

Vol. XVIII.

No. 2.

The
D. N. G.
Review

NOVEMBER,

1905

Cream Separator Facts

THE SKIMMING QUALITIES

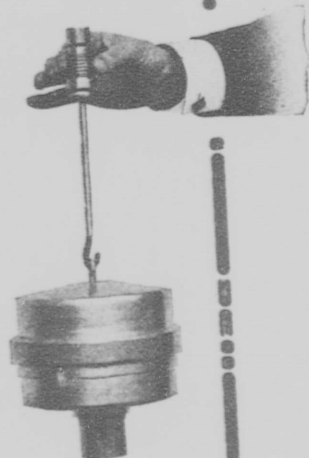


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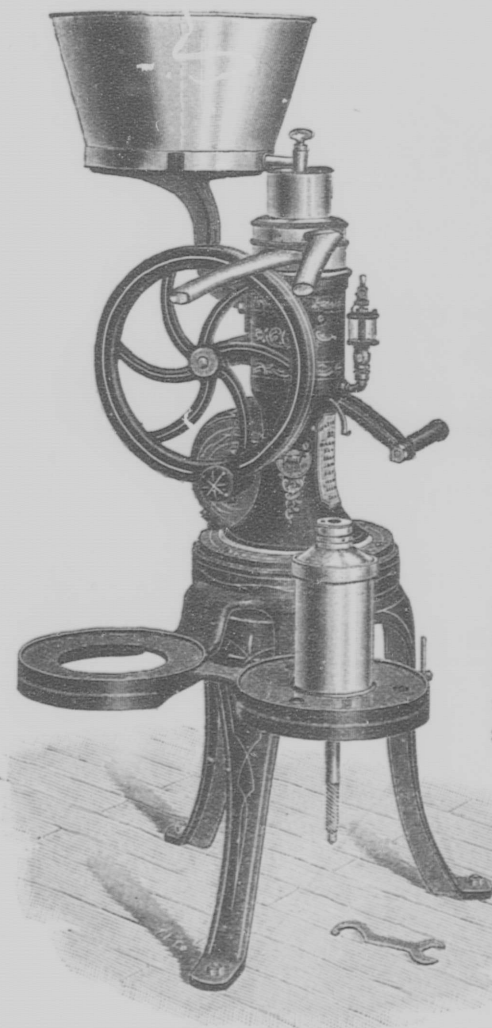


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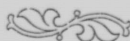
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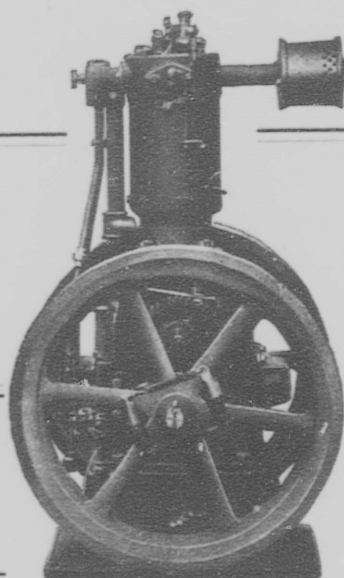
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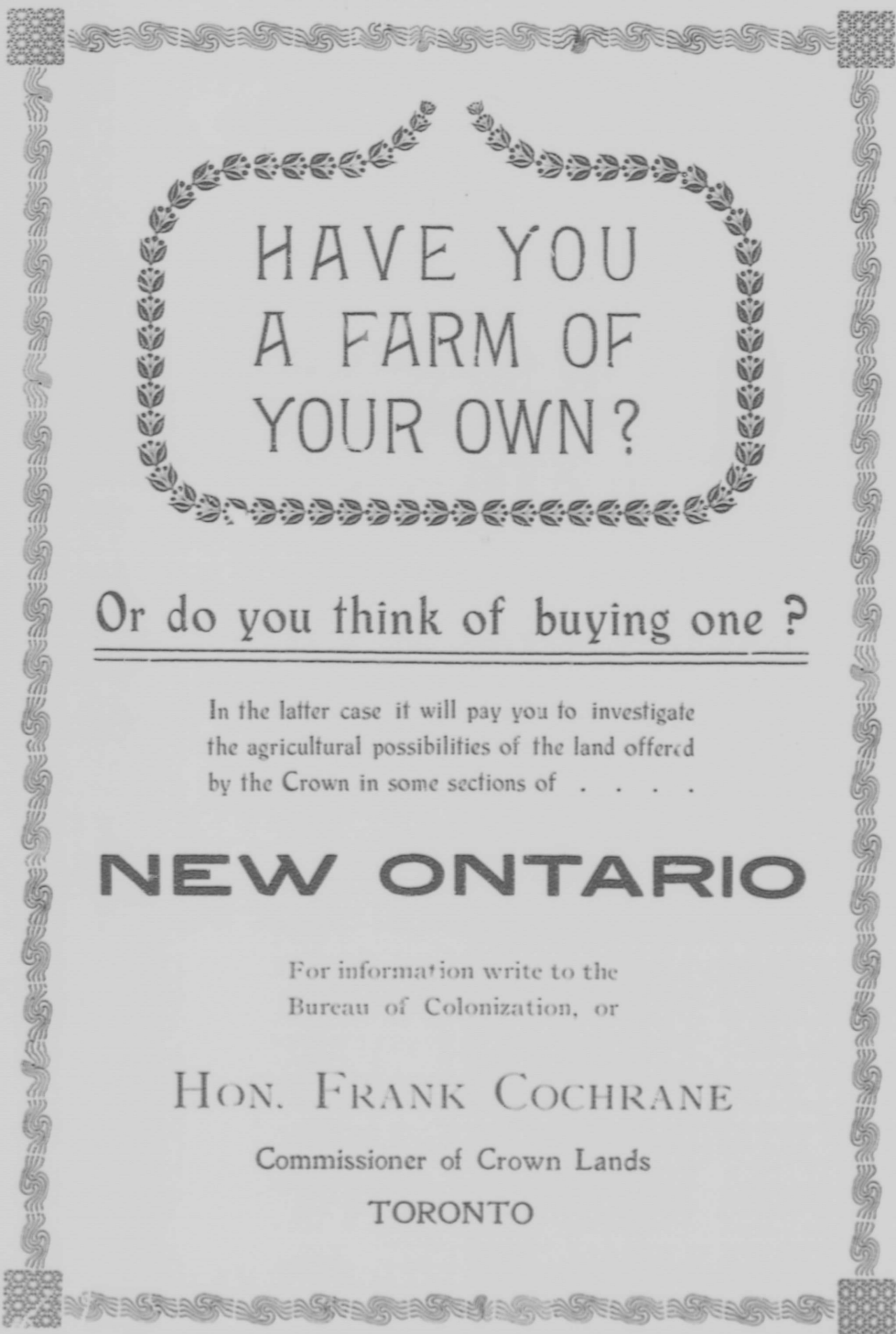
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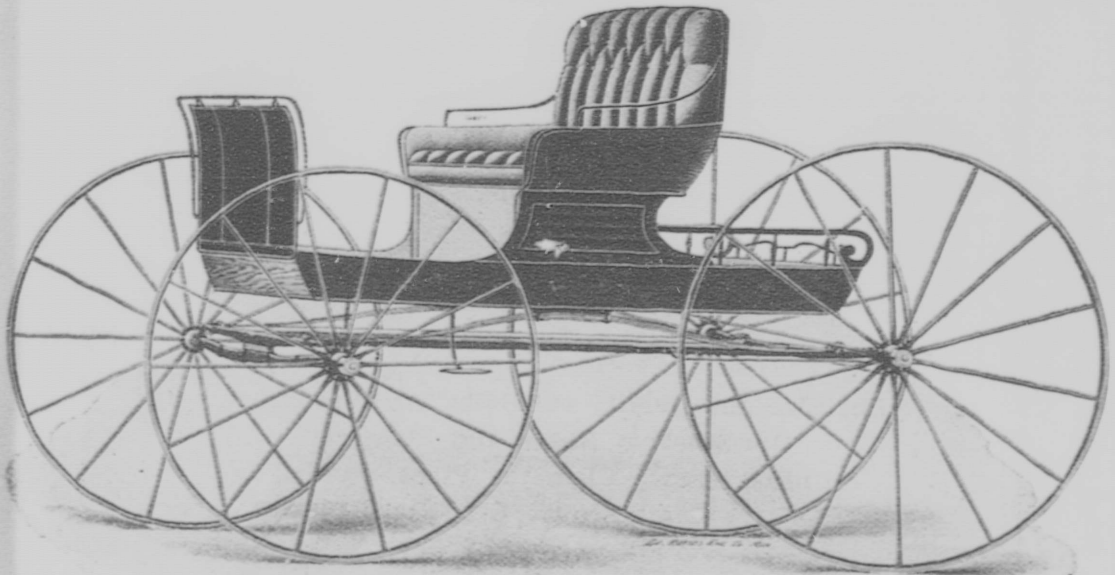
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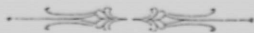
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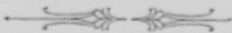
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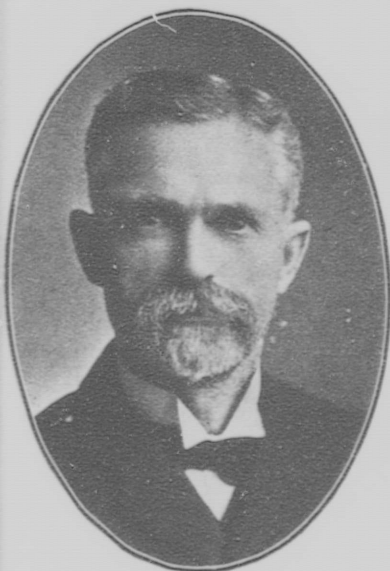
VOL. XVIII.

ONTARIO AGRICULTURAL COLLEGE,
NOVEMBER, 1905.

No. 2

Nature Studies on Weather.

By JOHN DEARNESS, M. A.



JOHN DEARNESS, M.A.

HERE were ninety teachers present when it was agreed that each for the benefit of all, should write an account of a Nature Study lesson that each had sometime taught. When the lessons were reviewed it was noted that not one of them treated of weather. In response to enquiry it was brought out that only one had ever taught a Nature Study lesson on that subject. It was based on a severe hailstorm that the pupils had observed during school hours.

If the experience just reported is not unique, what could be more timely than a talk with teachers about weather as a topic for Nature Study? Most subjects have their appropriate season—some in winter, others in summer, but weather is always with us. Certain topics require material that can be conveniently obtained only in town, many others material that is easily accessible only to country pupils, but we cannot escape weather wherever we are. Some lessons must be taught solely by observation, others largely by experiment; lessons on weather lend themselves to treatment by both methods, and that in a happy proportion. There are nature studies whose selection is justified on account of their disciplinary value, others are mainly utilitarian in the narrow sense; weather study well exercises the observing and reasoning powers, and is of great utility to all classes of people. Who is too young or who too old to take interest in rain and sunshine, in wind and frost, in cloud and rainbow?

The subject is so wide and the avenues of approach so numerous that a volume of lesson plans might be written on it, but this article will be limited to the observational exercise of making a weather record. The record may be the result of

VI. Cloudiness.		VII. Precipitation			VIII.	IX. Sunshine		X
Kind	Amount	Kind	Quantity	Time	Dew, Frost.	Hours Sunrise to Sunset	Insolation	Remarks, Coronas, fogs and other Occasional Phenomena.

