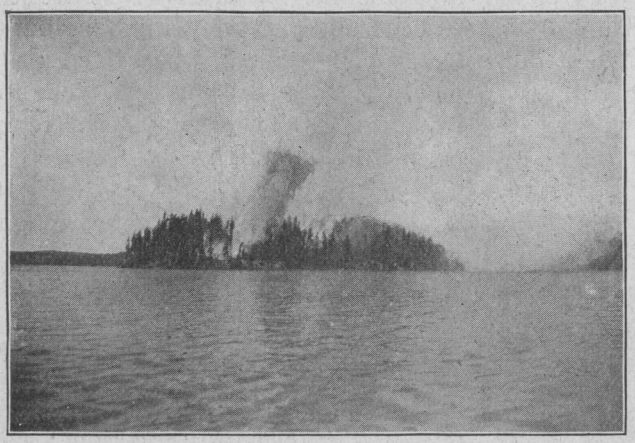
In order to show the extent of this evil in older Ontario, we shall refer to some figures published in the reports of the Director of Forestry for Ontario in 1901. These figures were compiled from returns made to the Bureau of Industries by the township clerks throughout Ontario. From these returns we find that in the western peninsula of Ontario, west of and including the counties of Simcoe and York, there were at that time 8,335,023 acres of cleared land, 1,135,769 acres of waste land, 877,510 acres of woodland, or 80.55 per cent. cleared, 10.97 per cent. waste, with but 8.48 per cent. of woodland. When we remember that the amount of forest usually held to be necessary to the best agricultural conditions is from 20 to 25 per cent., we see at once the seriousness of the conditions in Ontario, a condition so serious that

it should rouse the most apathetic of our people to the needs of the case.

In remedying this evil condition, obviously the first step to be taken should be in the direction of preserving what woods yet remain. These are almost entirely in the form of farm wood lots, and so, in this part of the problem we must deal with the private farmers, and the conditions directly affecting them. In the first place the work must be one of education. The farmers must be taught the value of their woodland, and the way to harvest the crop of timber, and at the same time not destroy the woods. They must be taught the things that will destroy their wood lots, taught to keep cattle out of them, and preserve the growth of young timber. This will do much to remedy the evil, but it will not do all. The present system of taxation must be changed, so as to encourage, rather than discourage, the preservation of woodland. In most townships at the present time woodland is assessed at the value of unimproved land, plus the value of the timber on it, in many cases raising the assessment above that of improved farm land. Under these circumstances it is a rather expensive luxury, to keep a piece of land in forest, and the temptation is very strong to cut the forest, turn it into money, and lower the assessment. This system of taxation is entirely wrong. The man who keeps a piece of land in forest is a public benefactor, and as such, should not be punished,



The Forest Evil.



The Beginning of the Fire.

but rewarded, or at least let alone. A system of taxation which commends itself to my mind, having as its object the encouragement of the preservation of woodland, is this,—that land, so long as it is left in forest, should not be taxed, in recognition of the fact that the owner is conferring a benefit on the community at large, but that so soon as the forest is cut down, a tax should be levied on the timber product, and the land should be assessed as unimproved land. This would undoubtedly do much to encourage the preservation of woodland, and would be a fair way of levying the tax, since, so long as the timber was left standing, yielding no revenue to its owner, no taxes would be collected, but, as soon as the timber was turned into money, the tax would be collected, falling upon the owner at a time when he would be best able to pay it.

But something more than this is needed. If a proper proportion of forest is to be had, much waste land must be reforested. Here it is of interest to notice that, were all the waste land in this section re-planted, there would be a fairly good proportion of forest. If, in addition to the 8.48 per cent. of woodland, the 10.97 per cent. of waste land were reconverted into forest, we would have 19.45 per cent. of woodland, an amount nearly sufficient to give the best results. It is very desirable that this waste land should be replanted as soon as possible, and steps should be taken in this direction as soon as possible. The recent announcement by the Hon. Mr. Dryden, of the intention of the Government to establish a nursery at the O. A. C., from which young forest trees will be supplied to farmers at cost, is certainly a move in the right direction, but we think it hardly goes far enough, and we do not look for any great results from it, in increasing our area of woodland. No doubt very many farmers will avail themselves of this supply, to get trees for wind-breaks around their farms, but we do not think that many trees will be used by private farmers to replant waste or unprofitable land on their farms. The growth of a forest is too slow, and the returns too far off, for the work of reforesting to be undertaken by private individuals. Whatever is done in this direction, we feel safe in saying, must be done by the Government of the Province, or by the Counties or Townships. We recognize the magnitude of the task, and the inadvisabil-

ity of rushing headlong into it, but we think the recommendation made by the Experimental Union last fall, that one or more demonstrations of the practicability of reforesting waste land should be carried on, was a reasonable and wise one, and we yet hope to see it bear fruit.

We have endeavoured to point out the present conditions of the western section of the province in regard to the proposition existing between cleared and forest land, with some of the causes leading to this condition, and we have ventured to suggest what appeared to us remedies for this condition. In conclusion, we would wish to urge the great importance of this question, and the need for dealing with it at once. Long years must pass before we can undo the mischief which our ignorance and carelessness has permitted, and it is very needful that intelligent and energetic action should be taken in the matter, and taken, we think, at once.

E. C. D.

Experimental Union Distribution of Choice Seed.

The members of the Ontario and Experimental Union are pleased to state that for 1904 they are prepared to distribute into every township of Ontario material for experiments with fodder crops, roots, grains, grasses, clovers, and fertilizers. Upwards of 1,500 varieties of farm crops have been tested in the Experimental Department of the Ontario Agricultural College, Guelph, for at least five years in succession. These consist of nearly all the Canadian sorts and several hundred new varieties, some of which have done exceedingly well in the carefully conducted experiments at the College, and are now being distributed free of charge for co-operative experiments throughout Ontario. The following is the list of co-operative experiments for 1904 :

No.	Experiments.	Plots.
1	Three varieties of Oats	3
2	Three varieties of Barley	3
3	Two varieties of Hulless Barley	2
4	Two varieties of Spring Wheat	2
5	Two varieties of Buckwheat	2
6	Two varieties of Field Peas for Northern Ontario	2
7	Emmer and Spelt	2
8	Cow Peas and two varieties of Soy, Soja, or Japanese Beans	3
9	Three varieties of Husking Corn	3
10	Three varieties of Mangolds	3
11	Two varieties of Sugar Beets for feeding purposes	2
12	Three varieties of Swedish Turnips	3
13	Kohl Rabi and two varieties of Fall Turnips	3
14	Parsnips and two varieties of Carrots	3
15	Three varieties of Fodder or Silage Corn	3
16	Three varieties af Millet	3
17	Three varieties of Sorghum	3
18	Grass Peas and two varieties of Vetches	3
19	Two varieties of Rape	2
20	Three varieties of Clover	3
21	Sainfoin, Lucerne, and Burnet	3
22	Seven varieties of Grasses	7
23	Three varieties of Field Beans	3
24	Three varieties of Sweet Corn	3
25	Fertilizers with Corn	6
26	Fertilizers with Swedish Turnips	6
27	Growing Potatoes on the level and in hills	2
28	Two varieties of early, medium, or late Potatoes	2
29	Planting Cut Potatoes which have and which have not been coated over with land plaster	2
30	Planting Corn in rows and in squares (an excellent variety of Early Corn will be used)	2

The size of each plot in each of the first twenty-six experiments is to be two rods long by one rod wide; in 27, 28 and 29, one rod square; and in

No. 30, four rods square (one-tenth of an acre).

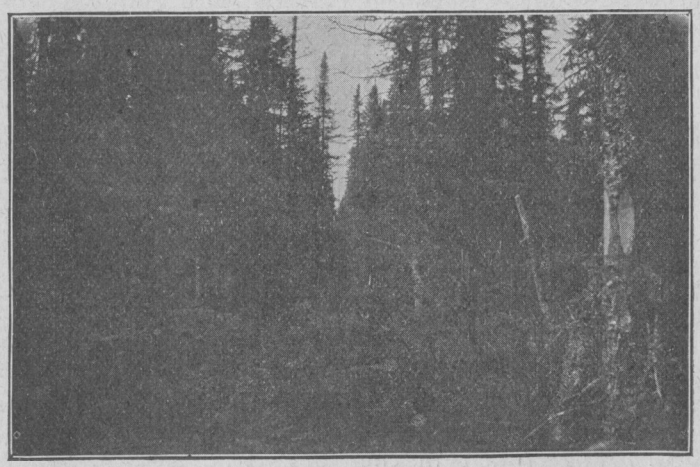
Each person in Ontario who wishes to join in the work may choose any ONE of the experiments for 1904, and apply for the same. The material will be furnished in the order in which the applications are received until the supply is exhausted. It might be well for each applicant to make a second choice, for fear the first could not be granted. All material will be furnished entirely free of charge to each applicant, and the produce of the plots will, of course, become the property of the person who conducts the experiment.

C. A. ZAVITZ, Director.

Ontario Agricultural College,
Guelph, March 19, 1904.

Definite arrangements have been made regarding the forestry plantation at the College. Mr. E. J. Zavitz, a graduate of McMaster and an undergraduate of Yale Forestry College, has been appointed director of the work, and will take charge before the 1st of May. The site chosen is near the Macdonald Buildings, and already the seeds and seedlings have been ordered which are to throw the Institute of Domestic Science in the shade.

The only way to find the feeding value of a food is to experiment with. As much depends on the feeder as the food.



Horticultural Department.

EDITED BY T. C. BARBER.

Cold Storage.

THE importance and the possibilities of cold storage may be illustrated by the simple fact that in 1880, less than twenty-four years ago, the first two cargoes of frozen meat, containing 400 carcasses of mutton, were shipped from Australia to Great Britain, while in the year 1900 the number of carcasses of mutton from the same colony was 6,433,821. The phenomenal growth in this particular line typifies a universal extension of the principles of cold storage. While the frozen meat industry has passed beyond the realm of experiment, and while dairy products, if under property conditions, are ocean shipped with little or no deterioration in quality, the limitations of and the ideal conditions for cold storage in its application to the fruit industry are as yet not fully determined; it is with a view to aiding in the solution of some of the problems concerning the storage of fruit that a cold storage plant has been installed at the College for experimental purposes. It is with the fruit aspect of the question that the present article will deal.

To begin with, it may not be amiss to devote a little space to the principles and the different methods of cold storage, though a full treatment of these cannot be undertaken in the limited space of this article.

The methods fall readily into two broad classes, ice refrigeration and mechanical refrigeration. In either system the storerooms must be well insulated from external conditions, so that variations of temperature produce comparatively little effect inside, and that even these small effects are slow. The insulation of the cold storage rooms at the College is described in the annual report of 1902 as follows:

1. "A hollow brick wall, constructed as follows:—Two 4½ inch walls, with a 2½ inch space between. Across this space, at intervals of three feet, a bonding course of brick is laid all round.

2. "The two inside faces of the walls are coated with a preparation of cement plaster, making each wall practically air-tight; and the top of each bonding course is also plastered, so that we have secured within the wall a series of dead air spaces.

3. "Next to the wall is strapping placed vertically, and on this is a heavy coating of insulating paper, and then lumber, paper, and lumber, making a second air-space and a course of insulation. Next comes strapping laid vertically and horizontally, in squares, then lumber, paper, and lumber, making another dead-air space with a second course of insulation.

4. "The floors are insulated by two thicknesses of lumber and one thickness of paper, above and below the joists, with mill shavings between the joists. This is the style of insulation also around the cooler above the second floor."

During the coldest weather of the winter just past, no heat more than that given by two incandescent lamps in each room and two in the hall-way was needed to prevent freezing in the rooms, so that this method of insulation may be taken as quite effective.

Ice refrigerators are simple in principle. Beside or above the store-rooms, but connected with them, is situated an insulated ice chamber, the connections being so made as to secure a constant exchange of cold for warm air. This circulation, besides cooling the rooms, serves to remove the moisture to the ice chamber, where the greater part of it is condensed on the ice, thus minimizing the condensation on the walls of the refrigerator and tending to secure a dry atmosphere in it. The ice may be stored in the ice chamber, which in this event must be large, or in a detached building. In the latter case it is transferred to the ice chamber as required. This is the more usual method.

Mechanical refrigeration is based upon two principles: (1) That all liquids in passing to the gaseous state absorb heat, thus lowering their own temperature as well as that of contiguous substances. (2) That any gas may be liquefied by pressure accompanied with cooling. Various substances may be used as refrigerating agents, but those easily liquefied, and at the same time volatile or easily vaporized, and also capable of absorbing much heat on evaporation, are the most economical. Ammonia meets all these conditions better than any other substance, and, consequently, is more extensively used than any other.

From the underlying principles mentioned above we should expect the plant to consist of three parts, a compresser, a cooling bath or condenser, and an expansion chamber or refrigerator. The pressure generated in the compresser is about 175 pounds per square inch. From the compresser the gaseous ammonia, at the pressure mentioned, is led to a coil of pipes, over which flows a continuous supply of cold water. In this way the temperature is so reduced that the ammonia is liquefied. From the condenser the liquid ammonia passes by pipe to a regulating valve (where the pressure is reduced to about 28 pounds per square inch) and thence to coils of larger pipe, the refrigerator, where because of reduced pressure and increased room it again assumes the gaseous state, absorbing much heat in doing so, and producing very low temperatures. From the refrigerator it passes to the compressor, having thus completed the cycle, only to begin anew.

The "cold" derivable from the refrigerator may be applied in various ways: (1) The "direct expansion" method. The refrigerator is situated in the store-room, which is cooled by radiation. (2) The brine circulation method. Brine, reduced to a low temperature by the refrigerator (not situated in the store-room now) is pumped through radiating coils placed in the store-room, which is again cooled by radiation. (3) The air circulation system. The refrigerator, placed in an insulated room adjoining the store-rooms, is connected with them by two ducts fitted with slide valves. At the mouth of one of these ducts, and blowing across the refrigerator to the

other, is situated a fan, which, when run, draws the air from the room, forces it over the refrigerator, where it is cooled, and then down the other duct into the room whence the warm air was drawn. The rate of circulation is regulated by the slide valves mentioned. To prevent the formation of ice on the refrigerator, brine is made to drip over it continually; but the brine serves another important purpose: it absorbs moisture and impurities from the air drawn from the room, and hence sends dry, pure air in return.

The method last described, is perhaps the most perfect system of producing the ideal conditions of cold storage, viz.: cool, dry, pure air in the rooms; and, besides, much lower temperatures can be produced by it than by the ice refrigerators; hence it is broader in its application. On the other hand, it is expensive, so much so that it is unprofitable, except when constant storage of large quantities of produce is needed. A number of growers might profitably install a plant on the co-operative system. The plant and building at the College cost in the neighborhood of $6,000, of which $3,200 was paid for the plant and $2,800 for the construction of the building. There are eight rooms, with average capacity of 675 cubic feet, and the plant has "a capacity of six tons," i. e., the plant produces in a day the same amount of refrigeration as would the melting of six tons of ice per day. Smaller plants of course are obtainable. The same company as installed this one, manufactures a machine of one ton capacity, which is large enough to maintain a temperature of 32° in a well insulated room of from 1500 to 2000 cubic feet capacity. I am unable to state the cost of such a machine, but that of a suitable building would be in the neighborhood of $300 or $400. The cost of operation during the summer would be considerable.

The ice refrigeration, however, while less perfect than the mechanical, is fairly effective, and very much cheaper, so much so indeed as to be within the means of most growers. An ice refrigerator of 1500 cubic feet capacity could be erected for between $300 and $400. The cost of operation would be small.

The efficiency of cellars, where these are available as storage rooms, might be much increased during winter by a little attention to insulation and ventilation. We found that for five months of the past winter we were able to maintain the desired temperatures, 30° and 36° F in the store rooms, without any outlay either for heating or for cooling when the temperature within the rooms varied. The refrigerating room, and hence the ducts leading to and from the store-rooms, can be opened to the outside air. When the rooms were too warm, cold air was admitted in this way; when they neared the proper temperature, this connection was cut off. When they were in danger of becoming too cold, the incandescent lamps were left burning. Now, these conditions might be easily realized in many cellars. If a cellar receives heat from above by conduction through the floor, a ceiling of board might be put in. This would, with the floor above, form a "dead air" space that would afford considerable insulation, or the space might be filled with mill shav-

ings. Cold air, when needed, might be supplied by a duct connectable with the outside air, provision being also made for the escape of the warm air.

The supply of farm, orchard and garden products frequently exceeds the local demand, and markets at a distance must be sought. From this condition arises the necessity for cold storage. If perishable products, such as fruit, can be held in cold storage in good condition till the local demand is more active, or be placed on a distant market in good condition, then many problems arise: Can raspberries be shipped to Winnipeg, or peaches and pears to Britain? If so, under what conditions? Can storage transportation be made cheap enough to render such undertakings profitable? These are some of the problems now in process of solution by investigators in various parts of the continent.

Experiments in the storge of fruit have been carried on jointly by the Departments of Physics and Horticulture for three years. At first no storage accommodation was available at the College, so the fruit was stored in Toronto and St. Catharines. Under these unfavorable circumstances, only two varieties, one of pears, the Duchess, and one of apples, the Fameuse or Snow, were used for experiment. With these, three conditions were investigated: "(1) different styles of packing; (2) different temperatures in storage; (3) different sizes of fruit. The following conclusions were reached: (1) Apples and pears keep best when wrapped singly in paper and packed in shallow boxes not larger than a bushel. (2) Snow apples keep best at a temperature of 31°. (3) Medium sizes of apples and pears keep longer than the largest, all being perfect specimens and picked at the same time. This is evidently a matter of maturity; the larger specimens are on the whole riper than the smaller ones if picked at the same time. (4) With apples and pears the fruit should be picked in advance of dead ripeness. (5) Fruit, on being removed from cold storage, should be allowed to warm gradually so that moisture will not be deposited upon it. But if the wetting cannot be prevented, then the fruit should be spread out and dried as quickly as possible." [Bulletin 123.]

In the spring of 1903 room was available in the new storage building, so the scope of investigations was much broadened, extending to different varieties of each of the following fruits: Strawberries, raspberries, currants, plums, pears, peaches, quinces, and early and late apples. The general conclusions previously reached have all been confirmed, but many additional facts have been added. In the notes given below, the figures following the names indicate the temperatures at which the respective species were found to keep and develop best. It is also necessary to define our use of the word "limit." With all kinds of fruit there is a time limit beyond which it is unprofitable to hold fruit in cold storage or anywhere else, for it begins to deteriorate through mould, decay, loss of flavor, etc. That limit, for sound fruit, is dead ripeness. So that when we say a fruit has "reached its limit" we mean that it

will deteriorate in quality if held longer.

Strawberries, stored in boxes as picked for market, were found to keep best at 31°. They reached their limit in about six to ten days, according to variety and degree of maturity. Irene, Haverland, Anna Kennedy, Saunders, and Bismarck, stored when not too ripe, kept ten or twelve days and were practically all sound and good at the end of that time. These varieties might profitably be shipped to Winnipeg and other western points, if proper storage enroute were provided.

Raspberries, 31°, limit 10 days.

Currants, 31°, limit 10 days.

Plums, 38°, limit about six to eight weeks. Most were stored rather green, but some were fairly ripe. The latter were prime in from four to six weeks; and they surpassed the greener ones very much in the quality developed. Four varieties were tested, Washington, Shipper's Pride, Bradshaw, and Pond's Seedling.

Pears, 38°. Six varieties were stored, viz.: Bartlett, Flemish Beauty, Duchess, Keiffer, Clairgeau, and Louise Bon. They were stored in baskets as picked for market, most of them being quite green. Two or three baskets, however, were approaching ripeness. The latter gave good results, especially at 38°, reaching their limit in four to eight weeks. The green ones have not matured in storage; when removed to warm rooms they have ripened, with only fair results, in from ten to fifteen days. These facts indicate that for cold storage, pears should be rather riper than they are as picked for ordinary marketing.

Peaches, stored as picked for market, mostly quite green, but some fairly ripe. The latter developed well at both temperatures, being in prime condition in from four to eight weeks; the former did not mature.

Early apples, 38°, reached their limit in six weeks and upward, according to variety. Those picked rather green developed no color and poor flavor.

Late apples, 31°. Snows grown at Guelph reached their limit early in March; those grown along the St. Lawrence (Maitland) are about at their best now, April 6th. Other varieties, such as Spy, Seek-no-further, Salome, Russet, Baldwin, Bellflower, Tallman Sweet, Colvert, and Wallbridge are still firm, especially at 31°, and are developing well in quality.

Three important facts have been determined with regard to the different fruits under experiment: (1) The most suitable storage temperature for each. (2) The storage limit for fruit of each variety approaching ripeness. (3) Fruit of any kind picked rather green does not give good results in storage. This was noticed in several varieties of each species, and was perhaps the most strikingly demonstrated of any fact observed. Its lesson should not be disregarded when fruit is being prepared for cold storage or even for storage in cellars.

These results show that even the tenderer fruits can be shipped much further than now. All over the continent more extensive investigations are being prosecuted from year to year; consequently, the possibilities of cold storage will be realized more

and more by producers, the men whom it most vitally concerns. This will mean an increased demand for cold storage transportation, which will be furnished better and more cheaply than at present; and it seems not too much to predict that what cold storage has done for the mutton industry of Australia it will also do for the fruit industry of Canada.

W. H. DAY.

The Surplus and By-products of the Peach Industry.

(CONCLUDED.)

UNFERMENTED PEACH JUICE.

Peach juice makes a delicious and nourishing summer drink. It is used in the preparation of syrup for soda fountains and it has a wholesome value in cookery. The demand for fruit juices is increasing, and is such as to warrant a greater effort on the part of the fruit grower to supply a pure and attractive article. In making peach juice, the fruit is crushed, pressed and filtered. The juice is then clarified by adding the whites of two eggs for each gallon of juice. Then heat nearly to boiling point. After allowing to stand for two hours, siphon off into bottles. Place these in cool water, heat to boiling and seal air-tight. Allow bottles to cool gradually and store in cool, dark, dry cellar.

PEACH WINE.

From time immemorial sparkling wines have played a prominent part in the celebration of all momentous events and happy occasions. Sparkling wines are made from the juice of black grapes; ordinary wines may be made from the juices of various fruits, including peaches and even tomatoes. Sparkling wine differs from ordinary wine in that it contains a considerable quantity of carbonic acid gas, which has been retained in the wine by bottling it before the completion of the alcoholic fermentation.

Good sparkling wine is difficult to make. Perfect quality, which depends upon the selection of the raw material and the perfection of the process, is secured only by delicate skill, precision and long experience. Ordinary wine, sweet or dry, is simple enough to make and may be prepared in the orchard of any peach grower. Quicker and probably more profitable returns may be secured, however, by utilizing the surplus peaches in the cannery or evaporator.

PEACH BRANDY.

Fifty years ago, peaches, in many parts of America, were raised principally for distillation. Every peach growing centre had its distillery and every planter had a large share of his crop turned into brandy. Peaches were cheap then and good brandy could be bought for fifty cents and less per gallon. That was before the days of internal revenue, before the producer had to pay a tenth or more of his income to the tax gods that be, and when men were at liberty to do and make what they pleased so long as they did not do harm to others. Things have changed since then. To-day peaches are raised principally for consumption in the fresh state; peach distilleries are few and far between; both peaches and brandy are much more expensive; internal revenue officers demand a tenth and some-

times ten tenths of the profits, (in Georgia, if I remember rightly, to make a two-dollar brandy, the distiller must pay the government one dollar, besides buy the peaches, pay for labor and other expenses,—as a result, most of the distilleries are closed;) and to-day men are not at liberty to enjoy individual freedom of action in this boasted land of the free.

Although distilling is attended with difficulties and the profits largely dependent upon the requirements of the law, it is nevertheless a means of utilizing small, inferior, half rotten peaches and the refuse from the cannery and the evaporator. Parings from the cannery make more brandy in proportion to bulk than whole peaches. In Georgia, the exorbitant demand of the U. S. government for one gallon of brandy from fourteen gallons of pomace is mitigated by the use of these parings.

The following outlines, though not complete, will give a general idea of the process: The peaches, which should be fully ripe, are placed in barrels and mashed to promote fermentation. When doing this, care should be taken not to break the pits, as such, when broken and boiled, liberate prussic acid, which tends to make the brandy bitter. The barrels are allowed to stand eight to twelve days, seldom longer. The pomace is then put into the still, about two-thirds full, and boiled for about three and one-half hours. Boiling may be quicker, but a slow process brings out the most brandy. When the condensed brandy commences to run, it is filtered through charcoal suspended in a keg by means of a double flannel cloth. The first run may be comparatively weak, around 70 proof; the last, usually very strong, about 150 proof; the average, however, will be about the desired standard, usually 100 proof. The liquor is barreled as soon as distilled, bunged up tightly, and allowed to stand some months before using. Brandy will vary in body, flavor, strength and delicacy, according to the richness of the pomace, the amount of care and experience exercised in its manufacture, and the length of time it stands in the wood.

VINEGAR.

Vinegar is generally made from apple and grape juice, although an equally fine article may also be made from refuse peaches. The fruit is placed in casks, mashed and thoroughly broken up, allowed to stand for a sufficient length of time, and the liquid is drawn off into clean casks as it accumulates. In these new vessels it is allowed to stand for some time and, if sediment settles, it should again be drawn off before finally being put away for use.

PEACH BUTTER.

This is another product of the peach orchard and one that should have been mentioned immediately after our consideration of peach jam. It is made and put up in much the same manner as recommended for jam, differing only in being spiced and in the quantity of sugar used. Large quantities are used in England and other countries, like jam, as a substitute for common butter.

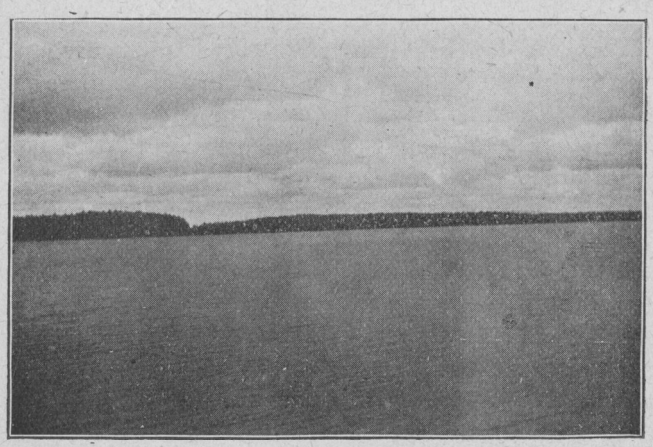
MISCELLANEOUS.

Fallen fruit is unfit for any purpose, except as food for hogs or as a fertilizer. Swine turned into the orchard to forage upon fallen peaches not only increase in value themselves but they also destroy infesting insect larvae and fungous diseases, and they add fertility to the soil, through their excrement. The particular value of peaches as a fertilizer is not known to the writer. In some peach sections it is a common practice to return the culls and refuse to the soil. Fallen peaches may also be gathered and dried for their seeds.

Peach pits may be utilized by planting in the home nursery or by selling to professional nurserymen who usually pay a good price for selected seeds. It is well to observe that pits from the distillery are unfit for nursery practice, as the boiling destroys their vitality. In England an essence of some kind is extracted from the pits, and a very appetizing beverage may be made from them as follows: Remove the kernels from the pits and crush them in water, filter, add sugar to suit taste and boil.

Noyau, a by-product of the peach industry, is "a cordial made from brandy, sweetened and flavored with orange-peel and the kernels of peach stones, bitter almonds and the like," It is also made by steeping the leaves of the peach in spirits. The leaves yield also a milder liquor that is used for flavoring cookery. The blossoms and the buds yield, by a system of distillation, agreeable and fairly pure perfumes.

A. B. C.



The O. A. C. Review.

BUSINESS MANAGERS:

H. H. LEDREW. A. J. HAND.

SUBSCRIPTION RATES:

Annual subscription—Students, 75 cents; Ex-students, 50 cents.
Single copies, 10 cents.
Advertising rates on application.
Ex-Students are requested to contribute to our columns.
If you do not receive your REVIEW within the first week of the month kindly notify the Business Manager.

APRIL, 1904.

Editorial.