HOUR.—Morning, noon, afternoon—say, 9 a.m., 1 or 1.30 p.m., and 4 p.m. are convenient times to make certain observations. The number of times per day when observations are made will depend on equipment and other circumstances.

TEMPERATURE.—For other reasons than use in nature study lessons, every schoolroom should have a thermometer, and an additional one whose bulb can be wrapped with wet cotton batting—a maximum and a minimum thermometer. For the second I have used a dairy thermometer, which may be either swung around with the wet batting attached to its bulb, or left standing in the moistened batting, whose other end is lying in a saucer containing water. The difference between the readings on the dry thermometer and the wet bulb one gives a datum from which the humidity of the air can be obtained. It should be remembered that a difference of, say, 5° at 32° F. indicates the same relative humidity as a difference of 15° would at a temperature of 100° F. The atmosphere of a schoolroom at 70° F. is neither too moist nor too dry when the wet bulb thermometer shows 60° F. A table of multipliers for each difference in order to find the degree of saturation or relative humidity is given in all textbooks on meteorology, and in some on sanitary science.

A maximum thermometer has a short,

downward dip in the tract of the fluid, just above the bulb. The column of mercury ascends with expansion by heat but owing to the dip cannot return into the bulb; hence it marks the highest point reached from one "setting" to the next. The minimum thermometer contains a minute dumb-bell which is drawn down by the descending liquid and remains until set again at the lowest point reached. These two instruments mounted together cost from \$6 to \$10.

PRESSURE.—Barometers vary in price from \$6 to \$30. One may be improvised with about a dollar's worth of mercury, a tube 32 or 33 inches long and about a quarter inch in diameter, and a bowl. The tube, when filled with mercury and inverted in the bowl, may be supported against a board to which a graduated ruler is attached, and the increase and decrease of atmospheric pressure roughly approximated. Such observations should be made in connection with those upon the ascent of smoke, flight of birds and insects, reported feelings of rheumatic people, etc.

WIND.—The direction of wind is easily inferred from its effects upon clouds, smoke, dust, trees, etc. It is not much trouble to make a wind vane, often less than to set it in a suitable position. A good form is made of two thin boards, attached at an angle of about 22° .

An anemometer is a windmill or set of revolving cups which imparts its motion to a cyclometer, and registers the velocity of the wind. But velocity may very well be expressed in adjectives, those commonly used being:

Calm—No wind.

Light—Moving leaves of trees, 1 to 5 miles an hour.

Moderate—Moving slender branches of trees—6 to 10 miles an hour.

Brisk—Moving large branches, raising dust on roads—12 to 18 miles an hour.

High—Swaying trees, raising loose objects, as twigs, off the ground—20 to 30 miles an hour.

Gale—Breaking off branches, loosening fence boards, difficult to walk against—45 to 60 miles an hour.

Hurricane or tornado — Sweeping everything before it—80 to 200 miles per hour.

CLOUDINESS.—“A great pleasure came into my life when I learned to observe and enjoy the constantly varying cloud adornment of the sky.” It takes time to learn the name and nature of the different kinds of clouds. The four simple forms are: (1) *Cirrus*, high, thin, feathery, striate, flaky or veil-like clouds, becoming in the last named forms. (2) *Stratus*. These are, as the name suggests, disposed in strata or layers, or even banks, with horizontal edges on the lower sides. *Stratus* cloud at the ground is called *fog*. Great mounds or fleeces of cloud, with flat bases, are called (3) *Cumulus* clouds. (4) *Nimbus* clouds are those of continual rain or snow.

These terms are combined for transitional forms. Each kind of cloud has its own significance, which is not always the same in all parts of the country.

The amount of cloudiness is usually approximated in tenths; for example, (5) means that the sky is half covered with cloud.

PRECIPITATION.—With a large funnel 9 inches in diameter at the top, and a “candy” bottle, 4½ inches in diameter and 11 inches deep, made horizontal in the bottom with a few spoonfuls of mixed sand and building cement, I improvised a very good rain-gauge. If rain fell during any period, one quarter of the depth in the bottle gave the rainfall; for example, seven-sixteenths of an inch of

water in the bottle meant a rainfall of about one-ninth of an inch in the field. Snow may be caught in an oblong box and measured. Usually it is melted and the quantity of water it produces measured and compared with the catching surface-

Sunshine.—Insolation, as distribution of the rays of the sun on the earth's surface, may be stated in terms of the ratio of the area of a brick tile or square box to the area of the beam of light passing through it, measured upon a horizontal surface upon which such tile or box is poised, parallel to the sun's rays. This ratio will vary hourly from sunrise to sunset, and daily at the same hour, throughout the year. The lower the sun is at noon the greater the area over which its rays scatter. The area of the cross-section of the box, say, 16 square inches, might be entered at the head of the column, and the lighted horizontal areas taken at noon, say once a week, entered opposite the respective dates. The areas would show a gradual increase from June to New Year's, and decrease in the other half year.

If making the observations and keeping the record might be compared in value to new milk, then the reasonings and inferences logically based upon their comparison might be compared to cream. Even quite young children can learn that certain combinations of direction of wind and kind of cloud frequently occur with rain, that certain combinations are succeeded by heavy dew, or no dew, or frost, that other conditions precede thunderstorms, and so on.

Limitations of space prevent taking up the experimental accompaniments. Book assistance, if needed in the demonstration of evaporation, condensation, air currents, etc., will be found in any good text-book on physiography. For this phase of the subject, Cowham's *Graphic Lessons in Physical Geography*, 4s. 6d., will be found particularly helpful.

Life on a Field Party.



It is a boast of the Canadian public and press that we hold the timber wealth of the world. Yet how very little is actually known of this same national asset? No one but the lumberman has ever felt an active interest in ascertaining the true characteristics of our timber lands, nor has he done more than to make rude estimates founded on the experience of

a "cruiser" sent through the woods for that purpose.

It is also known to many people that we possess timber reserves. Indeed, the common conception is that there are more timber reserves than actually exist. These reserves are areas generally pronounced unfit for agriculture, but capable of producing timber, where the land has never been thrown open for settlement but preserved in the name of the Crown for the purpose of supplying timber, either to produce lumber or, as in some instances in the west, to provide fuel for the prairie settler.



A SUNDAY AFTERNOON.

Those were rare opportunities when we were permitted to entertain such visitors.

provide fuel for the prairie settler.

Although held by the Crown for many years as public timber reserves, no definite steps have ever been taken to explore or investigate them, nor in fact has any definite official action been taken in connection with them, except fire guarding. Of course in the past, in Canada particularly, the timber in the country has always been an obstruction, and never has a feeling of preservation been associated with it, but in late years public attention has been drawn to the growing value and waning supply of our forest resources, and with the development of forest policies in other countries, the knowledge of the necessity of such a scheme has become evident at home.

This feeling culminated in the establishment of a forestry division at Ottawa, upon which devolves the responsibility of providing and enforcing a system of management for the forest reserves. The first step in establishing such a policy was to adopt measures to secure data bearing on these reserves, showing their topographical features, distribution, quality and quantity of timber, and all other information dealing with any phase of the question, which might in any way be proven useful. The only satisfactory way to accomplish this was to send a party



A LITTLE SOCIAL CHAT.
The one "At Home" of the Season.

ceedingly crooked and almost interminable, or there were genuine western sloughs of the most virulent type. Now, a slough is a body of water which has been a long time dead; it may be deep, or it may be only a few inches of water on a lot of mud, or it may grow up with grasses and bulrushes, but the most dangerous variety is that which has collected on impervious soil behind some ancient beaver dam, where there is absolutely no drainage and where a dense covering of sphagnum moss has grown over, reaching from side to side. On these you may walk sometimes sinking to the knees, and when the centre is reached the whole mat may be shaken like a mass of jelly. These sloughs are usually in the line when you are chaining and are never quite too deep to walk through, or rather not deep enough to make it worth while going around. Between these sloughs were long undulating stretches of hills covered with a dense growth of young aspen which shut off the view in every direction. It was in this country we went to look for timber. There were large areas of brule, where fire had preceded us by three years, leaving all the timber on the ground, forming an insur-

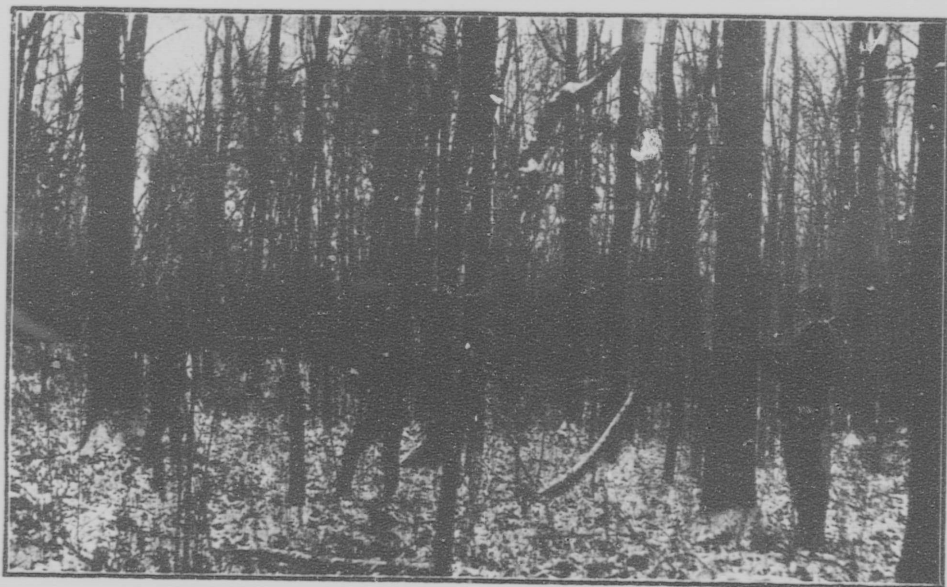
out known to the profession as a "field party," and it is with life in this party that this article deals.

The party must be supplied with the equipment necessary for spending a season in the woods, consequently a full outfit was essential, yet one which could be easily transported over the rough trails existing in such a country. First and foremost was the cook on whose ability depended our peace and happiness, and with him we took a complete set of utensils, two tents, and enough provisions to complete an exact wagon load of outfit. This wagon, with its party of four, was our family for the summer.

The country in which this particular party worked, Turtle and Moose Mountains, was very wet. Fully one-third of the land was covered with water in one form or another. Either there were chains of lakes, aggravatingly narrow, ex-



THE SIMPLE LIFE.



THE FIRST CALIPERING PARTY IN CANADA AT WORK IN RONDEAU PARK, 1904.

mountable *chevaux-de-frise* in every direction. There were huge gardens of thousands of acres of dense pea-vine eight and ten feet long, growing in mixture with hops and bindweed up through brush and debris which rendered walking more a process of climbing than of locomotion; there were storms which caught us eight or ten miles from home, obliterating both sense of direction and all landmarks, sending us soaked to camp. Nevertheless we were happy.

There was freedom and variety in the work. During the whole summer both day and night were spent outside. From morning until night the work kept us out in the open; dinner at night we ate in the shade of trees, and the evenings were spent reading, writing and mending clothes around the camp fire. When we wished to retire, we rolled in our sleeping bags, not even in a tent, and slept the sleep of the just until morning.

As for the work itself, though demanding care, attention, and a great deal of endurance, it was not exacting to any degree, and no one could claim that it was monotonous. Always the scenes shifted, never was the same ground covered twice, and the certainty of new obstacles continually arising prevented any waning of interest. One day would be spent in "calipering" to ascertain the density of a stand of timber; the next would find us all up in the hills, fanned by the breezes from the prairie, taking reproduction surveys, while probably another would be devoted to traverse work, chairing across country to obtain data for maps, or possibly there would be a few days of "stem analysis," or dissection of trees (as it might be written) to find their rate of growth. Again we would be out taking height measurements, laying out trails and moving.