College Societies. In considering the work of the college societies for the past year, we cannot close our eyes to the fact that a difficulty, which acts a as clog to progress, remains to be remedied. At present the greatest trouble in the management of these societies is the collection of the necessary funds. Our students fully recognize the importance of the societies, they are not slow in that respect, but generous as they are, it takes a winter's effort from four able-bodied men to collect the dues. Why should this be? The work of these societies is a part of the educational work of the institution; the money for them should be collected in the same way as our laboratory and contingency fees. The only objection that can be urged against this is that ancient scare-crow known as personal liberty. We are told that in these matters the student should be allowed to choose for himself. But surely this is a case where liberty should cease, when such liberty interferes with the rights of others. The objection may be raised that no student should be forced to join the Y. M. C. A., it being a religious institution, but the Y. M. C. A. is not a denominational affair. It places no restrictions on forms of worship, and Protestant or Heathen, Catholic or Confucianist could have no objection to joining an organization the object of which is the development of pure manhood. At present we have ninety-five per cent. of the students as members of these societies, and, for the liberty of the remaining five per cent., the college must be hunted, time wasted, book-keeping hampered, and energy that should be applied to productive work is simply squandered. The time is ripe for this change. If we are to have the maximum of success with the minimum of effort the energy of our students must be preserved for something better than the development of debt collecting ability. The change would be a mark of progress, a token of better days to come, and he who adds this rule to

our college regulations will deserve a monument, cast in deathless bronze, and worshipped by every student organization in the college.

* * *

Back Numbers. We are told that history repeats itself. This may be true of such a revolutionary instition as a nation; but in a well governed college such as ours the more romantic part is not allowed to repeat itself, at least not with impunity. Therefore it is necessary that a record be kept of the doings and undoings of our predecessors, contemporaries and successors. This can only be done through the means of the college paper, which is the only true portrayal of the life of staff and student. Realizing this, arrangements have been made to have volumes of the REVIEW bound and placed in the library for the edification of the "has beens" and "will be's," to serve as works of reference for those who wish to live to the letter of college etiquette, and possibly prove of inestimable value by furnishing anecdotes for the biography of some great man.

Unfortunately, owing to lack of accommodation, and the flitting character of the management, copies of previous issues have not been preserved. Therefore we take this opportunity of reminding those who have been subscribers from its foundation that, if during these balmy days of housecleaning and resurrection, when dusty relics of past ages are unearthed from their long forgotten hiding places, they stumble over those praiseworthy efforts—the early numbers of the *O. A. C. Review*—instead of consigning them to some other place, it would be of much more benefit to their spiritual welfare, as well as to posterity, to consign them to the College Library.

* * *

Special Forestry Number. Much attention is being drawn to the subject of forestry by papers which are wholly devoted to the topics of the day, consequently we feel that, as a factor in the educational press of Canada, and as a representative of that class to which forestry is of paramount importance, we are justified in making of this a special forestry number. Our aim is to advance the theoretical and practical sides of the subject by discussing educational schemes, its importance, and its necessity. In this we are greatly assisted by the kind co-operation of two leaders in theory and practice, Dr. Muldrew and Mr. E. C. Drury, to whom we are indebted for the articles in this issue.

* * *

National Sentiment. Are Canadians lacking in National sentiment? As a people, are we conscious of the importance of our country and its limitless possibilities? These questions have been forcibly presented to us by noticing the difference between the courses of study among some of our contemporaries on the other side of the line, and the leader of them all, the O. A. C. In the American colleges everything possible is done to impress upon the students the greatness of the American nation. Historical associations are thrown about every phase of the student's life. The colleges are founded on Plymouth Rock or built on Bunker Hill, and even the apron-strings of the devotees of Domestic Science breathe for the

Declaration of Independence. In Uncle Sam's Dominions the doctrine of self-importance is too thoroughly applied; here, not thoroughly enough.

This defect in our educational work is to be overcome. With the idea, not of making us vain-glorious of our national greatness, but for the purpose of impressing upon us a true sense of our importance, there will be commenced at the college next fall a series of lectures by the leaders in Canadian National life. Men of action and ideas, men who are prominent in some field of national interest. will from time to time address us upon live questions of the day, and from a fuller knowledge of our status as a nation, and from closer acquaintance with the great problems that confront us we shall be more truly fitted to become worthy citizens of the Land of the Maple, the Home of the Free.

* * *

London Fence Co. We regret to say that owing to a little mistake of ours, the cut of the London Fence Machine in their attractive full page "ad" in our last issue was placed on its side, rather than on its end as it should have been. The machine is well known to us, and it is very simple to operate, and efficient in its work. A large amount of the fence was erected on the college farm a few years ago, and remains to-day, as it will remain for years to come, a standing "ad" of the durability of the London Fence.

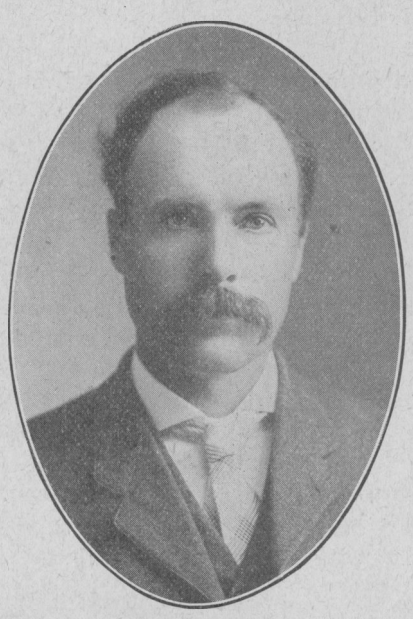


A Muscovite Scene on Lake Bala.

From our Special Correspondent.

Our Old Boys Page.

Graduates We Seldom See.



Prof. F. B. Linfield, of Bozeman, Montana.

Brought up on a farm, just a few miles north of Goderich, and filled with ambition, F. B. Linfield arrived at the O. A. C. in the fall of 1887, determined to learn as much as he could about his chosen occupation,—agriculture. For almost six years he was at or around the O. A. C. Then the great development of the agricultural colleges in the U. S., after the passing of the 2nd Morrell Act, and the Hatch Act, resulted in a great demand for capable and competent men to take professorships.

Utah wanted a man, and sent for Mr. Linfield, now a B. S. A. He considered the offer for nearly a year without accepting. Then, being advised to do so by the late Hon. John McMillan, of South Huron, he took the position, hoping that it would lead to something better, and for nine years worked hard and faithfully at his new tasks. He watched the development of agricultural and dairy industries throughout the State, and saw the agricultural course in the University grow to be one of the best equipped and most popular courses offered, being himself responsible to no small degree for this great development. It was hard work, as he says, often discouraging work, but he was an indefatigable worker, and kept on.

Then Montana Agricultural College wanted some one to take charge of its agricultural department, and sent for him. He was accepted at his own terms, beginning as Professor of Agriculture, Animal Husbandry, and Dairying. Since then he has been made Acting Director of the Experiment Station, Acting Secretary, and Superintendent of Farmer's Institutes. Then he was appointed special agent to collect and arrange the agricultural exhibit from the State for the St. Louis World's Fair. This is a tremendous amount of responsibility to be shouldered by one man, but when that man is F. B. Linfield, everything that can be done will be done. To paraphrase his own words slightly; he had neither political pull, social pull, church pull or family pull, nothing but the ability to work, and work hard. Nothing develops the man like the doing—nothing succeeds like success.

J.W. Hutchinson ('91-93) proprietor of Bonnie Mead Stock Farm, is making specialties of seed grain production, Barred Plymouth Rocks and Holstein cattle.

H. B. Higginbotham is Assistant Manager of the Sun Life Insurance Co. of Canada, office in Philadelphia.

L. H. Cass ('93-94), is running a farm of 150 acres near Carn, Assa.

G. C. Butler (83'85), is farming at Wilham, Essex, England.

Dr. Alex. R. Douglas, one of the old boys, who has been practicing in Dauphin, Man., has moved east to Winnipeg where he is now working up a flourishing practice.

E. A. Ponting ('93-94), is in a bank at Moweaqua, Ill.

J. R. Hutchinson ('97 99), is manager of the St. George Cheese and Butter Factory, St. George, Ont.

S. Calvert ('84-88), is chemist in the State University, Columbia, Missouri.

Mr. Percy W. Hodgetts, B. S. A., has been appointed Secretary of the Ontario Fruit Growers' Association. He graduated from this college in '98, as the first horticultural specialist. He worked with Professor Hutt some time ago as assistant in horticulture, and has since been Superintendent of fumigation appliances, in connection with the requirements of the San Jose Act of the Province of Ontario, which position he will still retain.

F. H. Buscarlet ('89-91), is farming at Souris, Man.

A. J. Brokovski ('97-98), is farming near Battleford, Sask.

E. Burnett ('97-98), is farming at Lacombe, Alta.

H. Wallace ('96-97), is farming at Glen Ewen, Assa.

Geo. F. Rowe ('92-93), is also farming in the Northwest. His address is Box 13, Lumsden, West Regina.

A. D. McPhail is farming near Milton, Ont.

Jno. Landsboro ('79-80), is located at Atlantic, Iowa, where he is pastor of the Congregational church.

The many friends of Mr. A. B. Hogeboom ('05), will be glad to learn that he is still in the land of the living and place of hope. Blake remains single in spite of all the attractions of the fair sex in the St Lawrence Valley, and occasionally, he thinks of old friends around Guelph. He is now giving special attention to the production of high-class poultry, and an "ad." from him will be found on another page. Hogeboom is a rattling good head, and his many friends in this vicinity will be pleased to hear of his prosperity, and hope it may long continue.

Adam N. Davis ('95-97), is working in a railroad office at North Bay.

T. H. Tinney ('88-90), formerly of Oakwood, Ont., is a breeder of Galloway cattle at Medicine Hat, N. W. T.

Crombie Collins, of Corbetton, Ont., has been a helpless invalid since May 24, but latest reports indicate that he is improving.

I. E. Bill is farming at Ninga, Man.

Douglas (Texas) Russell ('98-00), is in India in command of a regiment.

J. M. Glass ('84-85), is farming at Belmont, Man.

Jno. Newton ('79-80) is a successful apiarist at Thamesboro, Ont.

T. H. Hodgson ('96-98), is manager of the United Typewriter Co., and is to be found at 19 King Street West, Hamilton.

FOWLER-CHRISTIE.

(Ottawa Citizen, March 9th.)

A very quiet wedding was solemnized this afternoon at 2 o'clock in St. Luke's church by Rev. Mr. Read, when Frances Constance, daughter of Rev. I. J. Christie, of 557 Gilmour street, was married to Mr. Reginald Charles Fowler, of Emerald, Ont. The bride, who was given away by her father, was daintily attired in a gown of white organdy and wore a wreath of lilies-of-the-valley; she carried an ivory prayer-book. The bridesmaid, Miss Florence Fowler, sister of the groom, wore white muslin with white and pink carnations. The groom was supported by Mr. John Christie, of Vancouver, brother of the bride. Mrs. Christie, stepmother of the bride, wore black voile, relieved with touches of grey. The groom's gift to the bride was a gold locket and chain; to the bridesmaid, an enameled brooch. The gifts received by the bride were very numerous and handsome. Mr. and Mrs. Fowler leave by the evening train for Brockville and will visit Toronto and Detroit before returning to their home in Emerald. All good wishes accompany the young couple.

Mr. Fowler ('96-'98), is engaged in dairy work at present, and was a prominent man on the staff of the Farmers' Institutes last winter.



Book Review and Exchange Column.

THE study of Botany is undergoing a change. Formerly it consisted of a perusal of books about the plants, a second-hand study, where some unknown professor in a far off country made the investigations and the student accepted them, *nolens volens*. Now it is a true communion with nature, instead of being rigid texts the only books necessary are those which serve to give the generally accepted technical terms, the necessary instruction and the indispensable system. With this, and his patient, the plant, the student can carry on his own observations, make his own deductions, and thus indelibly impress upon his memory knowledge which he himself has gained.

Such a book is "Plant Life," by Professor Barnes, plant physiologist at Chicago University. It exhibits the variety and progressive complexity of the vegetative body; discusses the more important functions; explains the unity of plan in both the structure and action of the reproductive organs; and finally gives an outline of the more striking ways in which plants adapt themselves to their surroundings. Every important or intricate point is clearly illustrated, and each illustration accompanied by a concise description.

Another point which proves its value to nature students is the system of laboratory directions. In four appendices are given a course of practical research, the necessary material, where to collect and how to preserve it, the best equipment and a list of reference books.

By reason of its practical style this work is of special benefit to nature students. It may be obtained of the publishers, Henry Holt & Co., New York, post and duty free, for $1.00.

The Rocky Mountain Collegian, of Colorado Agricultural College gives us this toast list:

The American: "Here's to the stars and stripes of the U. S. of America which were never trailed in defeat."

The Englishman: "Here's to the rampin', roarin' lion of Great Britain, that tore down the stars and bars of Russia, clipped the feathers of Turkey, picked the feathers of the cock of France, and ran like"——right here, our contemporary has forgotten something and we hasten to complete the sentence——"the wind after the retiring and expiring Yankee."

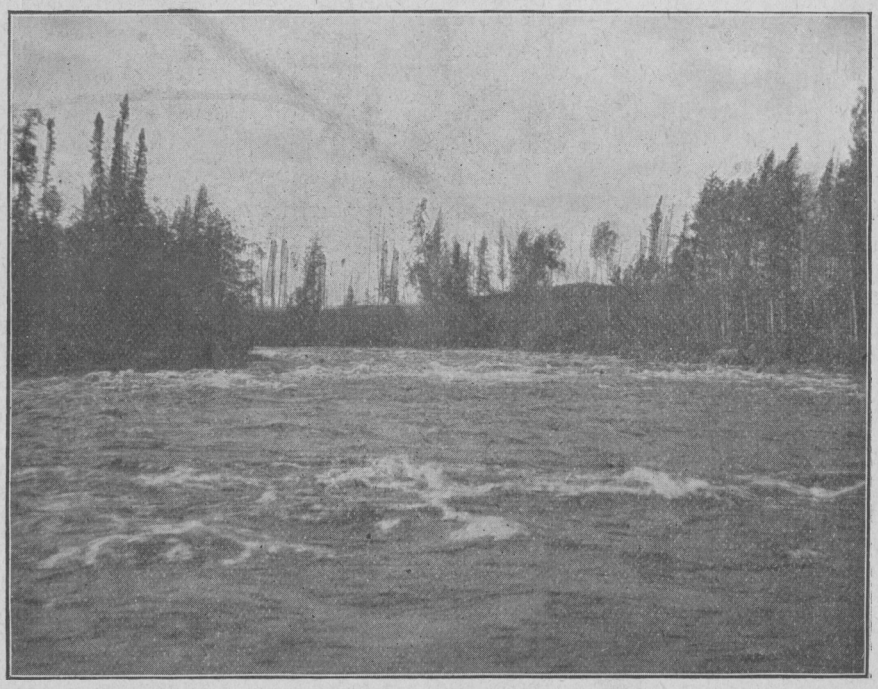
Now here's to Canada, the land of limitless possibilities, bounded on the north by the aurora borealis; on the east by the procession of the equinoxes; on the west by the day of judgment, and on the south by a bag of wind.