Moving furnished the same excitement for us as is supplied to the civilized house-

hold by house-cleaning. Everything must be packed snugly for passage over a rough trail; then this trail must be provided. Sometimes we found it necessary to make our own trails, following old winter roads, cutting trails around sloughs, up steep hills, building bridges across streams, persuading teamsters they were safe and generally disturbing nature's balance in this hitherto unmolested country. Occasionally the wagon would sink in a deep, soft spot and worry the teamsters so that some person must reason with him before he would feel at ease again. Just here it is likely to start to rain or get dark, necessitating a stay for the night, which is easily accomplished by rolling up and sleeping under the wagon. This brings to the careful Easterner visions of bronchitis and pneumonia in the morning, but though every person in the party had wet feet, no amount of cold water administered in any form seemed sufficient to induce a cold.

The most interesting type of life in that country is the "squatter." This is usually some person who has migrated to the prairie, from a back woods settlement in the East, has found life too fast and strenuous on the plains and retired to the



ENJOYING THE LAKES.

Occasionally we were favored with a visit from the Forest Ranger's family.

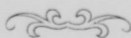


A SQUATTER'S OUTFIT ON THE TRAIL.

foothills for solitude. He usually has a tumble-down shack, a large family, a small irregular farm, not half so well broken as the owner, and is always "agin the government." He does not own his land but squats on government land; he is very wrathful at any infringements of his rights as a property holder. But all our associates weren't squatters. Two weeks we had the pleasure of camping across the lake from a summer resort, and here we mingled freely with society. The campers were very cordial, entertained us freely, and with one continued round of boating, pedro parties, camp fires, and like amusements, we spent a novel series of evenings for a party in the wilds.

For more strenuous amusement we had the game of the region. Many of the lakes contained myriads of voracious fish, and during the month of open season we were in a country almost feathered with ducks, prairie chickens and partridge. Needless to say, often the cold chill of grey dawn would find us wishing we hadn't told the cook to wake us at 4.30, but always he was inexorable, and soon would be heard the report that usually meant game for dinner. Also there was horseback riding, which gave to camp life a pleasant spice, or if studiously inclined there was always Gray's Manual and acres of compositae, or Comstock with an unlimited supply of insects, conspicuous among which were mosquitoes, black flies and deer flies. Viewed from every standpoint, this life for the summer is a perfect mixture, mentally and physically, consisting as it does of responsibility, originality, exercise and nourishment, seasoned with unforeseen circumstances.

MACMILLAN, '06.



A Song of the West.

Oh! wind that comes out of the West,
The land of the sunset skies,
Where far o'er yon mountain's crest
Those glorious colors rise.

You bring me the fragrance of pine,
The coolness of mountain snow,
The music of falling streams,
By the hill where the lilies grow.

Glow skies, with your golden light;
Blow softly, dear wind from the hill;
For my heart has a longing to-night
That only the West can fill.

—Marion E. Moodie.

To the Freshmen at O. A. C.

By JOSEPH E. WING, of Woodland Farm.



WE all have to be Freshmen once. When I was a lad, indeed, I never advanced beyond the freshman stage in the little academy that I attended. How well I remember it all, the tremors with which I wended my way for the first time across the campus, the meeting for the first time my Professors and my fellows in the Freshmen class. There was the jolly little Irishman, Johnny Doyle, the big Dutchman, VanAmsterdam, the elegant Cassius Hibbard, the man of the world, Robertson, and all the rest. What a mix-up we were! From the farm, from the factory, from the streets, one, at least, from the slums, and one of the brightest of them all, from the elegant mansion. But how soon, after we grow to know each other, the artificial advantages of fortune were sloughed off and the strong ones came to the front.

There were the other class men—how old they seemed to us, how superior. It did not seem possible that we could ever attain to their wisdom, to their easy, careless grace of manner and carriage. Their feats in the gymnasium seemed to us superhuman. Oh, worshipping Freshmen! Good it is for you to choose from those above you ideals and to strive mightily to emulate their deeds, so they are good deeds.

How well do I remember the first time that it occurred to me that my humble self might have in me some merit, some power the match for the powers of the

mighty Juniors and Seniors. It was when we were taking a very long October stroll up a wooded mountain road. There were one or two of each class along, save that I was the only Freshman permitted. The older boys were kind, give them credit for that, but they were lofty and condescending, as befitted them. It happened that they were all of them town-born and bred, while I was from stumbling along after the plow tail. My legs were not especially nimble, but oh so tough were their long, lean lengths! We raced, as boys will, spurling with much foolish boast, and at this the townsmen distanced me, so that my heart became heavy, and shame sat upon me. But as the way grew steeper my fellows lagged, and soon I took the lead, yes, and held it easily, too, and wondered at them complaining, rods behind me. Never again did any of that crowd heap reproaches upon me for my slowness afoot, especially when we had walked so far that they begged to be allowed to go home by train, while I was as fresh as when beginning, and wished to go home again on my own tough legs, triumphant, but was bribed to come with the others in the train.

Oh, goodly group of Freshmen, where are you all now? Johnny Doyle, who aided and abetted me in getting together some column of stuff for a local daily paper (that was in 1880), Johnny Doyle is a special correspondent of a great New York paper. One of my comrades is a great attorney. Another successful in

business. So the story runs, all, so far as I know, have come to some good, saving the writer, who has beat a retreat to the country, who sits to write this on the home farm that his father owned, who plants things and watches them grow, and loves them; who plants seeds of thought sometimes, he hopes, in young men's minds, loves them and knows that they will grow, too.

Well, there were girls in that old academy, fair girls and dark, serious girls and girls brimming with mischief. The writer knew them all by sight, and some of them by name, but with not one of them could he boast an acquaintance. And yet there was one roguish little beauty whose mouth turned up at the corners into the loveliest cupid's bow, whose hair had in it the glint of October, she sat opposite him and he spent hours gazing at her and wondering about her, and marvelling that God could have made such a being and put her among other mortals of common clay upon the earth. He loved her sincerely, I have no doubt, and wonders now if ever she stole sly glances across his way, and wondered at the big, awkward, shy lad? He never spoke to her, and has forgotten her name long since, but yet the memory of her has made him a better man.

The boy, the young man, just away from home, and entering the great and fascinating and terrifying world. How my heart goes out to him! It is such a good world, and such a bad world, and such a safe, kind, helpful world, and such a deceitful, treacherous, poisonous world. It is as you take it; there are all sorts and conditions of men in it. Let me earnestly entreat the young man to choose the best men for his friends. Did you know that it is easier to gain the acquaintance and friendship of a

truly great man than of a third-rater? It is. Make your friends of the best, then. Cut out the low, the depraved, the "smart" set.

Then there is the feeling that comes to the young man just away from home that the world is such a busy place, such a full place, that there is no need of him, no room in it for him. What a blunder that thought is! It is a busy world, and a full world, but some one is getting off at every corner, and there is a job waiting for every man who will work and who knows how to work. And are the Trusts standing in the way? No fear. There is the little bit of world that you can call your own, where you may dig and delve and plant and reap, and sit beneath your own vine and box elder tree. And if you must work for another man, know this, that loyal service never yet failed of recognition sooner or later; that young men who know how and will do right are scarcer than hens' teeth, and that employers long to see them arrive.

What, after all is this new life that we are just entering? There are three elements of it, if we make of it a success. Love, Labor, and Living! Love it is, you know, that makes things be. It is love that makes the world hold together, that draws the apple to the ground, that makes the crystal of quartz, the wonder of the snowflake, the beauty of the diamond. Love it is that makes the birds mate and nest: love that makes the father bird search for food for his fledgeling. Love, too, brings one man to one woman and causes his eyes to be opened so that he may see in her the very great beauty of soul and character that God has given to her. Love that makes him dig and strive to build a nest for her, and to clothe her and nourish her. Love that

causes to spring up around those two the little family, for that is God's way, and love is a re-creative force.

Love it is, too, that makes work easy and toil sweet. Love, when it has gone into the brain of a man, and into the muscle of a man, takes him out of the ranks of toilers and sets him alongside of artists. Love, when it inspires the thought and directs the muscle, enables a man to carve from a dull block of stone such a figure that all men's hearts will be lifted up at sight of it. Love guiding the hand of the painter shall paint for us new conceptions, give us new uplifts toward the great heart of things. Love ennobles labor. Loving labor transforms the drudge into the genius, the artist, the poet. Don't forget that, my boy, and when you are currying that horse put enough love into that act to do it so well, and so quickly, and so thoroughly that it will be a distinct act of worship. When you are hauling those farm manures, let love direct that work, and see if you can't so spread it over the land, with faith and joy in your work, that you can, in anticipation, smell the clover

blooms where others smell only the ammonia.

Loving labor on the farm! How that transforms. How orderly fields, rich in beauty of growth, follow that! How trees spring up where never were trees before! How flowers and shrubs stand and mutely testify to the glory of God! How animal forms stand in right and splendid proportion, and testify to the skill of their master and to the glory of God! Love, Labor, and a Living! That is all there is in life, and the living when it is a living vitalized by love, is a living indeed. The man who performs loving service, labor, has twice the life in him, gets twice the living from the world that the other fellow gets that hates work or is only indifferent.

My dear Freshman, take courage! Stand so erect that you lean just a little backwards! Hold your head up! Smile! Work! Love! Be clean! Have faith in yourself and reliance in the good God. It is, indeed, a goodly world.

November is a trifle dark and gloomy, but Christ was born next month some centuries ago, and a new year follows!



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Corn Breeding in the Corn Belt.

By L. S. KLINCK, Macdonald Agricultural College,
St. Annes, Que.

THE leading corn producing States in the Union are essentially agricultural States. Their wealth lies in their soil. Directly dependent upon their soil is the industry of grain production. In grain production "Corn is King," and in corn production a prime factor is well bred seed.

The importance of good seed is recog-

only must larger returns be secured from an acre but more attention must be given to quality as well as quantity. Methods of cultivation and harvesting have been greatly improved but as yet comparatively little attention has been paid to the selection and breeding of the seed planted.

The tendency in recent years has been in the direction of smaller farms and



A HILL OF INBRED CORN.



A HILL OF CROSS-BRED CORN.

nized to-day as never before. The past decade has witnessed an almost phenomenal increase in the value of farm lands in these states. The appreciation in land values has rendered improved methods in crop production imperative. Methods of ten years ago no longer bring profitable returns for the time and energy expended. The area capable of producing corn in a commercial way cannot be materially increased and the farmer is confronted with the problem of how to produce more bushels to the acre. Not

more intensive cultivation. This is a necessity growing out of the new conditions. With a fertile soil and with every modern facility to lessen the labour incident in corn production, the average yield of corn for the past ten years in the seven leading corn producing States in the Mississippi Valley has been nearly nine bushels to the acre less than the yield obtained on the stony hill sides of the New England States where flint varieties are grown almost exclusively.

This marked difference in yield is due, not to better soil conditions, but to more intensive methods of culture and to stricter attention to the selection and breeding of the seed planted.

The past two years have witnessed a wonderful awakening of interest in these States in the production of more and better corn. Farmers are no longer content simply to grow "corn" without regard to purity, type or quality, but are securing those varieties which combine yield and the highest percentage of constituents most valuable for their particular purposes.

The work of Dr. Hopkins in Illinois in improving the chemical composition of corn and the work of Professor Holden in Iowa in selection has awakened a great interest in this much neglected cereal. The methods for improvement, while scientific, are simple, and the farmers have been brought to see that with very little additional labor, and with practically no expense, they can materially increase their profits by increasing the quantity and improving the quality of their corn crop.

The work in corn improvement as carried on by these men has been productive of wonderful results. No new varieties have been originated as one of the great difficulties now encountered in corn improvement is the lack of fixity of type and a consequent tendency to wide variation. Their object was not to add another variety to the already overburdened list but to improve an established variety already possessing desirable characteristics in a marked degree, and, by breeding, render it still more efficient for specific uses and adapted to special localities.

In Bull. 82 of the Illinois Experimental Station Dr. Hopkins gives the follow-

ing reasons for breeding corn for specific purposes:

"It is a well established fact that there now exist markets and demands for different kinds of corn. The price of corn varies say, from one half cent to one cent per pound."

The cost of protein in the principal stock feeding states varies from three to five cents per pound. In other words the protein is several times more valuable per pound than the corn itself. Consequently, stock breeders want more protein in corn. (Very possibly the feeders in the Southern States want more carbohydrates to supplement their present more abundant supplies of nitrogenous food stuffs.)

The price of corn starch varies from two to three to five or even ten cents per pound, depending upon the wholesale or retail nature of the sale. The manufacturers of starch and of glucose sugar, glucose-syrup, and other products made from starch want more starch in corn.

In its own publication a large commercial concern, which uses enormous quantities of corn, makes the following statements:—"A bushel of ordinary corn weighing fifty-six pounds, contains about four and one-half pounds of germ, thirty-six pounds of dry starch, seven pounds of gluten, and five pounds of bran or hull, the balance in weight being made up of water, soluble matter, etc." The value of the germ lies in the fact that it contains over forty per cent. of corn oil, worth, say, five cents per pound, while the starch is worth one and one-half cents, the gluten one cent, and the hull about one half cent. per pound.

It can readily be seen that a variety of corn containing say one pound more of oil per bushel would be in large demand.

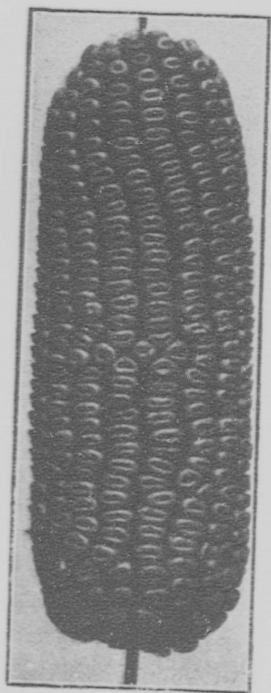
Farmers throughout the country do

well to communicate with their respective agricultural experimental stations and secure their co-operation along these lines.

These are statements and suggestions which should, and do, attract the

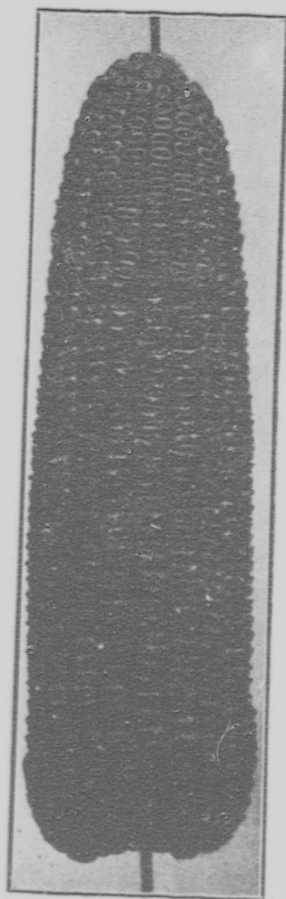
attention of fifty million bushels at five cents per bushel would add \$2,500,000 to the value of the corn purchased by this one company each year. The Glucose factories are now extracting the oil from all the corn they use and are unable to supply the market demand for corn oil. On the other hand, to these manufacturers protein is a cheap by-product and consequently they want less protein in corn.

Corn with a lower oil content is desired as a feed for bacon hogs, especially for our export trade, very extensive and thorough investigations conducted in Germany and Canada having proved conclusively that ordinary corn contains



AN INBRED EAR.

attention of experimental station men. They are made by the Glucose Sugar Refining Company of Chicago, a company which purchases and uses, in its six factories, about fifty million bushels of corn annually. According to these statements, if the oil of corn could be increased one pound per bushel, the actual value of the corn for glucose factories would be increased five cents per bushel; and the President of the Glucose Sugar Refining Company has personally assured the writer that his Company would be glad to pay a higher price for high oil corn whenever it can be furnished in large quantities. The increase



A CROSS-BRED EAR.

too much oil for the hard firm bacon which is demanded in the markets of Great Britain and Continental Europe.

The methods of corn breeding devised by the Illinois Experimental station and now used not only by us, but also by the Illinois Corn Breeders' Association, and, to some extent by other Experiment Stations and other corn breeders, have for their object the improvement of corn in yield and in quality. In the main the methods are now the same as we have employed for the past six years and they have given results which enable us to assert with confidence that by these methods corn can be improved in a very marked degree and for many different purposes. The yield of corn can be increased and the chemical composition of the kernel can be changed as may be desired, either to increase or to decrease the protein, the oil, or the starch.

One of three methods or a combination of two or more of these is generally employed in improving plants. First, selection; second, testing promising individuals for prepotency or reproducing power; third, crossing. Variation through crossing is sometimes induced in order "to break the type" and so obtain a wider field from which to select, but this is not necessary in corn as the tendency to variation is already too great. This is, of course, to be expected, for with any open pollinated plant so extensively grown, crossing whether intentional or accidental is sure to be effected.

If, therefore, an improved strain of corn is desired the breeder will attain his object much more quickly by making his selection from a variety of acknowledged excellence based on long years of rigid systematic selection and adherence to an established type. By pursuing this course the breeder will have the benefit of years of careful breeding behind him,

there will not be the same lack of uniformity of type that there would be if he made a new cross and while he will not have the same diversity of forms from which to select he can rest assured that the type selected as his ideal will be reasonably sure to transmit its characters.

As there are wide differences in the performance records of varieties so there is a great range in the reproductive powers of different individuals in the same variety. Corn plants are infinitely variable. No two are exactly alike. Breeders now recognize the fact that each plant has an individuality and that improvement must come through the individual.

We frequently find a wider difference in the yield of two good ears of corn, which outwardly appear the same, than in two varieties having similar characteristics. This difference is not confined to yield alone but manifests itself in the general characters of growth such as height of stalk, structure of stalk, amount and character of foliage, height at which ears are borne, size and character of shank, number of barren stalks, broken stalks, suckers, and the degree of resistance to attacks of smut. Since these characters are generally transmitted to the progeny, it readily can be seen that this tendency to variation becomes, in effect, the basis for improvement, not only between varieties but within the variety itself.

METHODS OF CORN BREEDING.

Three methods of breeding corn are generally practiced—the farmers' seed block system, the block or mating system, and the row system.

THE FARMERS' BREEDING BLOCK.

For a breeder, situated as is the ordinary farmer, a simple and inexpensive



THE BLOCK SYSTEM.

Two ears plant a block. The even numbered ears plant the even numbered row; the odd numbered plant the odd.

method must be followed. The improvement, of course, will not be marked as in the other methods, but this plan, if persistently followed, will do much to improve the yield and quality of any corn.

From the seed selected for planting pick out twenty or thirty of the choicest ears and plant them in a block by themselves on the south or west side of the field where they will be removed at least one quarter mile from any other variety. These locations are to be preferred as the prevailing winds come from these directions. If corn of another variety is near enough to cause damage the choice ears may be planted in the middle of the regular field. Here they should receive close attention as they are naturally placed at a disadvantage through being surrounded by and more or less crossed

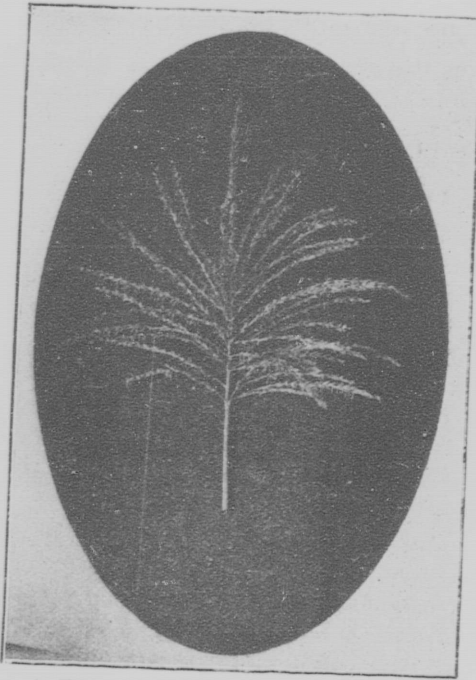
with the ordinary farm stock. If planted on the side of the field it is best to plant in a block as a number of rows on one side are almost sure to receive too little pollen for complete fertilization if planted in a long narrow strip. No special care need be given this plot in the way of manure or extra cultivation, as the conditions should be as nearly as possible those under which the corn is to be grown.

The thirty ears should be shelled together and planted the same as ordinary corn. The amount of seed should be sufficient to plant from two to three acres.

When the corn is tasseling out and before any pollen is shed, detassel all weak stalks, broken stalks and suckers. As all stalks do not tassel at the same time it will be necessary to go through the block two or three times at intervals of two or three days to make sure all undesirable stalks are detasseled so their pollen will not fertilize the silks of good stalks and predispose the kernels on a good ear to barrenness and production of nubbin-bearing stalks.

This method requires but a few hours extra work and the results obtained in practice have more than justified the additional expenditure of time. One of the strongest arguments in favor of this system is that it enables the breeder to make a more intelligent selection of his seed corn in the fall.

Not only is he enabled to make a better selection both from the standpoint of ear and stalk, but it makes conditions more favorable for harvesting and storing his seed corn at the time and in the manner he considers will give best results. Since "Like begets Like" he has reason to believe that his best seed ears will be found in his seed block because his best ears were planted there.



A Tassel at the time Pollen is shed.
50,000,000 pollen grains are produced by
one tassel.

At the proper time for husking he can make a careful selection based, not only on the ear alone but on the nature of the parent stalk as well. Naturally he will choose the largest and best developed mature ears borne at a convenient height on desirable stalks. Not only will this system tend to increase the probability of more careful field selection, but it will do even more towards improving methods of storing.

With a seed block a farmer will make a business of selecting his seed ears at the proper time instead of depending on getting choice ears from his entire field. One thing at a time is all a man is capable of doing well, and in the rush of regular husking, seed ears are usually chosen because of size instead of paying due attention to the stalks bearing them, the character of the ground on which

they were produced, the number of stalks in the hill and other factors equally important which have a very direct bearing on the character of the ear produced.

THE BLOCK SYSTEM.

In the block system an ear possessing outstanding merit in one or more desirable characters is mated with an ear possessing other desirable features but perhaps somewhat deficient in those points in which its mate excels. By mating these two ears the breeder aims at combining the desirable qualities of both parents in the resulting progeny.

In following this system the odd numbered rows are planted with the odd numbered ears. At tasseling time the progeny of an ear is detasseled to prevent inbreeding and the breeding ears for next year's crop are selected from the detasseled rows.

While this system has its commendable features it is open to a number of serious criticisms. The great amount of work entailed in planting by hand and the labour of harvesting and weighing each row by itself makes it almost impracticable for the average breeder, except on a very small scale, for foundation stock.