We welcome to our exchange list *St. Margaret's Chronicle*, the journalistic product of our lady friends from St. Margaret's College. Well done, girls! Your paper is neat and attractive, and we shall be pleased to have it come more frequently.

We are glad to note that our old friend, the Ottawa University *Review*, remains bright and undimmed by the fire through which it has passed. The loss of the buildings must be a great inconvenience to the students for some considerable time, but with that generosity which our Catholic friends have always shown to their brethren in distress "Ottawa" will rise greater and grander from its ruins, and remain, as it always has been, one of the strongest of our higher educational institutions.

We are indebted to the publishers for a copy of Bernarr McFadden's new book on hair culture. It may seem a far fetched phase of agriculture, hare-raising, but nevertheless it is one which we do not doubt would prove profitable to all our readers. It may be the means of showing some of us what hair-breadth escapes we are having in our every day life from that doom of the hen-pecked-baldness. The instructions are simple, to the point and practical, and as a sample of the sound wisdom contained, in addition to the hair-raising episodes, we can do no better than quote, "Don't court insanity. Don't mope! Leave morbidity for those who are courting insanity. If you cannot be happy, work—work—work during every leisure hour. If you have no object in life find one. If one cannot be found, make one; and if you attend to this assiduously there will be very little time to think about other troubles."

Those who desire to save their scalp we advise to send $1.00 to the Physical Culture Publishing Co,, of New York, for this valuable tonsorial guide.



College Reporter.



C. M. MacRae, President Literary Society.

Mr. MacRae is pushing, energetic, and resourceful, and under his presidency the Literary Society has made splendid progress.

The oratorical contest is the crowning literary event of the year. On this occasion the best and bravest of our College orators stand forth before the finest audience assembled in the year, to do honor to themselves and to their training in a contest of the keenest possible kind. Each succeeding year brings forth its champions to the field, but seldom has a contest been so close and interesting as that of the present year. The speakers, the subjects, and the audience were all that could be desired, and even the losers in the fight did excellent work, worthy of the highest praise.

The speech of the evening and the winner of the coveted trophy, the Creelman Class Prize, was Mr. H. H. LeDrew's effort on the subject of Newfoundland's Confederation with Canada. Himself a Newfoundlander, thoroughly familiar with his country's history, he spoke from what he actually knew and felt, and fairly carried his audience with him in a speech remarkable alike for the purity of its diction and thorough mastery of the subject. From the vastness of Canada, from her present greatness and future prospects, the Island which guards her gateway should float her flag. Newfoundland is the



H. H. LeDrew.

oldest colony of the British Empire. The same blood that flows in the veins of her people courses through

our own. She is rich in resources, boundless in possibilities, and, united with Canada, would swing forward on the wave of prosperity in the vanguard of Anglo-Saxon civilization.

The winner of the second prize was Mr. B. S. Pickett. He is a veteran on the O. A. C. platform, and always a credit to the institution. The subject of his speech was "Universal Law," and although it failed to stir his hearers like the patriotic strains of the winning oration, yet it was indeed a masterly production. In beauty of expression and clearness of delivery, it well deserves the highest eulogy, and would receive a place of honor among the winners in any contest.

The third prize fell to J. W. Kennedy, for an excellent oration on Robert Burns. Mr. Kennedy is a first year man, and had the disadvantage of not being accustomed to the gymnasium platform, but he proved himself a speaker of more than ordinary ability and will undoubtedly be heard from in future contests.

At the close of the meeting the prizes were presented by Dr. Mills, and as he rose to say a few words the ringing cheers of the students showed that though absent he would never be forgotten. He spoke of the standing the College was taking in the outside world, and highly complimented the speakers upon the evening's work. Then, with cheers for Dr. Mills, and "God Save the King," the meeting was brought to a close, and another contest had passed into history.



N. J. McKinley.

McKinley comes from the banks of the Rideau, a part of Ontario where good and hardy men are found. He appeared at the O. A. C. last September, and his qualities resembling those of his martyred synonym, he was elected president of his year, 07. He has had a much more successful term of office than his namesake, having reached the end of one session without seeing anarchy, discontent, or disruption among his subjects.

As a man and a student, he is deservedly popular, because of his genial manner, and his active participation in all the functions of college life. Notwithstanding reverses, which are incident to all Freshman classes, his year has made a very creditable record, and the man who led in the combat with the Pandemonium Club deserves hearty congratulation.

However, his influence is not confined to the college and to his year. The spirit of chivalry, the admiration of the lovely, is strong in his soul, and many and diverse are the pilgrimages he makes to worship at the shrine of Beauty. Thus we see a man who is developed on all sides—the physical, the moral, and the intellectual—who appreciates the beautiful, and who leads others. This is McKinley.



F. C. Hart.

"Frank" Hart, like the other "wise men," comes from the East. He was born in native city, Halifax, early in his infancy.

Unlike the majority of our students, he did not spend his palmy days upon the farm. It was when he was better able to grasp the intricacies of agriculture, that he transferred his talents to a rural "field." His early education he gained at the public school and the collegiate of the Garrison city, where he received a certificate which qualified him to exercise dominion, by mental intuition, moral suasion, or physical logic, over such sundry scions of humanity as came beneath his regime. His duties as pedagogue brought him in close contact with the agricultural population, (too close the bad boys thought). Immediately he recognized that his native province was in a dire plight, lacking the guiding influence of a master hand. His first thought was that by applying himself to the plough he might work the required improvement; for two years he labored, a son of the soil. Although not by any means a faint Hart, he was "Frank," he realized that there must be an easier way to farm, a more royal road to earning, and in accordance with his inclinations he departed from the land of bluenoses and cast behind him the irksome chains of labor.

His search for this royal road led him to the Royal City. Here, as of old, he found the embryo year wrapped in swaddling clothes, (and all other kinds of clothes), as an offering he brought "Frank" in-sense, the star of the East. It was this priceless ingredient statemanship, which made the sophomore year what it is.

When a weighty matter is to be discussed he summons up such rare foresight, profound wisdom and remarkable discretion, as to throw Socrates in the shade; yet in an emergency, where skill, sleight-of-hand, or ingenuity are required, he is the fountain head of supply, leading the raid, likewise the retreat, with an ardor worthy of burning Sappho.

With no apparent effort he leads his classes, his time he sacrifices to his college, his year and his fellow students, proving himself an active supporter of all college institutions. He is much in prominence at the Athletic Banquet, shows his appreciation of the Literary Society by exposing his dearest friend to the flood of fiery eloquence, and his interest in the Y.M.C.A. is manifested by the earnest solicitude of his pleas for more "collection."

These are the reasons for which he was chosen to guide through its checkered career the year which is the pride of the college, the Sophomores.

Let us hope that Frank may return to his native province as a missionary, with a mind replete with expedients for the advancement of a system of Agricultural Education which will prove second only to his Alma Mater.

The Speaking Contest.



J. P. Atkin.

Necessity is the mother of invention. Possibly this is what made such a success of the public speaking contest, the quarantine supplied thenecessity, the fertile minds of the students and able speakers of the college did the rest. Although the outlook was rather discouraging, the executive of the Literary Society, with characteristic energy did all in their power to make the event a success; the results were most satisfactory. The programme was somewhat enlivened by Professor von Walkenburg's harmonously assorted band and their protesque music.

The speeches were a credit to the speakers and to the college. They betrayed a grasp of affairs, a careful preparation, and ease of delivery which is often found wanting in more mature orators.

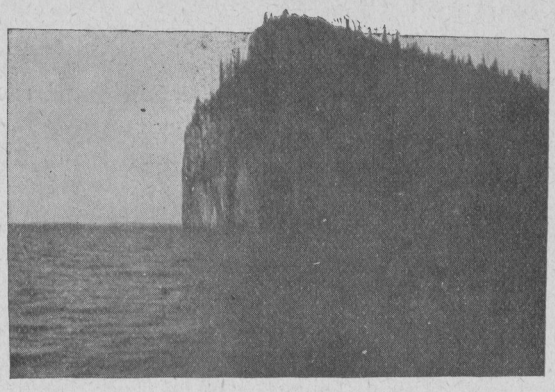
As usual, Tommy Atkin was to the fore. This is, perhaps, the first time that a name so celebrated on the broad field of battle has ever been carried to conquest on the platform. With the same vigor, earnestness, and patriotism, which has in hour of danger inspired his warrior namesake in the thin red line, he brought before the minds of his audience a vivid picture of "The Yellow Peril.' He excelled the other competitors in annunciation, native fire, and eloquence; in fact, was more of an orator than a public speaker.

Although not a winner, Mr. Eddy's speech easily could have been, in an ordinary contest. The subject "Canada and the Empire," was interesting, and was handled in a way which showed that we have a rising generation which is going to make the world interesting for other nations when they hold the reins of government.

The speakers taking third and fourth place were J. E. Bower and C. W. Esmond. The material of their speeches was excellent, but possibly lacked a little in vivacity and effect. They and J. F. Monroe and H. A. Culham, the remaining competitors, will be the men who will in years to come lead the agricultural interests of the country from the platform of the Farmers' Institutes. And when the last ring of applause has died, and they stand, successful agricultural evangelists before a converted audience, proudly will they turn to the Literary Society of the O. A. C. and say, "All I am is due to thee."

On Tuesday evening, March 22nd, the Panton Club discussed the subject, "The Early Races of North America." Four members of the Third year, Messrs. Evans, Westover, Bell, and Howitt, gave papers bearing on this topic. The subject was a most interesting one, and a great deal of reminiscent and historical information was obtained. Mr. Evans discussed the kitchen midden deposits, and shed considerable light upon the habits and

character of a people whose past existence is not very generally or widely known. Mr. Westover's description of the mound-builders proved very interesting. The works of this industrious race compare favorably with the wonders of the ancient peoples of the old world. The habits and characteristics of the Esquimaux were treated by Mr. Bell, who gave a very interesting and comprehensive description of this fast disappearing race. The most interesting subject, "The North American Indian," was taken up by Mr. Howitt, who did justice to his subject. A short, interesting discussion of characteristics and historical traces of these ancient peoples followed, after which the meeting adjourned.



Macdonald Notes

"Do you iron the backs of the fronts of men's white shirts?"

Over-heard in the car—"Well, we'll live out West where he can't wear a white shirt."

Did the laundry girls have the borrowed collars done up at the Chinaman's before returning them? It was rumoured that the collars badly needed it.

A MACDONALD TALE.

One day a Tennant of the Green Mills of Dikie Holland was Given a little Brown Savage who had walked many miles to see a Black Crowe Butchart.

Miss Given (to an O. A. C. Student), —"You are not allowed to speak to the girls."

O. A. C. Student—"I suppose this regulation had to be imposed to insure the instructors receiving any attention."

The model flat, or apartment, is now in running order, and is being occupied by Miss Watson and Miss Given. This will be especially interesting to the housekeepers who will soon have to "run the flat," and see that the boarders do not get thin over it.

When the Macdonald girls wish to summon any one to dinner do they ring the "Bell" or "Culham."

It was with much surprise and some disbelief that the physiology class learned that they actually had two bones in the lower part of their arm. Indeed, even yet, some fail to be convinced of the fact, and insist that they have but one. Our lecturer thinks there must be something wrong with them. (We don't doubt it).

We have to announce that after this the subject, "Business Methods" or "Practical Arithmetic," will be dropped. The new girls will not have to try to find out, that, if in one minute one cat would catch one rat, how many rats in how many minutes would three cats catch?"

It might be added here, that, owing to the discovery of an instantaneous rat poison in the shape of home-made pie-crust this advanced system of feline mathematics can be dispensed with at the Macdonald Institute.

We were very sorry to see the girls of our first short course leave us. But as all our time between exams. was taken up in engraving our names on their "cushion tops" we trust that we at least will be remembered

by them. We are glad to welcome the new short course, and we hope that they will have as enjoyable a course as the others had. According to the remarks overheard, some of the Guelph girls are very much alarmed over the household sewing.

To us girls who are "stationary" for two, and maybe more, years, it seems as if "Girls might come and girls might go, but we go on forever."

A RECIPE FOR A KISS.

To one piece of dark piazza (or sofa) and a little moonlight, take for granted two people. Press a soft hand in two strong ones; sift slightly one oz. of attraction to one of romance, add a large measure of jolly, stir in a floating ruffle, and one or two whispers. Dissolve half a dozen glances, dust in a quantity of hesitation, one oz. of resistance to two of yielding. Place the kiss on a soft cheek or two lips, flavor with a slight scream, and set aside to cool. This will succeed in any climate if directions are carefully followed.

The holidays are over and we start on another three months term of hard work. But, indeed, we have less than three months, for on the 22nd of June we may put away our books, and for three short moons we can rest and never once have to puzzle out the awful question: "Whether boiled carrots are more digestible than corn-meal porridge." It is really a bewildering thing to try to solve this question, especially at an examination, when time is limited. Our brains become so fatally twisted when we try to remember eating these dishes, and which one affected us less pleasantly, and then just when we are sure we feel better after taking the porridge we suddenly remember that it wasn't boiled carrots we had eaten, that we never ate boiled carrots, didn't like boiled carrots,—then comes the call, "Ten minutes more time," and we plunge desperately into the question and ten to one put down just what we do not mean. For getting one fatally and hopelessly twisted examinations are the worst.



The Girls at Work.

Athletics.

The Indoor Sports had to battle against rather unfavorable conditions this year. Owing to the persistency and renewed attack of the noxious germ, the athletic committee were compelled to "cut out" the evening on which they had intended that the final contests should be held.

On the afternoon of Thursday, March 31st, the preliminary events were run off, the chief interest centering in the boxing bouts. These were refereed by Mr. W. G. Milligan, who, as usual, made an ideal official. We are glad of this opportunity of expressing our appreciation of Mr. Milligan's untiring efforts on behalf of athletics in the college. He has at all times been a keen promoter of sport, and has proved a most obliging and invaluable friend to student as well as athlete. This will be amply borne out by all who have had debates to prepare or any subject whatever to read up, and who have been put in possession of the precise reading matter of which they were in search. Mr. Milligan's nomination of Foot-ball manager of the Athletic Association for next year bears testimony to his well merited popularity with all.

On Friday afternoon the final events took place. Although the weather was uninviting, a number of people from town were present, and the gym. was fairly well filled. Professor Doherty was on hand in the capacity of judge, and, together with "Andy" Robertson, kindly consented to give an exhibition performance on the parallel bars, which added greatly to the entertainment, and was much appreciated by the spectators. The number of competitors was not excessive in many cases; but the interest in the various events was well sustained throughout, the boxing bouts proving most exciting. "Tom" Barber won the championship with 24 points, and is to be congratulated upon his splendid performance all through the sports. A. Robertson captured second place.



T. C. Barber.

"Tom" is the style of college athlete we are proud to acknowledge, a first-class all round man, who by dent of courage and diligent perseverance has made himself proficent in every-phase of college work, who considers the physical a stimulus to the mental side of a systematic training.

Winners in the different events are as follows :

I.—BOXING.

1. Light weight—A. Robertson.
2. Welter weight—R. Ramsay.
3. Middle weight—J. Granel.
4. Heavy weight—J. Granel.

II. Horizontal Bar, - A. Robertson
T. C. Barber

III. Parallel Bar, - - T. C. Barber
A. Robertson
IV. Vault, - - - - - T. C. Barber
A. Robertson
V. High Jump, - - Douglas Weir
M. S. Middleton
T. C. Barber
VI. High Kick, - - - D. MacBeth
M. S. Middleton
J. Bracken
VII. Horse, - - - - T. C. Barber
VIII. Flying Rings, - T. C. Barber
IX. Travelling Rings, T. C. Barber.
M. S. Middleton

At a general meeting of the students, held on the afternoon of Saturday, April 2nd, the following were elected as next year's Athletic Committee :

Hon. President—Professor Harcourt.
Hon. Vice-President—W. H. Day.
President—W. C. McKillican.
Vice-President—H. S. Stayner.
Sec.-Treasurer—H. H. Miller.
Fourth Year Representatives—
A. Leitch and G. C. Warner.
Third Year Representative—
C. F. Bailey.
Second Year Representatives—
M. Greenshields and A. D. Broderick.
Foot-ball Manager—W. G. Milligan.
Hockey Manager—R. D. Prittie.



'06 Tug-of-War Trophy.

In this issue appears a cut of the Challenge Cup, which the boys of '06 presented this year to the Athletic Association for competition in the Tug-of-War, and which was won by the Second Year team. The presentation of this cup was certainly enterprising on the part of the Sophomores, and it greatly stimulated the interest in this contest, as was intended by the donors. It was an entirely original idea, but it is to be hoped that a precedent has been established, and that the Sophomore years that are to come will follow the example of those who sought to promote greater enthusiasm in athletic events, and who have won distinction as pioneers in this department of sport.

Locals.

SUNNY JIM. (MODERNIZED).

They used to call him "Sleepy Mac"
And he did sleep, you bet, in fac';
But since he put his thesis in
The boys all call him "Sunny Jim."

Before that time with all his might
He used to sleep the whole long night;
But since he handed his thesis in
He works all night does Sunny Jim.

In hours between, with stick in hand,
He plays lacrosse to beat the band;
"For since I put my thesis in
I've got the time," says Sunny Jim.

Before, his tenor was "Exams,"
He thought they'd alter all his plans;
"But now I've put my thesis in
What need I care," says Sunny Jim.

Well, Joe, by dad, I've finished my thesis. Now the trick is to hand it in.

2 hours later in President's office.

Enter sleepy Mac slowly, in one hand a roll of papers, and on his face a weary look.

"Here, Pickett ——Thesis——."

Exit Mac in haste—hands empty, and on his face a sunny smile.

10 seconds later.

"Well, Joe, it's did."

Carpenter—Rice—Old Boots—Alma—Congratulations.

"The By Products of the Guinea Pig Industry," by B. S. Pickett.

McKinley must be a lady-killer. Vox Collegii reports that Margaret E. had a killing time with McKinley.

It is rumored that in the event of another quarantine, Mason has offered to take the position of guard at College Heights for half price.

Prof. Lochhead.—The exam. will consist of five minutes speaking and five minutes silence.

MacBeth.—I can take 100 per cent. in the five minutes silence.

Marino, when asked why he didn't eat too much, naively remarked, "I can't."

Dr. R. K. Monkman, V. S.—Very Short.

A. L. McCredie, V. C.—"Village Carpenter."

Second Year Exam. Paper.—Tennyson married a squalid savage, reared a dusky race, and died in the Isle of Wight.

Tom Knight—"I don't know enough about bacteriology to set a paper I could pass on."

Dr. Reed—"We all have a tendency to exaggeration."

MacBeth—"I wish you would exaggerate my marks."

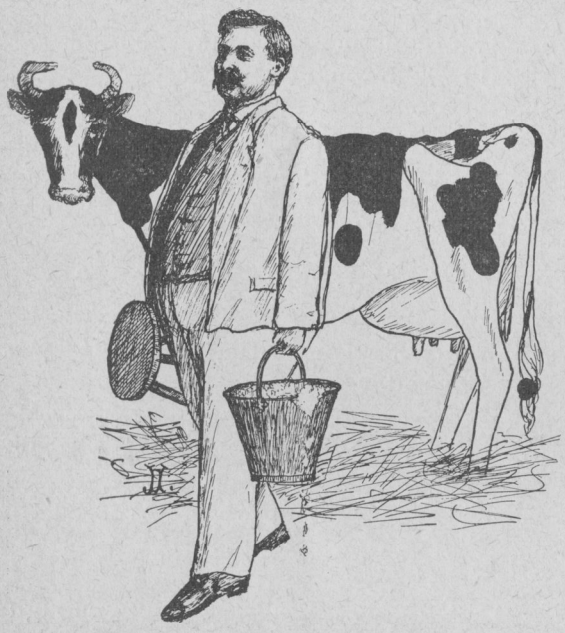
Heard in the President's office—"Please connect Mr. MacMillan with the Macdonald Institute." As of old, love laughs at locks and bars.

A Reminiscence of the Conversat.—It is reported that at 3.30 the next morning, MacMillan, wrapped in slumbers, his mind still dwelling on visions of beauty, was heard to plaintively ask, "Don't go home without me."

Heard in the entomology class-room:

Northcott—"I wonder if there are any bean weevils?"

Bean—"Search me."



A Dairy Dream.

Of the man in the sketch
We would say just a word;
For we all know the boss
Of the farm dairy herd.

His tastes, too, are known—
If there's anything more
That he hates than tobacco
Tis the sight of a core
Of a college snow apple,
When thrown on the floor.

His technical terms
May sometimes fall flat;
But we here see the force
Of his "solids (all) fat".

From Senior to Freshman
We've heard and we've read
Of his sound common sense
And his good business head.

He is a good manager—
That we'll allow
When we view him; but cast not
Our eyes on the cow.

Marrett (a new importation), musing on his return from the poultry-yard, where he had been sent on a fictitious errand at 5 a. m.—"I was a stranger and they took me in."

During the first quarantine it was the practice of a few students of a predatory nature, while wandering aimlessly around the poultry yards, to absorb any eggs which might be left unguarded. Learning this, the astute manager of the feathered flock removed some preserved eggs of more or less ancient parentage from an incubator and placed these where they might follow the fate of the previous disappearances. The bait took, ask McKenney how he felt, "just as the egg went down."

The staff are a jolly lot, and one evening one of them sought to entertain a few friends by relating this little incident. He had succeeded very well with the beginning of the story and followed up with the words, "The professor of poultry was annoyed at the loss of the eggs, was at first non-plussed, but, being of a sporting nature, he resolved to pay them back in their own coin and laid them—" here he was interrupted by a general laugh, and even yet this learned professor is wondering why they laughed before he told the joke.

Woods—"What is the mechanical advantage of a stump lifter?"

Prof. W. H. Day—"I don't know."

Woods—"I'll give you a few pointers on it after the lecture."

The following useful feature of a bank was put forward by a second year man, who doubtless knew

whereof he spoke: "They furnish comfortable employment for business men of average ability."

Sam Lee Hing, accosting Mulloy, as he sauntered down the street, blissfully unconscious of his dusky collar—"Washee collar?"

"Oh, I wish my collar would fade,
I'd like a different shade."

The following is not the weird propitiation of a heathen fetish, but the program of a concert offered the residents of Mill street during the quarantine:

Painless Parting ..... Bug
Chair Juggling ..... Jim Morse
Mandolin Solo—"Where the Limburger flows" ..... Tom Morse
St. Vitus Dance ... Halliday & Leavens
Chemical Demonstrations—Spontaneous Combustion of Gases—
Tom Morse
Ping-Pong, the Indian Curiosity. He eats apples raw.
Time 10 o'clock.
Admission 2c.

The BIG BOOK STORE

CHAS. L. NELLES,
Upper Wyndham Street,
GUELPH.

O.A.C. Books and Requisites. Complete Stock. Fountain Pens for Students, $1.00.

Brookside Poultry Farm,
A. B. HOGEBOOM, Prop.

BREEDER OF PURE BRED
Barred Plymouth Rocks, R. C. R. Leghorns, and Pekin Ducks.

STOCK AND EGGS FOR SALE.
All Orders Given Prompt Attention.
CAINTOWN, ONT. CANADA

SEMI-MONTHLY. SEMI-MONTHLY.

The Farming World

A PAPER devoted to all branches of Agriculture. It is read by the leading Farmers and Stockmen throughout Canada. Everybody engaged in farming should subscribe, and Receive The Farming World regularly.

One Year, 60 cents.
Two Years, $1.00.

Sample copy free on request. Address

THE FARMING WORLD,
90 Wellington Street West. Toronto, Canada.

STEWART'S DRUG STORE,

(2 Doors South of Post Office.)

Is Headquarters for Student's Supplies. Special Prices for Students.

ALEXANDER STEWART, Dispensing Chemist.

Give Your Mouth

A GENUINE TREAT

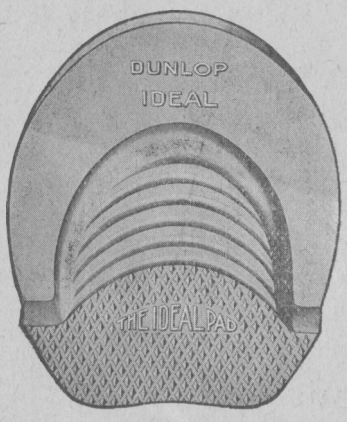
By introducing it to a box of our Choice Bon Bons at 40c. and 50c. per lb. Half pounds 20c. and 25c.

The

Kandy Kitchen.



Keep a Horse's Feet Sound.



The useful qualities of a horse is particularly in his hoofs. If these go back on him his usefulness is at an end.

Dunlop Ideal
Horseshoe Pads

Prolong the working life of a horse—prevent cracking of the hoofs, balling in winter, lameness.

Write for our Booklet, "Horseology."

DUNLOP TIRE COMPANY, Limited,

Toronto, Ont.



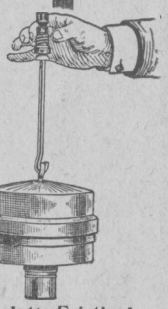
"Melotte" CREAM SEPARATORS

HAVE UNIQUE FEATURES

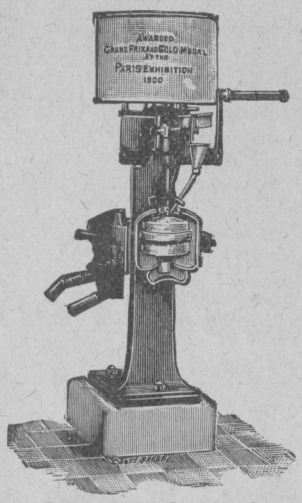
Which Merit the Closest Inspection.

NOTE THE FOLLOWING:

1. Vertical gear wheels turning on ball bearings, which are always immersed and completely covered with oil.
2. Machine cup gears of high grade steel.
3. Self-balancing bowl suspended from ball-bearing spindle, as illustrated.



Melotte Frictionless Self-balancing Bowl

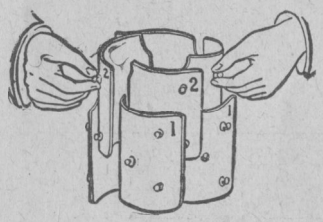


Sizes 1 to 5, Capacity from 400 to 1100 lbs.

4. Self-emptying bowl, every part of which is accessable to the hand and cleaning cloth.
5. A simple spiral skimming device, very strong and more easily cleaned than any other.
6. In sizes 1 to 5, an enamelled bowl casing, a surface specially suited to easy and perfect cleaning.
7. A simple and effective brake
8. The largest, strongest and most conveniently placed receiving can.

For close skimming, for general appearance, for finish and convenience in use, the Melotte is unexcelled.

Write for Booklet.



Melotte Spiral Skimmer

ANY SIZE SENT ON TRIAL.

R.A. LISTER & Co LTD. 579 & 581 ST PAUL ST MONTREAL

BELL

HIGH CLASS

PIANOS,

Piano-Players, Organs,

MANUFACTURED BY THE

BELL PIANO & ORGAN CO. Limited, GUELPH, ONTARIO.

CATALOGUE FREE.

Alva Farm Guernseys.

Awarded First Prize at Montreal for Breeders' Young Herd.

Young Animals of Merit for Sale.

Pedigrees and particulars to parties wishing to purchase. Address

SYDNEY FISHER, - Knowlton, Quebec.

When in need of

Dairy Supplies,

CREAMERY OR CHEESE FACTORY FURNISHINGS

Write

The Ballantyne Dairy Supply Co., Limited. Stratford.

Satisfaction Guaranteed.

JOHN HILL,

Importer and Breeder of

YORKSHIRE SWINE and SHORTHORN CATTLE.

Stock always on hand.

John Hill, Wellesley P. O.

G. T. R. Station, Baden.

STAMMERERS

THE ARNOTT INSTITUTE, Berlin, Canada, for the treatment of all forms of Speech defects. Dr. W. J. Arnott, superintendent. We treat the cause, not simply the habit, and therefore produce natural speech.

Write for particulars.

OUR

Maple Cream Taffies, etc.

Are second to none.
Made fresh every day.

J. H. SMITH, ***Opp. City Hall.***

Do you use **FOSTER'S** Pots?

Strong Durable Light



Porous and Cheap

Those who do will have no other.

A post card brings price list and all particulars.

The Foster Pottery Co.,

LIMITED

HAMILTON, - ONT.

The Self and Sex Series

PURE BOOKS ON AVOIDED SUBJECTS.

Books for Men.

BY SYLVANUS STALL.

What a Young Boy Ought to Know.
What a Young Man Ought to Know.
What a Young Husband Ought to Know.
What a Man of 45 Ought to Know.

Books for Women.