Another strong objection is the inability of the breeder to estimate correctly the effect of soil conditions on the yield of the different plots, for no matter how uniform the field may be, experiments have proven that the soil has frequently more to do in determining yield than the quality of the seed sown. In the plot system the soil is a more potent factor in determining yield than it is in the row system because it must, of necessity, be small and hence too often less representative of the whole field.

In addition to these disadvantages,



THE INDIVIDUAL ROW SYSTEM, ONE EAR PLANTS A ROW.

the breeder must bear in mind that unless he has each plot completely isolated the progeny of the detasseled rows will not be wholly the result of crossing between the mated parents, but will, to a considerable extent, be the result of crossing from stalks in adjoining blocks.

THE ROW SYSTEM.

When time and means are at the disposal of the breeder best results are secured by adopting the row system. By this method, ears possessing the desired characteristics in the highest degree as determined by their conformity to the points which go to make up perfection in form, and also from the chemical composition as determined by analysis, are planted in rows by themselves. Each ear is shelled separately

and its kernels are used to plant a row. A composite sample is made of the corn remaining from all the ears and this is used to plant several border rows around the block to protect the breeding ears from foreign pollen.

Before any pollen is shed, alternate rows are detasseled to prevent in-breeding. Barren stalks and suckers in all the rows are detasseled or removed to prevent their pollen fertilizing strong, vigorous silks. At harvest time full field notes are taken on all detasseled rows. These rows are then husked and weighed separately and the choicest ears from those rows showing the greatest number of desirable characters are saved for next year's breeding rows.

This system makes it possible to obtain the performance record of each individual

ear, and this record forms the basis for the selection of future mother ears. While this method makes it possible to ascertain the exact reproductive power of each ear it presents the usual possibility for self-pollination, and an unusual possibility for close-pollination.

In an experiment extending over four years at the University of Illinois, where alternate rows were detasseled and the best ears from the highest yielding rows in the tasseled and detasseled rows were planted successively, the average increase in yield for the four years was 10.6 bushels per acre in favor of the detasseled rows. Of course, the detasseled rows were cross-pollinated, while the tasseled rows became more and more inbred. These marked results in favor of cross-pollination led to the planning of an experiment to ensure the greatest amount of cross-breeding. Each row was planted with corn from a separate ear. The even numbered rows were detasseled, and seed for the next year's breeding plot was taken from the six best yielding detasseled rows in each quarter, four ears being taken from each row. Of the four seed ears taken from each selected field row, two were used for sire seed and two for dam seed. A guide system for seven years and a guide system for odd years has been worked out whereby the ears are so planted in the field that practically no in-breeding occurs. As yet no data have been secured on this experiment.

After the four choice ears have been selected from each of the six best rows in each quarter of the breeding block, the remaining good ears are planted in the multiplying plot. Here all weak and barren stalks are detasseled, as the seed for the commercial field is taken from the multiplying plot. All

seed ears are registered, and the number and description of each ear, together with the performance record, is carefully preserved.

Since it has been demonstrated that the breeding of corn for specific purposes is both possible and practicable, a large number of breeders and commercial seed houses have taken up the work with marked success. At Bloomington, Ill., the Funk Brothers have over 8,000 acres in improved strains of corn. They have devoted considerable attention to, and are making specialties of breeding corn high in oil and high in protein for general feeding; high in oil and low in protein for glucose factories; high protein without changing the normal amount of oil to obtain a balanced ration for fancy beef and bacon hogs; high protein with low oil for growing cattle and young stock.

This firm has its own chemist, and a thoroughly equipped chemical laboratory. Any corn breeder in the State of Illinois may have several samples of his corn analyzed by the Station free of charge, providing he carries on the breeding work as directed by the Station.

The real work of breeding corn is, as yet, largely in the experimental stage. A few pioneers have, by their failures and by their successes, pointed out the way, but much yet remains to be done. Much of the so-called breeding of to-day cannot correctly be termed breeding. Much of the so-called pedigreed corn offered to the public is not really pedigreed corn. An absolute pedigree can be established on the dam side, but as near as we can come to the pedigree of the male side is that we are sure it is of good blood, although the exact pedigree cannot be ascertained and recorded.

Horse Interests at the O. A. College.

PROBABLY there was no time when horse interests and the horse industry have been brought more prominently before the Canadian and American public, commercially and educationally, than the present; probably there are few countries that have better natural and racial advantages such as should assure success in the enterprise of breeding and rearing horses than Canada; probably there are few of the leading Agricultural Institutions on the continent that are giving so little practical attention to this phase of the stockman's interests as our own college. The merit and necessity of systematic and intelligent assistance being given by the Government in some way to this work, need hardly be discussed, particularly when we think of the large amount of capital invested in horses throughout the country, and also of the profit that there should be and is in this industry to the individual farmer. Some of our prominent horse owners and breeders have been the first to take steps in an attempt to secure this assistance, and already a deputation representing their interests have waited on the Minister of Agriculture, and have outlined their expectations, and have urged his support. It is the purpose of this brief article to advocate that the first money be spent in an extension of this work at the College.

It would seem that there could be no more opportune time than the present to seek in an educational and experimental way to bring some information prominently before our farmers, particularly along the lines of horse-breeding. The

present active and expected future demand for horses has awakened and stimulated much interest in this enterprise and has caused much more money to be invested in breeding animals than formerly. But we may well question whether this money is really being expended wisely and to best advantage. Further, we may question whether the subject of horse breeding is really given any very serious and systematic consideration by our average farmer. Are the laws of breeding understood? Are the market demands and requirements understood? Any who have been privileged to travel at all in rural districts, and have had the opportunity to observe the lack of information about these subjects and the lack of system in buying, breeding, and rearing horses, will with me answer these questions in the negative. Canadians have but lately been commended by our neighbors in the United States for the success that they have already attained in producing a certain type of horse, but we wonder if there could be a better time to confess that a part of this success has been due in large measure to the enterprise of a few of our leading horse-owners, rather than to any uniform and intelligent effort on the part of all our farmers; and that further, much of this success has been a result of circumstance rather than of purpose, and of necessity rather than of knowledge. If our success, then, has been somewhat indifferent and our system somewhat haphazard, may it not be possible now, taking advantage of the aroused interest, to stimulate and concentrate attention upon this enterprise

and through uniform and intelligent effort on the part of all to produce Canadian horses of certain definite types, such as shall command the admiration of horse breeders everywhere, and such as shall bring a larger measure of profit and pleasure to the individual farmers who produce them.

We think that the college should take the initiative in this work. Equipment has been provided and money has not been spared in order to make possible educational work in connection with the other branches of live stock, and it will be admitted that the college has won its own reputation in its practical relation with the stockmen and farmers of the country, in leading and directing thought, and in bringing them into closer touch with the facts of trade. But no one denies that the horsemen's interests have not been at all adequately represented here, and what is more, by no means sufficient emphasis has been placed upon the subject of horses and horse-breeding in the general instructional work in the country. We have our export steer our bacon hog, our mutton sheep and our dairy cow, but very seldom have we had defined the differences between the various types of light and heavy horses, and in such a way that the ordinary man knows just what is wanted, and just how to produce it. The average farmer needs an object lesson, and naturally he does and should expect to find it at the O. A. C. The reputation of the college demands that we take up this work in a more extended way, both educationally and experimentally, and by so doing we shall find another opportunity of cementing the belief in the place and usefulness of the institution. It would seem that a government institution such as this, should not only be a register of present knowledge, but should also be a recog-

nized leader in agricultural thought, research and practice. Our sister institutions across the border are now giving prominent attention to the science of horse breeding and the State Governments are entrusting to the Animal Husbandry Departments the task of working out the problems of the business. Even our new Canadian College of Agriculture at Truro, N. S. has already gotten together quite a handsome array of horses for this work. We are looking to our own Provincial Government to assist us also in making a beginning.

There are at least three lines of work that merit consideration. It is due our students that a more extended course in horse judging and practical horse management be given them, and we need the material to do it. It is due the stockmen that breeding operations should be conducted here, if only on a limited scale, both for the educational value of the work and for the sake of the object lesson that it would give. By means of illustrated bulletins and in other ways much information could be distributed through the province which should help to promote a more intelligent investment of money in breeding animals, a more careful and uniform system in mating stock and a better-informed and more enthusiastic pursuit of a pleasurable and profitable business. No very elaborate equipment need be provided immediately, if a moderately generous appropriation be given for two or three successive years. A horse barn for the accommodation of breeding stock is, however, practically a necessity, but it could be built in such a way that additions might be made to it as occasion required, without detracting in any measure from the general effect, and appearance of the building. With this provision, breeding stock could be secured gradually at the discretion of the department and as the work progressed. With this equipment within a short time a reputable stable could be established and the attention given to the work that it deserves.

H. S. ARKELL.

A Canadian's Impression of the Argentine Republic.

IT has been said that those who go down to the sea in ships have a better chance to learn as they live, than those who stick close to the dry land and never go to sea. There are persons, of course, who contend that this is not the case; nevertheless, some experiences of the writer during the past year point to the probable truth of the saying. While a sojourn of ten months is probably too short a time in which to form an accurate opinion of a foreign land, yet a briefly told record of some of my impressions of the Argentine Republic may interest the readers of the REVIEW.

Behind the City of Buenos Aires (of which I shall say nothing in this article) lies a vast expanse of country, the pampas,—endless plains, at one time trampled over by herds of wild cattle and horses, but now cut into "estancias" or ranches and farms of all areas and conditions. Travelling by rail over those parts of the republic is most decidedly uninteresting. The scenery is monotonous; for the country through which one passes can be described only in Kipling's words: "Every bloomin' camping-ground exactly like the last." Everywhere there extends the same dull, flat landscape, everywhere there is the same boundless horizon. Everywhere, too, in the good old Canadian winter time, the hot Argentine sun beats down from unclouded skies.

In the rural parts of the Province of Buenos Ayres, the wandering Canadian finds few natural scenes and few customs

similar to those he left behind in the land of the maple. The seasons of the year, the operations of the farm, Nature itself,—everything seems to be topsyturvy. Seeding takes place during the Canadian autumn, wheat is harvested in January, fruit is gathered in February, corn in March and April; the sun is in the north, Christmas comes in the middle of summer, summer comes in winter, and winter does not come at all. No real winter, nothing but a long dreary season of rain.

So far as agriculture is concerned, the Argentine Republic is the most progressive and most wonderful country in the world. That the republic is progressing is borne out by statistics and by the stand she is taking amongst producing nations; in wheat alone, it is safe to predict that in the near future the Argentine will lead the world. She is also a wonderful country—she is marvellous in her progress. Why? Because her soil responds so bountifully to crude methods of tillage and antiquated practises. Perhaps no other country in the world can boast of a broader, more fertile and more level lay of land than is to be found in the Argentine; yet, there are few countries that would care to boast of following the Argentine method of working that land. There are a few well managed ranches and farms there, 'tis true; but generally speaking, agriculture in the Argentine is not founded upon definite principles; there is no system; old time customs and superstitions are holding

the country back. Were she to adopt modern ideas and up-to-date practises in agriculture, her progress would be much more rapid even than it is now.

There are many things that tend to keep Argentine agriculture where it is. Chief among the many is the utter lack of education among the native farmers and peones, nearly all of whom can neither read nor write. The "curse of ignorance" restrains the country, and is at the root of all evils, including revolutions, in the republic.

At this stage in the industrial progress of the republic, some attention also is being given to the fruit industry, but those interested have commenced at the wrong end of the business. Too much attention is being given to marketing and markets, and not enough to orchard management. A few trial shipments of Argentine fruit have brought extraordinary prices in the London market, as, the seasons being reversed, they arrived there in mid-winter. The success of those shipments has marked upon the imaginations of some impulsive persons who know little or nothing about the business of fruit growing, and as a result, great efforts are being made in the

production of it. Of course, there may be exceptions to all rules. I was told that there are some well managed orchards in the republic; but, personally, I failed to see one orchard that is cared for according to modern ideas. But, then, I did not see all the orchards of the republic, nor of the province of Buenos Aires—I looked into Argentine fruit conditions only a few months.

Fruit growing, in that country, is adopted by too many people who do not know how to carry it on. Too many orchards are left to take care of themselves—too much is left to chance. Too many unprofitable varieties are grown just because they are the varieties that grow easiest. Quantity instead of quality seems to be the first consideration. One tendency has been to crowd trees in as thickly as possible—many orchards appear as though planted for firewood. Thinning the fruit, pruning, cultivation, spraying, and all practices that are necessary to the production of high class fruit seem to be entirely neglected. Verily, the Argentine Republic is only in its infancy in fruit matters.

ALDEN BLAIR CUTTING.



The O. A. C. Review

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Editorial.

It might be interesting to consider the present railway situation on the northern half of this continent. A great deal of attention is devoted by the press to the rate wars waging between the different railroad interests, but rarely is any mention made of that silent struggle constantly being pushed relentlessly forward to secure the supremacy of the wheat trade in the West.

Not only has this contest been between railroads, but has, by the opposition of Canadian to American interests, been developed into a rivalry of nations as to who shall have the best equipped railroads, most capacious and convenient elevators, and most efficient boat service.

The result is of vital importance to the companies represented. With the wheat fields unfolding in the west as they are

at present, the mammoth crops which must be moved hundreds of miles, and the location of dependent industries, such as flour mills, along the arteries of traffic, an immense stake is involved and colossal are the efforts being made to master the situation. Moreover, the outcome is of international importance, in that in the event of the happy relations at present existing, the nation not possessing adequate facilities for removing the western crop to the markets would be seriously handicapped. Realizing that the Canadian West is the last West, the best West, and the only West, the far-sighted, heavily-backed American railroads are now engaged in pushing their lines north into the Canadian wheat districts, and at present two of the strongest companies are reported to be engaged in actual construction which

will tap the most prolific grain areas. To further their scheme of capturing the market they have concentrated their rolling stock on their western divisions and are thus carrying more wheat out of the congested regions to different storage points along their lines, at Duluth, Chicago, St. Paul, and other cities, whence they can remove it at their leisure. This plan enables them to remove more grain than their competitors, even though it will be longer before it reaches markets. Nor are the Canadians losing sight of their natural advantages. Several powers have been combined to hustle the product eastward. The Canadian Pacific brings 700 cars daily to the largest elevators in the world, those of Fort William and Port Arthur. On the lakes is a large fleet of vessels engaged in the carrying trade from the opening of harvest to the close of navigation. To facilitate matters for the boats, the Trent Valley canal was constructed from the Severn to the Trent rivers, cutting off 250 miles of a trip, and now this is growing inadequate. Consequently, during the past summer, surveyors have been studying the possibility of connecting French River with the Ottawa, by a canal. This will shorten the trip again by 200 miles, and every mile saved represents so many more thousand bushels of wheat.

Two other railroads, the G. T. P. and Canadian Northern, are soon going to be in a position, with transcontinental lines, to relieve the pressure of autumn work. In order to be of value as soon as possible, the Fort William spur of the G. T. P. is being especially rushed for the grain of '07. The Canadian Northern is gradually accumulating and con-

structing roads across the Dominion, so that soon it will have the country bridged. But this does not represent all that is being done for the western farmer. The question of transportation by Hudson's Bay is being investigated, and during the last summer the geological survey chartered a steamer to enquire into climatic and geographical conditions affecting the proposition. At present the Mounted Police are endeavoring to establish overland communication between Winnipeg and the great inland sea. If this line is constructed, as present circumstances indicate, a fleet will probably be placed in the northern seas, and for some months in the year the wheat may be sent to Europe by a route some eight hundred miles shorter than the Montreal line.

With the perfection of all these plans comes a new scheme for Empire unification which may be worthy of mention. All these Canadian shipments will be made direct to Liverpool, and here a band of capitalists, acting on the supposition that the proportionate yield of the United States is decreasing, while that of Canada is increasing, and that the tariff will prevent shipment into the former country from the latter, have decided to erect the largest flour mills in the world. Here all Canadian wheat will be used, and in the future, when the United States is buying grain or flour, she will be forced to go to Liverpool, and the balance of power in the wheat market will have shifted from Chicago to Liverpool. This idea is one heavily backed by many of the ablest financiers in Britain, and speaks well for the spirit of Imperialism existing between Canada and the Old Land.

Alumni.

THE influence exerted by a College and its staff is shown very largely by the affection in which it is held by its Alumni.

Chas. H. F. Major, '81-'83, writes of the O. A. C. and of some of the staff in the old days, as follows:

"Prof. Panton needs no eulogy, for his splendid example and enthusiasm, his high aims, and high thinking, and

as Bonded Warehouseman in London, living in the residential suburb of Croydon.

D. Buchanan, '91, paid the College a visit recently, and conducted the Sunday afternoon service in Massey Hall, where he gave an enthusiastic and inspiring address.

Buchanan has been laboring as a missionary for some years, and is now about



W. C. MCKILLICAN, '05,
in a Morman Sugar Beet Patch.

his own sterling worth, are living as an inspiration among hundreds of ex-students the world over."

Of Dr. Mills, Major says: "Loyal, hard-working, even to the crime of over-working, he fought the College through the days of its wild studentship and its public unpopularity with a tenacity of purpose that not even the Toronto Authorities know better than some of us ex-students."

Major has long since returned to England, and is now engaged in a large way

to return to his field at Azul, Argentine Republic, after a well-earned furlough. He carries with him the sympathies and best wishes of the student body of the O. A. C.

R. F. Holterman, '78, '79, will be remembered as a former Lecturer in Agriculture at the College. He is now located near Brantford, where he has an apiary of 300 hives. He is also a Farmers' Institute worker, with "Bee-Keeping" as the subject of his lectures.

W. Carpenter, '86, '87, is one of the Directors of the Simcoe Model Fair. He is an extensive breeder of Shropshires, and a successful exhibitor in this class at the large shows.

J. A. Campbell, '75, '76, is living near Simcoe, and is engaged in horticulture. He has become an enthusiast in gladioli culture, and acts as grower for the celebrated specialist, C. H. Groff.

The class of '00, '02, will recall with pleasure the waggish pranks of Ernie Gunn. Ernie is the only man who ever took the Three Year Course in Agriculture. He is, however, making good use of it, and owns a large farm and beautiful house near Beaverton. He does not live a lonely life, having wedded a daughter of ex-Premier Ross, last spring. The news comes late, nevertheless, Mr. and Mrs. Gunn have the congratulations and best wishes of the "Review."

Norman Williams, '89, is cattle buyer for P. Burns, of Calgary.

H. Higinbotham, '85, '86, has deserted agriculture. We hear that he has been made Managing Director, for France, of the Sun Life Assurance Company, with his headquarters at Paris.

T. Gadd, '94, is Vice-President of the National Creamery and Produce Company, of Vancouver. He writes that he has just returned from a missionary tour through the Dairy sections of B. C., his gospel being "Advanced ideas in the Dairy business." We hope he has made many converts.

T. F. Patterson, '94, is interested in the lumber industry, being Manager of the Patterson Lumber Company, of Vancouver, B. C.

J. A. Maclean will be remembered as a popular Resident Master here. He took part of his course in Agriculture

here, but afterwards went to Iowa, from whence he graduated. Recently he has been appointed Professor of Animal Husbandry at the Colorado Agricultural College, under Prof. Carlyle.

L. H. Cass, '95, is one of the many of our ex-students who have been attracted by the prairies of the West, and the attraction seems to have fulfilled its promise. In a recent letter Cass writes that all crops have been good this year, wheat yielding 35 bushels per acre, and oats as high as 112 bushels. No wonder the West has attractions.

J. D. McLaurin, '99, is located at Calgary, and, in renewing his subscription to the "Review," recalls with pleasure the boyish capers of his classmates here.

A. J. MacKay, '03, '05, is another of the men who have benefitted by the instruction given here in Live Stock Judging. We read that "Mac" won the Silver Medal for Stock Judging at the Dominion Fair, at New Westminster.

J. McCallum, '00, '02, is farming near Shakespeare, and is putting into his farming operations much of the energy and enterprise which marked his College career. He has just returned to his home from a judging trip in Muskoka. He is breeding heavy horses and Short-horn cattle, and is one of the promising plant breeders of the Canadian Seed Growers' Association.

"Doc" Roberts, '99, who has recently yielded to the machinations of that meddlesome individual, "Cupid," was last seen on his honeymoon trip. Nothing has been heard of him since, but it is to be hoped that he will survive the event, and will be able to continue his farming operations at his home, at Sparta, Elgin County.

Jos. Laird, '94, is "getting there" in his own quiet way on the farm near Blenheim, just as he was accustomed to when "mouthing around" at the O. A. C. Joe is particularly favored by being situated in the celebrated bean and winter wheat district of East Kent. If a certain event, which may be looked for in the near future, is any criterion of prosperity, then Joe is exceedingly prosperous. He is an enthusiastic corn breeder of the Canadian Seed Growers' Association.

Moose Jaw. Though he has been but a few years in the west, he has thoroughly absorbed the spirit of that country, and says he felt so much hampered while visiting the East that he could not live here again under any circumstances.

T. G. Raynor, '89, is employed by the Dominion Department of Agriculture as Instructor for the Canadian Seed Growers' Association, and also to assist in educational work in connection with the Seed Act, 1905. He, with his family, has recently removed to Ottawa, where he will make his home.

J. W. Robson, '87, came here from Scotland. He is now engaged in farming upon a large scale in Southern Manitoba. While here, he made the reputation of being one of the best men of his year, and since he has left these halls he has shown this reputation to be well based, for he is now one of the members of the Manitoba Legislative Assembly.

Malcolm D. Geddes, '95, was for a time foreman of the College Farm. Since then he has trekked westward, and turned his attention to things journalistic, being now editor of the "Farm and Ranch Review," of Calgary. With him is associated E. L. Richardson, also of the class of '95.

Joe Shields, '98, has at last carried out his long-standing threat, and has "taken her" to himself. Joe thinks he has roamed long enough, and has settled down on his farm, near Smith's Falls.

J. I. Brown, of Beachburg, '99, is farming near that place. To him and his father is due to a large extent the success which has crowned Beachburg



F. M. LOGAN AND LORNE MUIR
On the Fence in Calgary.

F. Silcox, B. S. A., '03, is farming at Iona, and is quite enthusiastic over the impetus received at the O. A. C. In a critical community, he says nothing but "does things," but he will, sooner or later, be heard from as well.

Wm. Ure, '99, of Windsor, who has recently joined the ranks of the Benedicts, is farming on his own farm, with good success.

T. D. Tinney, who was the second Silver Medalist in the class of '89, spent a few days with the President recently. Tinney is ranching in the West, near

Fair, and has made it the Model Fair of Eastern Ontario.

The most valuable and interesting part of the "Review," especially to our many ex-students, is this Alumni section. Through it the widely scattered classmates of various years are brought into touch once more, and the residents of College days are once again recalled to mind. For this reason we ask all the Old Boys to let us know their whereabouts and their doings, for the benefit of the whole Alumni body. Do not fear to crowd us with personals. This column is of the highest importance, and it can be lengthened indefinitely.