By Mrs. Mary Wood-Allen, M. D., and Mrs. Emma F. A. Drake, M. D.

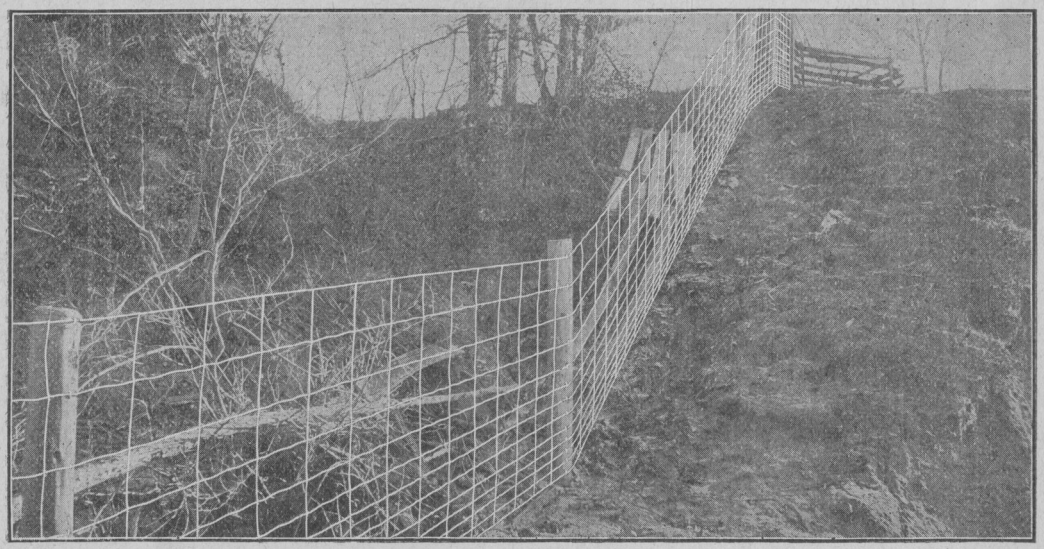
What a Young Girl Ought to Know.
What a Young Woman Ought to Know.
What a Young Wife Ought to Know.
What a Woman of 45 Ought to Know.

The safest and best books of their kind in the world—Commended by eminent physicians and authorities—Descriptive circulars free upon application.

Price, $1.00 Net Per Copy, Postpaid.

WILLIAM BRIGGS, Methodist Book and Publishing House,

29-33 Richmond St. W., TORONTO, ONT.



LAMB FENCE

Will fit the ground in any place, and can be erected in less time than it takes to get ready to weave a hand-made fence. Is made of the very best high carbon steel wire, which has more tensible strength than hard steel wire or common soft wire. Lamb Gates are efficient, as well as handsome.

THE H. R. LAMB FENCE CO., LONDON, ONT. WINNIPEG, MAN.

The Canadian Portland Cement Co.

LIMITED.

Manufacture

"RATHBUNS STAR"

BRAND

The Leading Canadian Portland Cement.

CAPACITY OF WORKS, 500,000 BARRELS PER YEAR.

....*Sales Agents*....

THE RATHBUN COMPANY,
310-312 Front Street West,
TORONTO, ONT.

ST. Lawrence Portland Cement Co.
202-203 Board of Trade Building,
MONTREAL, QUE.

ALL O. A. C. GRADUATES

Should Subscribe for Guelph's leading paper,

The Weekly Mercury.

IT will keep them in touch with important matters pertaining to their Alma Mater, will furnish them with full information concerning the Ontario Winter Fair; will give them the news of the Royal City, and the farm and live stock news of the District. O. A. C. officials, students and graduates will be specially interested in the great

PREMIUM PICTURE,

To be given to WEEKLY subscribers who pay in advance for the year. Write for descriptive circular. **$1.00 a year in advance.**

McINTOSH & GALBRAITH.

Royal Agricultural Society of England.

TELEGRAPHIC ADDRESS: "PRACTICE," LONDON. TELEPHONE No. 3675 GERRARD.

13, HANOVER SQUARE,
LONDON, W. June 30th 1903

DEAR SIRS,

I take pleasure in handing to you the enclosed Cheques, Nos 22001 & 22003, value £50 & £10, for First Prize awarded and return of Deposit in Kind Engine Trials and shall feel obliged if you will kindly present it through a Banker at the earliest possible date.

The receipt at the foot of the Cheque must be signed by you and dated before presentation to the Bankers, as the Cheque without the receipt is of no value.

Yours faithfully,
ERNEST CLARKE,
Secretary.

Messrs Goold, Shapley & Muir Co, Ltd

No acknowledgment to the Society is required.

N.B.—Cheques outstanding more than six months after date will not be paid by the Bankers until certified by the Secretary.

(1000/2/03)

GOOLD, SHAPLEY & MUIR CO., Limited.
BRANTFORD, ONTARIO.
Also Manufacturers of high grade Gas and Gasoline Engines.

"Insects Injurious to Fruits,"

(Second Edition, Revised.)

By WM. SAUNDERS, F.R.S.C., F.L.S., F.C.S.

Contents—Insects Injurious to the Apple, Pear, Plum, Peach, Apricot and Nectarine, Cherry, Quince, Grape, Raspberry, Blackberry, Strawberry, Red and White Currant, Black Currant, Gooseberry, Melon, Cranberry, Orange, Olive, Fig. Synomical List. Index. 436 pages. 440 woodcuts. 12 mo.

Cloth, $2.00.

Publishers, J. B. LIPPINCOTT & Co., Philadelphia

The Canada Chemical Manufacturing Co. Limited

LONDON, CANADA.

Chemically Pure **ACIDS and CHEMICALS** For Laboratories.

FARMERS'

Sons and Daughters

REQUIRE a special Business Training in this age, quite as much as any other class of young people. We provide a very special course in Farm Accounting and Business Methods, which can be completed nicely in a term of three months, or taken by *mail* in a term of a year or more. It is quite inexpensive either way you take it, and it has proved most valuable to many who have studied with us and are now applying the results with great success and satisfaction in their agricultural pursuits. Write for our Prospectus and our Booklet, "Back to the Farm." Address

Central Business College

Toronto.

W. H. SHAW, Principal.

BULLETIN BOARD

One step won't take you very far,
You've got to keep on walking;
One word won't tell folks what you are,
You've got to keep on talking.

One inch wont make you very tall,
You've got to keep on growing;
One little ad. won't do it all,
You've got to keep 'em going.

WHEN you advertise in the O. A. C. REVIEW you have the people "going." They believe all they see in this paper. A well known advertiser has for some months been running that popular, but heart-rending question, "How old is Anne?" We have received replies to this from places as far distant as Sydney, Cape Breton. This in itself shows that our readers are a careful, observant class, and that the magazine is devoured with avidity from cover to cover.

Again, they are scientific farmers with money, for are they not ex-students of the Ontario Agricultural College? The very type of a farmer our advertisers seek to reach is represented by the subscribers of the O. A. C. REVIEW, men of business ability, who are anxious to live up to the times and adopt the latest ideas. In consequence, it is sufficient proof that a firm has nothing new to offer, or do not want to sell, if they do not keep their name and wares to the front in the agricultural centre of Canada.

If you wish to touch the buyer's heart and pocket, start an ad. in the O. A. C. REVIEW; if you long for commercial supremacy, keep on "adding" to your space.

FOR
1904

WHITE

Traction Engines,

Portable Engines,

Station-ary Engines and Boilers,

Sawmills

Rebuilt Engines for farm use,

Engineers' Supplies.

First Quality Goods.



THE WHITE TRACTION ENGINE.

THE GEO. WHITE & SONS CO., Limited., London, Can.

ALL MONEY MAKERS. *ALL LABOR SAVERS.*

FOR
1904

WHITE

Challenge Threshers with wind Stackers,

with Johnson Self-feed-ers,

with Cutting Box attached to rear of Machine,

Baggers,

Talliers,

Dusters,

Chaff Savers,

Threshers Supplies.

The Spramotor

IS a machine designed for the application of all kinds of spray mixtures and paints, being operated by engine, horse or man power. This machine was awarded first place in the Canadian Government contest and the Gasoline Power outfit operated by the Dominion Government Fruit Division last year to demonstrate to the growers the best way to raise a profitable crop of fruit.

It's Use Will Improve Your Fruit Crop Over 80 Per cent.

Destroy wild mustard in the growing grain, and not damage the grain, at a cost of 80 cents per acre.

Prevent blight and rot in the potato crop, and double the yield.

It Will Paint your buildings as fast as 20 men with brushes, at a cost relatively trifling.

Every Day you neglect to use it is a day of lost opportunity. Can you afford many of them? Agents wanted. Catalogue free.

SPRAMOTOR CO., 78 KING STREET, LONDON, CANADA.

Iowa State College of Agriculture and the Mechanic Arts,

AMES, IOWA.

A FACULTY of eighty-eight Professors and instructors; an Engineering Hall that Dr. Thurston pronounced at its dedication "The best of its kind in the United States"; courses in Science and General Domestic Science; for four year courses in Agriculture, viz: in Agronomy, including departments of Soils, Agricultural Engineering and Farm Crops; in Animal Husbandry; in Dairying and in Horticulture; four year course in Veterinary Medicine; four year courses in Civil Engineering, Mechanical Engineering, Electrical Engineering and Mining Engineering. Among the new buildings are a fire-proof Agricultural Engineering Hall, a brick Stock and Grain Judging Pavilion, a new Greenhouse, new Central Hall, costing upwards of $400,000, in course of erection. A large number of graduate students in Agriculture and Animal Husbandry, in Dairying and in the Sciences. For catalogue and information address the President,

ALBERT B. STORMS, Ames, Iowa.

Pneumatic Strawcutters

Three sizes—four, six and ten horse powar.

Our largest size straw cutter handles all the straw you can get to it easily with a ten-horse power engine.

Hand and Power Straw Cutters,

All sizes.

Root Pulpers,

Four and six knife, side wheel, plain and reversible.

PROMPT SHIPMENT

AND ABSOLUTELY THE BEST OF THEIR KIND.

The Wilkinson Plough Co'y.

LIMITED, TORONTO.

G. B. MORRIS,

Hardware

Cutlery and Sporting Goods a Specialty.

JEFFRIES & ROBERTS,

DRY GOODS.

MEN'S FURNISHINGS A SPECIALTY.

The White House, UPP. WYNDHAM ST., GUELPH.

The Electric Boiler Compound Co.

LIMITED.

MANUFACTURERS OF

WALKER'S ELECTRIC BOILER COMPOUND,

And Dealers in all kinds of High-Grade Lubricating Oils and Greases, Belt Lacings, Flue Scrapers, Etc.

PHONE No. 396. BOX 45, GUELPH, ONTARIO

Students' Footwear

AT THE

Leading SHOE STORE

Hockey Boots, Gymnasium Shoes. Evening Shoes, Rubbers and Overshoes.

BEST QUALITY. LOWEST PRICES.

W. McLAREN & CO.

O.A.C. Students!

We want you to take this as a personal invitation to visit Guelph's Leading and Largest store, corner Wyndham and McDonnell Streets, where you will find a full stock of Clothing and Furnishings to select from. Anything you desire, from a collar button to a suit made to your measure, will be found here. If you get the habit of dealing here you'll not want to go anywhere else. Come in and look around. You'll never be urged to buy.

D. E. MACDONALD & BROS.

One Price. We Cheerfully Refund Money.

GUTHRIE & GUTHRIE,

Barristers, Solicitors & Notaries,

DOUGLASS ST., GUELPH.

Donald Guthrie, K. C. Hugh Guthrie, K.C.

Get your hair cut for 15 cts.

R. H. McPHERSON,

Sign Pole 16 feet High.

UPPER WYNDHAM ST., GUELPH.

F. HURNDALL,

Photographer,

95 Upper Wyndham Street.

Thornton & Douglas

LIMITED.

Makers and Importers of

Wearing Apparel for Men and Boys.

DAIRY SUITS A SPECIALTY.

STORES:

STRATFORD, GUELPH, CHATHAM.

EVERYTHING



For Garden, Farm and Greenhouse



THE BEST SEEDS THAT GROW.

CANADA'S GREATEST SEED STORE.

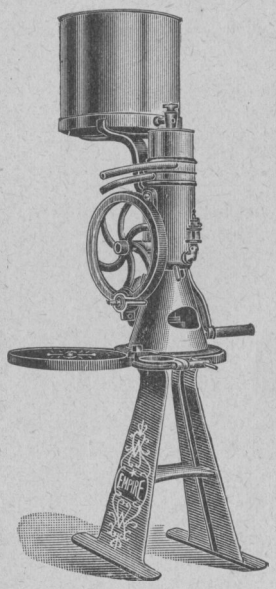
For Size and Quality our Bulbs are unequalled. Our Stock of Roses and Plants is unsurpassed. Clematis Vines, Shrubs, Small Fruits, Etc.

Illustrated Catalogue Free. Send for one now.

The Steel Briggs Co., Limited,

TORONTO, CANADA.

WAKE UP!



MANY of the up-to-date farmers in Canada have waked up, and more are waking up every day, to the fact that it is necessary to have an **Empire,** in preference to any other separator, in order to run their dairies on the most approved plan.

Why ?

Because the

"EMPIRE,"

On account of its ingenious skimming device, skims closer—on account of its smooth cones, is washed easier—on account of its light bowl and few parts, runs easier, and therefore lasts longer, and gives less trouble than any other machine on the market.

Look into these claims and see for yourself. We will be most pleased to demonstrate them to your entire satisfaction.

We have an interesting booklet called "Dairyman's Dollars," giving the story of Peter Sleepy and his awakening. Send for it.

Empire Cream Separator Co.,

28==30 Wellington Street, West,

TORONTO, ONTARIO.

Agricultural College,

GUELPH ONTARIO

A LARGE STAFF and first-class equipment, furnishing the kind of education needed by young men intending to live on the farm or follow any kind of practical or professional pursuit connected with farming.

REGULAR COURSES.

1.—Two Years' Course for Associate Diploma, September 15th.

2.—Four Years' Course for B. S. A. Degree, September 15th.

SPECIAL COURSES.

Intended for those who cannot spend the time or money necessary to take the regular Courses.

3.—Dairy Course, January 4th.

4.—Two Weeks' Course in Judging Live Stock and Seed Grain, January 7th.

5.—Four Weeks' Course in Poultry Raising, January 8th.

6.—Courses in Nature Study, Manual Training and Domestic Science, September 15th.

Send for Circular giving full information as to cost, terms of admission, etc.

G. C. CREELMAN, B.S.A., M.S., President.

Subscribe Now!

TO THE

FARMER'S ADVOCATE

Published Weekly

$1.50 per year.

Oldest, largest, most widely circulated and only national agricultural and home paper in Canada. Agents wanted everywhere; liberal terms given. Sample copy free.

The William Weld Co., Limited.

LONDON, ONT. WINNIPEG, MAN.

If you want Shoes

That fit well, look well, and wear well, go to

Rowen's Shoe Store,

WYNDHAM STREET.

Eastman Kodaks,

DEKKO, VELOX, SOLIO,

Always kept in stock at

Pringle's Jewelery Store.

Eastman's Goods are the best.

CALL AT

The City Shoe Store

For Fine and Heavy Shoes.

W. L. KEIL. *cor. Wyndham Street and Market Sq.*

Central Book Store.

We Sell everything that is to be found in a well kept Book and Stationery Store.

C. ANDERSON & CO.

PHONE 256.

Can you converse

Intelligently regarding any book you may have been reading—as if you had really *sized it up* completely? Well, a novel, a poem, a history, a biography a drama, an oration a sermon, or any other literary production, if read or studied as *our new book* tells one how, becomes a subject which one can discuss or write about in a thoroughly intelligent and comprehensive way.



HOW TO STUDY LITERATURE

Cloth, 75 cents, postpaid

HINDS & NOBLE,

PUBLISHERS

31-33-35 W. 15th St.

New York City

Schoolbooks of all publishers at one store

LIPPINCOTT'S

MONTHLY MAGAZINE

A FAMILY LIBRARY

The Best in Current Literature

12 COMPLETE NOVELS YEARLY

MANY SHORT STORIES AND PAPERS ON TIMELY TOPICS

$2.50 PER YEAR; 25 CTS. A COPY

NO CONTINUED STORIES

EVERY NUMBER COMPLETE IN ITSELF

O. K. *BARBER SHOP,*
Quebec Street,

Opposite Chalmers Church.

CLIFF WALKER, Propr.

DR. COGHLAN,

Dentist

Cor. Cardigan and Woolwich Streets.

TELEPHONE, 223.

Who can Please Us in

Photos ?

Why,

F. O. YOUNG,

On Macdonnell Street.

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

CLOVER SEEDS.	Per bu.
Alsike, 1st grade.	$ 7.50
" 2nd grade	7.00
" 3rd grade	6.50
" with some Timothy in it	5.50
Crimson. 1st grade	4.00
Lucerne, 1st grade	9.50
" 2nd grade	9.25
Red, 1st grade	7.25
" 2nd grade	7.00
Mammoth, 1st grade	7.50
White, 1st grade	15.00
" 2nd grade	13.50
Yellow, 1st grade	6.50

GRASS SEEDS.	Per 14 lbs.
Blue Grass, Canadian Fancy	$1.10
" Kentucky Fancy	2.00
Bromus Inermis, Fancy	2.00
Meadow Fescue, Fancy	2.00
Orchard Grass; Fancy	2.25
Red Top, Fancy	1.75
" Common	1.25
Lawn Grass, Bruce's	2.80
Hungarian; per bu	1.00
Millet, German, per bu	1.25
" Common, per bu	1,00
Timothy, 1st grade, per bu	2.25
" 2nd grade, per bu	2.00

2 Bushel Cotton Bags, 20 cents each.

Our beautifully Illustrated Catalogue of seeds—88 pages—mailed free to all applicants.

JOHN A. BRUCE & CO., Hamilton, Canada.

Seed Merchants. **Established Over Half a Century.**

8,000 Canadian Agriculturists Co-operatively United.

GRAND SUCCESS FROM START TO FINISH.

Farmers' Binder Twine Co.
LIMITED
Brantford.

Opposition of every character helplessly helpless against such an aggregation.

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.

LEARN ABOUT
OUR NEW
TORONTO
COMBINATION
SEPARATOR.
A WINNER.

The

WE ARE SOLE
MANUFACT'RS
IN CANADA
OF THE
PARSON'S
SELF FEEDER.

"Cock o' the North"

LINE OF

THRESHING MACHINERY

...and...

SAW MILL MACHINERY

Leads the Way.

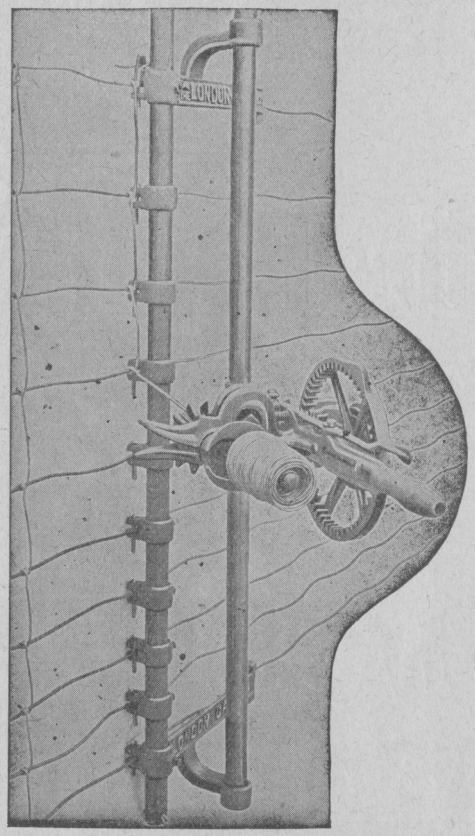
AMERICAN-ABELL ENGINE AND THRESHER CO. LIMITED.,

MANUFACTURERS OF THE GREAT

"Cock o' the North" Line,

TORONTO, ONTARIO.

A Challenge !

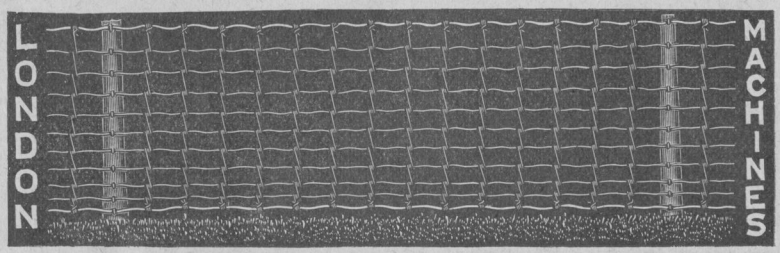


WE Challenge any one to produce for the same cost 75 per cent. as much strength, efficiency or durability, by any other style of fence or way of building it, as it is done by building it on the ground with London Machines. Nearly 3,000 London Fence Machines are in use by Ontario farmers, among them the best and most progressive, also used extensively by the Government Farm, Ont.

Wire for 100 rods 11 bar, coiled steel spring, woven wire fence like the cut, with No. 7 top wires, No. 12 body wires and No. 9 bottom wire, with No. 13 stays 12 inches apart (in small balls ready for weaving) all high grade galvanized steel wire, will be furnished by us or by our agents, or dealers who have our agency, for $30.00 cash. Delivered at any regular station in Old Ontario. Or the 100 rods, as above, and a London Machine complete, London Tackle Block, stretcher with rope and London Perfect Grip complete, a London Reel and pair of Bernard's best 6½ in. nickel-plated Cutting Pliers, delivered as above for $46.00 cash.

ASK OUR AGENTS FOR CATALOGUE OR WRITE US.

Large Catalogue Free.



The London Fence Machine Co.,

LIMITED.

LONDON, ONT. CLEVELAND, OHIO.

Evans' Seeds

PRODUCE GOOD CROPS.

EVANS' IMPROVED SAW-LOG MANGEL

The Largest and Best long red variety grown; has stood the test for years. The Ontario Agricultural College reports it as the largest yielding mangel. In 1lb packages, per lb, 20c.; 4 lbs, 65c. Add 5c. per lb for postage.

Giant Yellow Intermediate Mangel.

A very heavy and splendid keeping variety; a large yielder; per lb 20c, 4 lbs 60c. Add 5c per lb for postage.



EVANS' ONTARIO PURPLE-TOP SWEDE.

Produces large, round, perfectly shaped roots, with small tops. For hardiness, weight and quality it is unequalled. In ½ lb and 1 lb sealed packages; per ½ lb, 15c; 1 lb, 25c; 4 lbs, 85c. Add 5c per lb for postage.

Improved Monarch, or Elephant Purple Top Swede.

Splendid cropper, matures early; very nice flesh; per ½ lb, 15c; 1 lb, 25c; 4 lbs, 80c. Add 5c per lb for postage.

FIELD, ROOT AND VEGETABLE SEEDS.

Flower Seeds, Flowering Bulbs, Clovers, Grasses, Seed Grain and Corn, Cyphers, Incubators and Brooders, Poultry and Bee Keepers' Supplies.

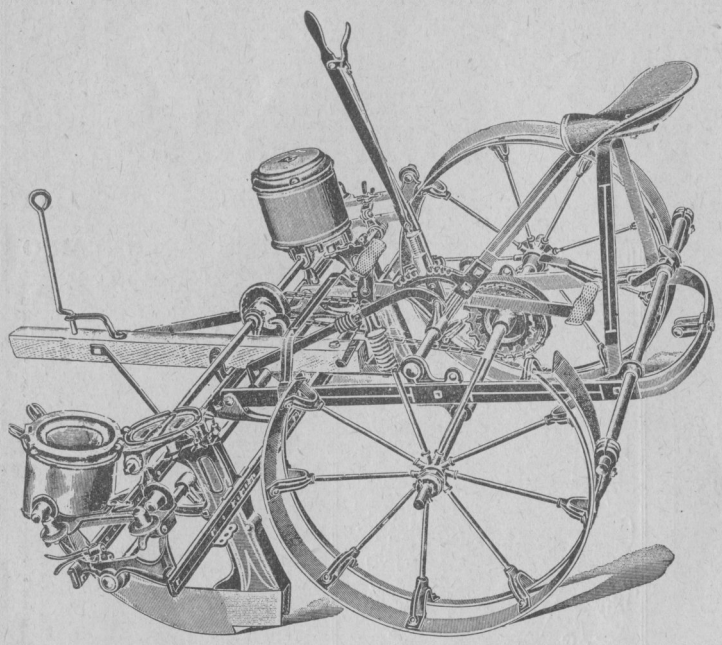
SAMPLES AND PRICES CHEERFULLY SENT ON APPLICATION. CATALOGUE FREE.

Robert Evans Seed Co.,

(LIMITED)

HAMILTON, - - ONTHRIO.

Cockshutt's Corn Planter.



Absolutely the best and most up-to-date planter on the market. It has no equal.

Sows exactly as the operator desires, and can be converted in a few seconds into a drill.

If you want the cheapest and best, buy the Cockshut Planter.

Cockshutt Plow Co.,

BRANTFORD, CANADA.

Anybody Can Make Good Pictures

BY THE **"Kodak System"**

LOADING, UNLOADING, DEVELOPING, PRINTING, ALL BY DAYLIGHT. BETTER RESULTS THAN THE OLD WAY, TOO.

Dark Room Abolished.

CANADIAN KODAK CO., Limited,

TORONTO, CANADA.



THE UNDERWOOD

The Underwood Typewriter

Six years ago when we started selling "UNDERWOODS" we thought we had the right machine; to-day 4,000 Canadian users, as well as ourselves, are CONVINCED. Are you one of them?

UNITED TYPEWRITER CO., Limited,
TORONTO

OUR SHEET STEEL BUILDING MATERIALS

Roofing, Siding, Ceilings,

Are Handsome in Design.

DURABLE AND FIREPROOF. **LOW IN PRICE.**

Equally useful in the construction of a new building or the renovation of an old one. Made in all grades and patterns for all purposes. Kept in stock for prompt shipment.

Send Sizes for Estimates and Free Catalogues.

THE METAL SHINGLE & SIDING CO., Limited,

Largest Makers in Canada

PRESTON, = ONTARIO.

A BOOKCASE
For $15.50.

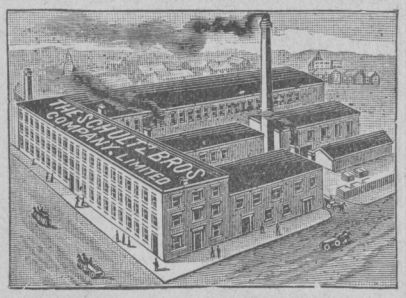


A SHANNON SECTIONAL BOOK-CASE can be easily handled and built up section by section any place in your library. Self-retiring glass doors enable you to keep the books entirely free from dust. All sections are of quarter cut oak, beautifully polished. A bookcase containing one section of each of the three sizes, complete with cornice and base, delivered to you for **$15.50.** Write for Catalogue No. 101.

The OFFICE SPECIALTY MFG CO., Limited,

77 Bay Street, Toronto, Ont.
Factories, Newmarket, Ont.

ESTABLISHED OVER 30 YEARS.



Builders and Contractors.

Manufacturers of Packing Boxes and Novelties.

WE SOLICIT YOUR PATRONAGE.

Contractors of the Massey Hall and Library, Macdonald Institute and Macdonald Residence buildings, all of Guelph.

THE SCHULTZ BROS. CO.,
LIMITED.
BRANTFORD, CANADA.



Send to

HARRY H. LOVE

For Sweaters, Jerseys, Gymnasium Clothing, Footballs, Basketballs
....AND....
All Athletic Supplies.

Discount to Students. Write for Illustrated Catalogue.

HARRY H. LOVE,
190 YONGE STREET, TORONTO.

Ontario Ladies' College



....and...

Ontario Conservatory of Music and Art,

Whitby, Ontario.

The Largest and Best Equipped College for Women in Canada.

Palatial buildings, beautiful grounds, magnificent site, overlooking Lake Ontario, steam heating, electric lighting, modern sanitation, large pipe organ, concert grand pianos—in short, a pleasant

Healthful Home of Christian Culture,

As well as a live, progressive institution, offering highest facilities for study of

Literature, Music, Art, Oratory and Commercial and Domestic Science.

Proximity to Toronto gives city advantages without the distraction incident to city residence. Several special trains from the city during the year.

Write for Calendar or further information to

REV. J. J. HARE. Ph. D., Principal.