EXPERIMENTAL UNION ANNUAL MEETING.

The annual meeting of the Experimental Union will be held at the Agricultural College on December 11th, 12th and 13th, commencing on Monday, the 11th, at 1.30 p.m. The co-operative work of the past year has been somewhat increased, and results will be presented in the departments of agriculture, horticulture, poultry raising, forestry, and agricultural chemistry. There were in all upwards of 4,000 co-operative experimenters during the past year. The good reports of carefully conducted experiments are perhaps more numerous than on any former occasion.

Besides the reports on co-operative experimental work, several very important subjects will be presented and discussed at the meeting, among which might be mentioned the following:—"Improvements of Plants and Animals;" "The Advisability of having a 'Good Farms Competition' in Ontario;" "Some of the Best Methods of Improving the Pasture Lands of the Province;" "The Advisability of enacting a Law to Control the Sale of Feeding Stuffs, etc." As these are all very important questions in connection with Ontario's agriculture, the addresses and discussions will, no doubt, be of great interest and value to those present at the meeting.

The Experimental Union has been exceedingly fortunate this year in arranging with Professor W. M. Hays, Assistant Secretary of Agriculture for the United States, to be present at the Union and to give addresses and assist in the discussions. The Hon. Nelson Monteith, Provincial Minister of Agriculture, expects to be present and take an active part in the meetings. The names of the other speakers can be ascertained from the printed programme.

One of the interesting features of the coming meeting is the special provision made for an old students re-union. There will be no public session of the Union held on Monday evening, December 11th. This will give an opportunity for a social gathering of the ex-students, to be held at President Creelman's house. The ex-students will then be able to meet and talk over old times and compare experiences of recent years.

Professor R. Harcourt and Mr. H. H. LeDrew have been appointed a committee to look after the interests of the ex-students during the time of the Experimental Union meeting. It is the intention to make arrangements with one of the city hotels as the headquarters for the ex-students when here. A representative of each class has been appointed to look after the interests of the ex-students who entered the college at the same time as himself. It is hoped that a large number of the old boys will visit their *Alma Mater* at the time of the Experimental Union this year, and that each one who comes may be able to find a goodly number of those whom he knew so well during his college days.

During the week of the annual meeting of the Experimental Union, the Women's Institutes of Ontario will hold a convention at the Macdonald Institute, and the Government and Live Stock Associations will hold the Provincial Winter Fair in the City of Guelph.

For particulars regarding Experimental Union meeting and the excursion rates on the railroads, apply to the Secretary.

C. A. ZAVITZ,
Secretary.

Agricultural College, Guelph, Ont.

College Life.

THE first monthly meeting of the Union Literary Society was held in Massey Hall, on the evening of October 14th. The program, unlike many of our social functions of last year, consisted entirely of literary talent, and that this was of the highest class was evidenced by the large and appreciative audience which filled the Hall.

The opening number of the program was an instrumental duet by Misses Dowler and Present, followed by a short and appropriate address from Mr. H. A. Craig, the energetic President of the Union Society. The remaining numbers on the program were as follows:

3.—Solo—Miss H. Fuller.

4.—Address—The use of the Library Catalogue—Prof. Harrison.

5.—Solo—Miss Biglow.

6.—Debate—Resolved—“That Trades Unions are detrimental to the welfare of a nation.” Affirmative—Messrs. C. R. Klinck and F. C. Nunick. Negative—Messrs. G. G. White and G. MacKay.

Judge's decision.

Critic's remarks.—Professor Day.

“God Save the King.”

VISITORS TO THE O. A. C.

The North Grey Teachers' Association had a pleasant outing to the Ontario Agricultural College on the occasion of their Annual Convention. Over two hundred and fifty arrived by special on the morning of October 12th. At the College they were officially welcomed by President Creelman, and shown over the various departments.

During their two days' stay here they were favorably impressed with our College equipment. The Macdonald Institute and Hall, and the Macdonald Consolidated School were each also given a pleasant call. On the Thursday evening of their arrival, a largely attended business meeting was held in Massey Hall, at which the officers for the coming year were elected. An impromptu program was also arranged, in which many interesting questions of an educational nature were discussed.

On the Friday morning following, the teachers from South Grey, accompanied by Mr. N. W. Campbell, Public School Inspector for South Grey, came to pay a visit to the College. Their business meeting having been held in Durham on the previous day, their visit here was

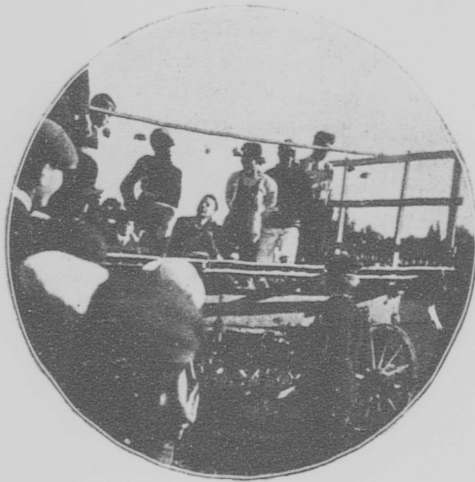


PROFESSOR S. F. EDWARDS.

chiefly of a social character. Teachers' Conventions from both Meaford and London were also visitors on October 19th and 27th respectively.

ENTOMOLOGISTS MEET AT THE O. A. C.

One of the most successful meetings in the history of the Entomological Society of Ontario was that held at the Ontario Agricultural College on October 18th



A Glimpse of Field Day. The Obstacle Race.

and 19th. The illustrated address on "The Extermination of the Mosquito," by Prof. J. B. Smith, on the evening of October 18th, was one of the most interesting features of the two days' proceedings. Prof. Smith displayed a complete acquaintance with his subject, and there was scarcely a phase of mosquito life upon which he failed to touch.

Dr. James Fletcher, C. E. F., Ottawa, the President of the Society, gave a short and interesting address upon "Insects Injurious in 1905." Dr. Fletcher pointed out that many new insects had been reported in various parts of the Province, but fortunately, of these there had been none which had proved specially aggressive in character. He also

drew attention to the cabbage and turnip aphid, which is doing much harm in Canada from year to year. A knowledge of the life history of this insect, he said, showed that much good could be done to prevent its spread over whole fields, as was now too often the case, resulting in the ruination of the crops. It was clearly shown in the addresses and papers given, that the farmers of Ontario, by a little care, and the judicious application of the proper remedies, can easily eradicate the insect pests that ravage their crops, thus incurring serious financial loss.

Amongst the papers read on the last day of the meeting were the following:

"Notes on some Jamaica Insects," by

T. D. Jarvis, O. A. C.

"Injurious Insects of the Flower Garden," by Mr. Arthur Gibson, C. E. F., Ottawa.

"Forest Insects," by Rev. Dr. Fyles, Quebec.

"Some Insects of the Year," by Rev. Dr. Bethune, London.

"Insects as Nature Studies," by S. B. McCready, O. A. C.

"The Advantages and Disadvantages of the Canadian Entomologist," by Rev. Dr. Fyles, and

"Notes on the Season," by Mr. Chas. Stevenson, Montreal.

It was pleasing to the members of the Society to note that the attendance at the various sessions here, especially of students from the Macdonald Institute and the Ontario Agricultural College, has been larger than at any of their previous annual meetings. Such an interest in entomological work should go far in swelling the membership of the local branch of the Entomological Society which has been established.

Before dispersing, the Society were tendered a cordial invitation, by Presi-

dent Creelman and staff, to hold their subsequent annual meetings at the O. A. C.

RECEPTION AT MACDONALD HALL.

A very interesting social function, in the form of an "At Home," under the auspices of the Union Literary Society of the O. A. C. and Macdonald Institute, was held in Macdonald Hall on Friday evening of October 20th. Although the spacious halls required no decorations, yet they were made comfortable and home-like by the judicious arrangement of lounges, couches, and sofas, and a profusion of flowers, palms, and cozy corners.

The program, consisting of promenades and music, was one highly appreciated, Thain's Orchestra, from the city, filling the halls with its voluptuous strains.

The guests were welcomed at the reception rooms by President and Mrs. Creelman and Mrs. Fuller, assisted by an energetic committee. No efforts were spared by the officers in charge of the program to make the evening an enjoyable one for the scores of Freshmen who on this occasion made their debut at Macdonald Hall. The guests quickly became acquainted, and genial smiles and pleasant words soon were the order of the evening.

The dining hall, in which ample refreshments were served during the evening, was profusely decorated with foliage plants and cut flowers. Strange to say, the pleasure and privilege of this phase of the evening's attractions were specially interesting to all of us. To the kindness and generous natures of Mrs. Creelman, Mrs. Fuller, and Misses Hardy and Watson, the patronesses, we must attribute much of the enjoyment of the evening.

To all, the function was one of genuine

pleasure. We trust that on future occasions the efforts of the officers of the Literary Societies may be crowned with such success.

The next monthly meeting of the Union Literary Society will be held in Massey Hall on the evening of Nov. 11. An excellent program is being arranged, so that we may expect a rare treat in things literary.

PHILHARMONIC SOCIETY.

The Philharmonic Society of the Ontario Agricultural College and Macdonald Institute has again reorganized its musical talent for the present season, with the following officers in charge:

Hon. President—Mrs. Harrison.

President—E. G. deCoriolis.

Sec.-Treas.—J. Buchanan.

Program Committee—T. D. Jarvis, R. W. Mills, H. G. Bell, Mrs. Fuller and Miss Springer.

Accompanists—Mrs. Harrison and Mrs. Fuller.

The object of this Society is to cultivate and develop the instrumental and vocal talent of our student body. Until the last few years, an organization of this nature has long been an acknowledged want. We truly welcome its inception into college life.

The semi-weekly practices which have been held during the present term have been well attended, and every indication points to a most successful season. It is proposed to give the first concert in the Opera House in this city early in December.

H. S. Peart, of the Horticultural Department, has just returned from a holiday trip through our western provinces. Mr. Peart has combined both pleasure and profit in the trip, having made a careful study of the fruit market conditions in the west, that our Ontario



GENUINE NATURE STUDY.

fruit shippers may better understand how to cater to the wants of a critical customer. True it is, that in Ontario our fruit is of a higher quality than that grown beyond the Rockies, yet by reason of poor grading, careless packing, and the shipping of much inferior fruit, the market of our prairie provinces has been lost to eastern fruit-growers.

The night of October 31 has always been one of mirth and mischief in the annals of life at the O. A. C. This year Hallowe'en was celebrated with much of the old time fervor, the College Heights presenting a scene of turmoil and gaiety, while the night air resounded with the toot horns and the shout of merry voices. The ringing of the gong at 9.45, (the conclusion of the College study hour) was the signal for rallying of forces and the commencement of the program for the night.

In the meanwhile the students of our sister institution, and their lady friends from the city, were holding a fancy dress ball in the gymnasium of Macdonald Hall. While the amusement was at its height, some one more daring than his fellow students precipitated into their midst a motley host of guinea pigs. In a second all was consternation, and a few found refuge in momentary flight, only to return shortly to a joyful appreciation of the joke. It is now rumored that the informal presentation has been turned to good account, and our lady friends at Macdonald Hall are no longer to be deprived of house pets.

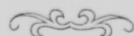
Later in the evening, the majority of the student body from the College, clad in costumes varied and ridiculous, repaired to the front of Macdonald Hall. Here, in the centre of the roadway, a huge bonfire was built, and around this

in dance and song, many a happy minute fled. Ancient Indian warriors, gay cavaliers, and imitations of many other antique characters, were included in the night's proceedings.