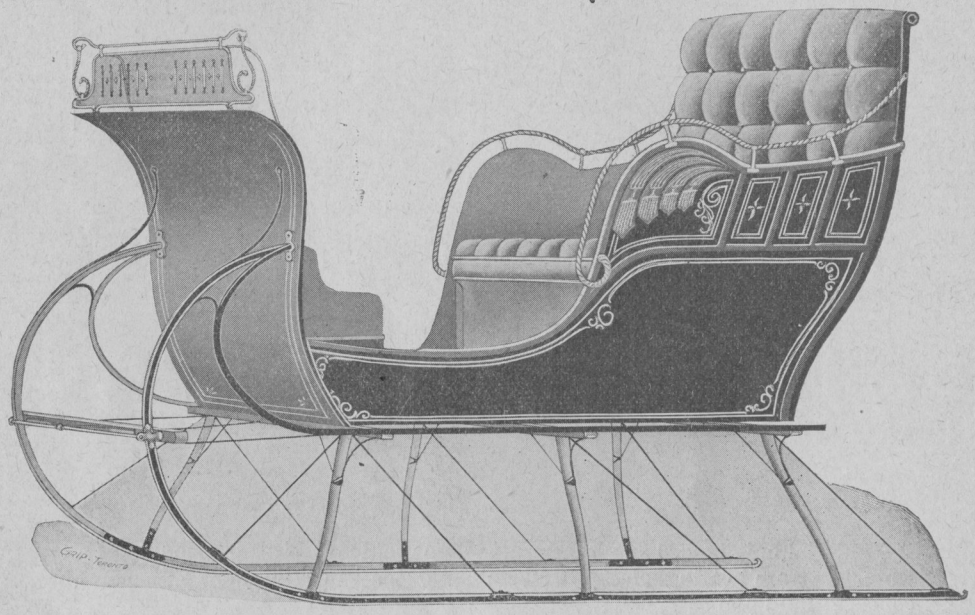
J. B. Armstrong Mfg. Co. Limited,

(THE GUELPH CARRIAGE GOODS CO.)

Guelph, Canada,

MANUFACTURERS OF

Fine Carriages AND Sleighs.



O.A.C. Students and ex-Students when purchasing a Cutter, Buggy, Carriage or Democrat, remember that the home of the college which made you a *good farmer* is the home of the firm making *Armstrong Carriages*, which are good carriages. Sold by live dealers everywhere. Catalogue on application.

COCKSHUTT PLOW CO., Winnipeg,

General Agents for Manitoba and N. W. Territories.

SAM LEE HING,

Chinese Laundry,

ST. GEORGE'S SQUARE, GUELPH.

We guarantee the best work in town, all hand work, which will not crack nor break wing. Shirt collars ironed straight, so as not to hurt the neck. Ties done to look like new. Ladies' shirt waists a specialty. Please call and try us. Parcels called for and delivered to any part of the city. Pure Tea from China.

Wagon calls at noon on

Monday,
Wednesday
and
Friday.

Watch for Sam Lee Hing, and don't give your laundry to any other Chinaman than

Sam Lee Hing,

ST. GEORGE'S SQUARE

Everything in Woodwork

AT LOWEST PRICES.

If you are shingling your house or barns, putting in doors or windows, erecting fences laying floors or repairing your property, go for your materials and secure lowest prices and the advantage of long experience and conscientious work of

ROBERT STEWART

GUELPH.

GUELPH AND ONTARIO INVESTMENT AND SAVINGS SOCIETY.

Savings Bank Dep't.

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

J. E. McELDERRY, Secy.-Treas.

All Coons Look Alike.

All hair cuts don't. If you want a hair-cut that looks right, go to

COON, the barber,

St. George's Square.

The Canadian Bank of Commerce.

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

Capital (Paid Up), - - $8,700,000
Rest, - - - - - - - 3,000,000

GUELPH BRANCH.

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

SAVINGS BANK DEPARTMENT.

Deposits of $1.00 and upwards received and current rates of interest allowed.
Interest added to the principal at the end of May and November in each year.

Special attention given to Collection of Commercial Paper and Farmers' sales notes.

J. M. DUFF, Manager.

J. A. SCOTT,

Maker of Men's Clothes,

The most satisfactory tailoring in the city is done here. Many have proved it and will tell you so. Just ask them. A call so cited.

26 Lower Wyndham St., Guelph, Ont.

Hello, Boys,

When you require any Pant or Coat Hangers, or anything in the wire spring line, call at

Steele's Wire Works,

WOOLWICH ST.,
Opp. Wellington Hotel

R. E. NELSON,

73 Wyndham St., Guelph,

MERCHANT TAILOR and MEN'S FURNISHER

I carry one of the largest and most select stocks of Fine Suitings, Overcoatings and Trouserings in the city. The garments made here are correct in style, fit and workmanship and reasonable in price.

Men's Furnishings.

Hats and Caps, Shirts, Ties, Underwear, Dressing Gowns, Bath Robes, House Coats, and all down to date goods are represented in my stock. All my goods are marked in plain figures, and I have

ONE PRICE TO ALL.

Try a suit of Steinfuld's Unshrinkable

Underwear, for Sale Here,

SPRING BROOK STOCK FARM,

"The Home of the Winners. Here is where you find the highest type of Holsteins, with good form and quality. Breeding unexcelled, Choice young bulls to offer, and an excellent lot of females at all ages, also two Tamworth boars for sale, ready for service, and some young pigs. call or write

A. C. HALLMAN, Breslau, Ont.

9 miles west of Guelph, on the G.T.R.

Dr. E. S. HARDIE,

Dentist.

OFFICE—Brick Block near Post Office,

GUELPH, ONT.

Maple Lodge Stock Farm,

ESTABLISHED 1854.

Shorthorn Cattle and Leicester Sheep. The Best.

A. W. SMITH, Maple Lodge P.O., Ont.

J. DRYDEN & SON,

MAPLE SHADE FARM, BROOLYN, ONT.

Home of the oldest and largest herd of Cruickshank Shorthorns in America. Shropshire flock founded 1871. Stations—C.P.R., Myrtle 3 miles; G.T.R., Brooklyn, 1½ miles.

Guelph Business College,

Masonic Block, Upper Wyndham St.,

GUELPH, ONTARIO.

No young man's education can be considered "finished" that has not included at least one term at a first-class Business College.

Guelph Business College offers the very best in practical up-to-date business education. Special courses of great value in English, French and German.

Call at the College Office or address

M. MacCORMICK, B.A., Principal.

IF YOU WANT

School Apparatus and Supplies

WRITE

The Steinberger Hendry Co.,

37 Richmond St., W., Toronto.

Short-horns for Sale.

RED KING (Imp.) Vol. 20; at head of herd, assisted by Fletcher's Joy of Morning (Imp.) Herd consists of such families as Languish, Myssie, Butterfly, May 3rd, and such popular strains.

HUGH POTTER, Caledon P.O. & Station.



NEILL — The Shoe Man,

SOLE AGENT FOR

The **Slater Shoe**

GUELPH, ONTARIO

Boys, Remember

For Carriages and Sleighs of every description, including large, comfortable Pleasure Vans, go to

E. DEVEREUX.

Livery Stables, Cork Street, Next to Imperial Hotel

TELEPHONE 250.

Snow White Windsor Salt

SNOW WHITE

Windsor Salt is as pure and as white as driven snow. There is no dirt or black specks in it—**it is all salt.** You hear this everywhere, "As pure and white as Windsor salt." Snow White

WINDSOR SALT.

FACILE PRINCEPS

...THE...

"Princess"

CREAM SEPARATOR

Verb. Sap.

Agents, CAMPBELL ARNOTT & CO.,

186-188 King St., East,

TORONTO.

Dairy School

There are five courses during the year.

1 **CREAMERY COURSE**—For Factory Buttermakers only, commences Dec. 1st, and closes Dec 19th, 1903.

2 **FACTORY COURSE**—For both Butter and Cheese making, commences Jan. 4th, and closes March 27th, 1904.

3 **FARM DAIRY COURSE**—For Ladies and Farmers' Sons, commences Jan. 4th, and closes March 27th, 1904.

4 **Course for Dairy Instructors**—April 1st to April 10th, 1904.

5 **Summer Course** for Butter and Cheese Makers, or those who wish to learn, May 1st to Sept. 30th, 1904.

The Farm Dairy Course includes lectures and practical work in the poultry Department and illustrated lectures in Domestic Science.

H. H. DEAN, In charge of Dairy School.

When you want

MATERIAL TO SMOKE OR CHEW CALL AT THE

Senate Cigar Store.

You will find everything you want there.

McHUGH BROS., 26 Lower Wyndham.

THE

Sterling Fountain Pen

EVERY PEN GUARANTEED.

You run no risk in buying one—if not satisfactory will be exchanged.

For one month will sell the $2.50 Pen for $1.50

At DAY'S BOOKSTORE.

DAY SELLS CHEAP.

Fruits and Fancy Groceries.

ROBERT MITCHELL, ..The Grocer..

Chocolates, Cocoas, Etc.

NO. 21 LOWER WYNDHAM STREET.

Have You a Farm of your Own?

Or do you think of buying one ? In the latter case It will pay you to investigate the agricultural possibilities of the land offered by the Crown in some sections of

NEW ONTARIO

For Information write to the Bureau of Colonization, or

HON. E. J. DAVIS,

Commissioner of Crown Lands,

TORONTO.

New Century Ball-Bearing Washing Machine.

Made Right. Built to Last.



Runs Light. Never Surpassed.

Not the cheapest, but decidedly the best Washing Machine made. Five to seven minutes only required for a tubful. The operator need not stand when using it, and there is practically no wear on garments. Full information given on application.

THE DOWSWELL MANUFACTURING CO.,
Hamilton, Ontario. LIMITED.

MINERAL WOOL

For insulation of heat, cold and sound in Private Dwellings, Cold Storage, Etc.

PIPE AND BOILER COVERINGS,

For steam, hot water, hot air and cold water pipes, etc.

Prepared Paroid and NeponsetRed Rope Roofing. INSULATING Papers, ASBESTOS Papers. For use under shingles.

Eureka Mineral Wool and Asbestos Co.

74 YORK STREET, TORONTO.

T. McPHERSON

Is my Barber. Is he yours? Try him.

ON ST. GEORGES'S SQUARE.

A. RUMFORD,

Dealer in Warm Air Furnaces, Stoves, Tinware, House Furnishings, etc. Galvanized Iron, Cornice and General Job Work. Plumbing and Gas Fitting.

COFFEE BLOCK. Up. Wyndham St.

R. B. KENNEDY,

PHOTOGRAPHER,

21 Wyndham Street.

BOYS!

We have a new pin, suitable for O. A. C. Students. Call in and see it.

SAVAGE & CO.

Alexander Engraving Co.

DESIGNERS and ENGRAVERS,

16 Adelaide Street, West, Toronto,

MAKE

Designs and Drawings.
Half tone cuts from photos.
Zinc etchings from drawings.
Wood Cuts.
Electrotypes.
Advertising Cuts.
Reproductions of any Black and White Copy.
Best Work. Prices Right.

SEND FOR SAMPLES.

Carnefac STRAIGHT TALK

The greatest veterinarian authorities in Canada have united in praising Carnefac. They have agreed with Prof. Shaw as to its value for Canada's stock.

PROF. SHAW, formerly of the Ontario Agricultural College, Guelph, Ont., and now Editor of the St. Paul Farmer, says:

ST. PAUL, Minn., Dec. 10, 1902.

This is to certify that the ingredients used by Mr. W. G. Douglas, Winnipeg, Man., in the manufacture of his Carnefac Stock Food has been submitted to me for my opinion regarding their value. I may say with reference to them I am satisfied they are all healthful. If properly blended they should make a splendid tonic for live stock, more especially when the digestion is not in the best working order. They will act as an appetizer and will also tend to stimulate the digestion, so that when fed to animals not in good condition of thrift the result should be to quickly improve their condition. I would suppose that this food would be especially helpful in feeding horses in preparing them for spring work, and in putting in tone the stomach of cattle, sheep and swine that have been pushed too hard in feeding. It should also render good service when fed to calves that are not prospering because of indigestion.

THOS. SHAW.

Carnefac STOCK FOOD POULTRY FOOD WORM POWDER **Made in Canada.**

Carnefac Stock Food Co., 65 FRONT STREET EAST, TORONTO, ONT.



GRAND TRUNK RAILWAY SYSTEM



The Great International Route.

REACHES THROUGH ITS WESTERN CONNECTIONS.
VIA THE FOLLOWING GATEWAYS

Detroit, Port Huron and Chicago.

ALL POINTS IN

Missouri
Kansas
Nebraska
Colorado
Arkansas
Texas
Arizona
California





Tickets, Folders and All Information from Agents of the Grand Trunk Railway System, or

R. E. WAUGH, C. P. & T. A., Guelph.

J. D. McDONALD, District Passenger Agent, Toronto.



The People's College

"The gateway to success open to all."

COURSES OF STUDY.

Academic Department.	American Literature, Beginners' Course, English Special Course, English Word Study, High School Course, Junior Leaving, Senior Leaving, Short Story Writing, Single Subjects—Elementary, Grade A, Grade B; Special Courses, University Matriculation.
Agricultural Department	Cold Storage, Commercial Floriculture, Dairying, Farm Crops, Fodder Crops and Grasses, Fruit Farming, General Agriculture, Market Gardening, Poultry Raising, Small Fruit Growing, Stock Judging, Stock Raising, Veterinary Science, Wheat Growing.
Civil Service.	Preliminary, Qualifying.
Commercial Department	Bookkeeping—Regular Commercial, Short Course; Business Correspondence, Chartered Accountants, Commercial Arithmetic, Commercial French, Commercial Law, Joint Stock Company Law, Opening and Closing Books, Penmanship—Advanced, Business; Regular Commercial Course, Shorthand.
Household Science Dept.	Part 1, Part II, Domestic Hygiene.
Industrial Science Dep't.	Druggists—Special; Industrial Chemistry, Inorganic Chemistry—Special; Practical Electricity, Practical Prospecting.
Insurance Department.	English Institute of Actuaries, Insurance Institute—Fire Branch, Life Branch.

The excellence of the C. C. C. system is recognized and appreciated by the leading college and university authorities, who state that among their best students are found those who have secured their matriculation or first year's standing by correspondence.

Our's is the modern method of education for those who cannot stop their work to go to college, or who cannot afford the cost of a resident-college course.

TORONTO, March 26, 1904.

GENTLEMEN:—Please accept my thanks for your help in my college exams. Two of the questions in my geometry paper were in the text papers, and I answered them correctly. Your teaching is thorough, and I am well pleased. I hope to take full Junior and Senior Matriculation with you. Yours very truly,

(Signed) E. P. PALMER.

Ask for Free Booklet regarding courses and methods of teaching. **Agents wanted.**

CANADIAN CORRESPONDENCE COLLEGE, Limited.

TORONTO, ONTARIO.