As the embers were dying low and the last few sparks flew skyward, some of the boys, who had appropriated the skeleton of a horse used in Dr. Reed's lectures in anatomy, deposited it before the front entrance of the Hall, where it remained till morning, a gloomy spectre, to greet the hazy vision of an early riser. After singing "O, they are jolly good fellows," the students returned to the dormitory, where the remaining hours of the night were spent amid snore and slumber. Needless to say, the bony framework of a once noble animal has since found its way back to the peaceful shelter of the Live Stock class-room.

Professor Lochhead, of the Biological Department, and Mr. P. W. Hodgetts, Secretary of the Ontario Fruit Growers' Association, have recently completed a

three days' inspection of the Scale infected localities of the Niagara District. It is regrettable to note that the San Jose Scale has made considerable progress in regions where it was not even reported last year. This is especially so in the neighborhood of some of the smaller towns, where little or no precautions have been taken to guard against the spread of the disease. In other districts again, and these are comparatively few, where stringent measures have been adopted, and the fruit trees have received thorough applications of the boiled mixture of sulphur and lime from time to time during the fruiting season, the infection has been checked, and in some instances almost completely. The fruit growers of Southern Ontario are only now beginning to grasp the situation, and to feel that unless in the near future the proper remedies for its subjection are applied, the fruit industry of our southern counties must be greatly impaired.



[We desire to call special attention to the Alumni feature of the Experimental Union this year. Every detail which could possibly tend to make the fraternal gathering more interesting and instructive has been carefully considered by the committee in charge.

Every ex-student whose address is now available, and this list comprises by far the larger portion, will be notified three times of the coming mass meeting. One man in each year has been furnished a list of all his classmates, and has accepted the responsibility of looking after their interests. Hotels have been chartered in Guelph, so that classmates and friends may be closer together and more enabled to make the best use of their time.

Believing that all these possibilities might not allow of enough of the social intercourse so dear to the hearts of old college boys, the committee have made it possible, through the kindness of President and Mrs. Creelman, for the whole ex-student body present, to spend one evening in the President's house, the whole time to be devoted to extracting as much fun as possible from mutual college recollections and histories.

This is a prospect which in itself should attract the farthest, the oldest ex-student who imagines himself forgotten. Believe it, none are forgotten, all are welcome, all are expected to make this a record breaking attendance at the old Alma Mater on College Heights.—EDITOR.]

Macdonald.

Domestic Science of the Present Day.

THE name of "Domestic Science," or "Home Economics," in its broader sense, does not explain itself, and is apt to be misleading. It may be better understood, however, as the study of the arts and crafts in the home, and their effect on human life. The economic use of material involved in the right expenditure of time, as well as money, and an appreciation of labor and its dignity.

To people in general, Chemistry, Physics, Physiology, Bacteriology—and any branch of science, in fact—are of little concern, save in the matter of practical application, or in being a subject taken up by specialists. In recent years the object and method of teaching most subjects, science included, has been changed. An English authority, in an address on "The Movement for Domestic Science in England," said, "A very great change has taken place in Science teaching. Instead of trying to teach the technicalities of chemistry, physics, and other scientific subjects in the schools, it is now sought to bring science teaching into relation with common things, and to make it, above all, a training in scientific method." In other words, the aim is to bring education into closer relationship with the work of life.

One of the great objects in Home Economics, or the science of the household, is to teach the laws and principles which underlie and govern household arts, and to show their application; but,

a greater object still is to produce a habit of mind and of action such as a proper study of Science can give, and infuse into woman's work a spirit of intelligence which will raise it to a dignity of which it is often most sadly in need.

The time has come when woman's work is no longer thought to be mere drudgery of housekeeping, but is recognized as an art, and handwork is no longer considered menial and despised. Her aim should be, not so much the product of labor, as the effect on her own individual development. Both intellectual and physical training are essential to the highest attainment—the best living.

The woman who is really desirous of conducting her home after the best improved principles has but to reach forth her hand and take what belongs to her.

"The fault, dear Brutus, is not in our stars,
But in ourselves, that we are underlings."

Men and women of to-day must choose their own mental, physical and spiritual ideals, and what is needed most is an all-round development, an individual independence of ideals, and the courage to reject all things pretentious. Aim at the best, and strive for the conditions which will keep us at our best. "Needed wisdom is not the accumulation of facts, but the power to think about them to some purpose."

The social value of Household Economics may be shown in three ways: the

direct influence on the home life, the social life in the school, and the development of general social efficiency.

Long ago, before man learned to build houses and cities, mothers, seeking shelter for their babies, crept into caves. But soon this primitive idea of home developed and improved. Dwellings more comfortable than caves began to be constructed, as tents made of animal skins, lean-tos by the side of the rock, and huts. As civilization progressed,

ently they made clay dishes and baked them in the fire or sun. What would our great grandmothers think if they were placed inside of the modern homes, where, by pressing a button the home is flooded with light, where heat is distributed through the home at an even temperature, hot and cold water in abundance, and where cleaning, dusting and laundry are all done by machinery. Even the food is given out to be cooked in one common kitchen, and sent home



INDIAN SUMMER ON THE LAWN.

houses more substantial, of varying styles to suit different climates, were erected, and to-day we have the beauty and fitness embodied in the noblest form of human dwelling. With this advance, and with the growth of the races, woman's work has become more complex. We look back only two or three generations to find a time when the household was practically the place where all kinds of industrial occupations were carried on. Women spun the wool and made it into cloth. They tilled the ground, planted the corn and made it into bread. To do this more conveni-

ready to serve. But, notwithstanding these and countless other advantages, the home life is losing its influence. It is losing its natural freedom, a place where peace and rest were found. Family union is fast disappearing. The woman as a wage earner trains for something outside the home, wage-earning brothers and sisters feel no longer constrained to live together under one roof. Is this an advancement in civilization? Is it not a sad state of affairs that the tendency of humanity to-day is towards making outward display, vying with neighbors and gratifying desires for pleasures that per-

ish in the handling? Can it be said that this tendency is producing a finer type of man or woman? "Plain living and high thinking are no more." We need to go back to greater simplicity. We need more homes and more effective expression of love for human beings in the home. The common things are in reach of all, and these afford most satisfaction and contentment. "The richest blessings come without strain, without toil, without anxiety, as a result of living truly, honestly, with mind and heart open to receive that which enriches the mind and satisfies the heart."

Let home be made bright, sweet and cheery; make it the sunniest spot to be found, and see that it is built on reality. "Home is the material expression of our spiritual life, and a true home is a little corner of the very bosom of God, where faithful souls are held close to the infinite Father-heart and carried safely to the home above."

Unless the domestic life of the land is sound and wholesome, the national life cannot be sound and wholesome. "No nation is greater than its average home."

The aim of the best education is to bring out that which is best and highest in man, and to open the doors of the Kingdom of Worth. It is this the schools are trying to accomplish, and the purpose of placing manual training and home economics in the schools is to supply the opportunity for handling real things and materials, with the actual processes of their construction and manipulation, with the knowledge of their social necessities and uses, to engage spontaneous interest in useful things, which prepares the child for the actual duties and methods of life, and implants in him that feeling of personal and social responsibility which is to be of greatest value in the future.

MINNIE E. GALLUP.

Now all Domestic Science schools
Are cleaning up their baking tools,
Prepared to teach the favored few
The art of making Irish stew.

The dainty teacher will declaim
About the basis of the game,
And urge the class to do the work
In dishes where no germs can lurk.

Then from an elevated seat
She'll say, "Don't purchase common
meat,

Do not forget when buying food
The very best is none too good."

And then the pupil, neat and "slick"
Will hasten home to do the trick,
And dad will find this lovely stew
Cost him about \$4.92.

The opening meeting of the Macdonald Literary Society was held in the Assembly Hall, at the Institute, on Friday evening, October 13th, and was a great success. The President, Miss Card, occupied the chair, and performed her duties very gracefully.

The program was excellent. The first number was a piano duet, rendered very charmingly by Misses Bickle and Greening, after which Mr. deCoriolis gave a vocal selection in his usual pleasing style. Mr. Foote then read an interesting paper on "Foreign Events." The most important number on the program was an address on "Shakespeare's Women," by Professor Reynolds. The close attention of the audience throughout the lecture testified to their appreciation of a most interesting and instructive address. The speaker stated that in the female personages of Shakespeare's dramas we find almost infinite variety, both in situation and in character. In his earlier plays, the women were, for the most part altogether unlovely. For example, in "Titus Andronicus," Queen



MACDONALD, '05, GRADUATING CLASS.

Tamora is a fiend; Queen Margaret, in "Henry the Sixth," is a fury; while Katharina earns the title of "Shrew" honestly by her bad temper and unreasonableness. The second group of plays shows a marked difference in the types of heroines. This group deals with lovers, whose amiability and tenderness make them altogether lovely; and includes Helena, Beatrice, Juliet and Portia. The next group consists of the Roman plays, in which we find women connected with great tragedies. Among these are Volumnia, the type of the ancient Roman Matron; Portia, the wife of Brutus; and Cleopatra, the enchanting and sensuous queen of the Egyptians. In Lear and Macbeth appear the supreme types of women of evil character. While Lady Macbeth is not wholly lacking in female tenderness, the two daughters of Lear appear to have no vestige of tender feeling. In the same group are Cordelia, perhaps the tenderest of all Shakespeare's women; the sweet and lovely Ophelia; and Desdemona, the symbol of purity and innocence. All of these women, both evil and good, possess the highest qualities, though, of course, in some cases, misdirected. According to Shakespeare, women in all ages have played a very large part in the world's drama; sometimes leading men to perdition—more

often to noble heights; but always leading them.

This address was followed by a song from Miss Biglow, which was rendered most acceptably. A hearty vote of thanks was tendered Professor Reynolds after which Mr. Shanklin read a brief but spicy criticism of the program. The meeting closed with the singing of "God Save the King."

The above is the 1905 Normal Graduating Class. Misses Smillie, Armstrong, McCrimmon, Livens, Williamson, Pease, Brown, Kent, Howitt, Powell, Bell, Sheffield are putting their knowledge into practice at home. Miss Culham is situated at Woodstock; Miss Marshall is studying further in Macdonald Institute this term. Miss Rath is teaching in the Public School classes in Rosthern, Saskatchewan; Miss Deikie is in Toronto; Miss Ferguson is teaching Domestic Science in the Y. W. C. A. in Kingston. Miss Johnston is teaching Domestic Science and High School classes in Renfrew. Miss Berry is teaching Domestic Science in the Public School at Vancouver, B.C. Miss Ross is teaching in the Consolidated School of Charlottetown, P. E. I.

Miss Nellie Harcourt is now a student in Teachers' College, Columbia University, New York, taking a course of physical education. Miss Shand has accepted a position with the Y. W. C. A. in Berlin.

That the subject of Domestic Science is widely studied at the present day, is amply shown by the number of articles bearing upon it to be found in the leading periodicals of to-day, as well as by the increasing number of publications devoted to it exclusively.

The data for the article on "Economy of Food" to be found in the October Century was largely furnished by the very careful experiments conducted by the United States Government in regard to the nature and quantity of food upon which man can not only be maintained in health, but can be furnished with the most energy, and thus accomplish the most work. The results show that most people actually take more food than is necessary, hence the title.

Another evidence that Domestic Science in our public schools has come to stay is to be found in the Educational Monthly, which now has a department devoted to the work of the Home Economics section of the Ontario Educational Association. In addition to current items, the first section in the October number contains a timely article by Miss

Margaret Davidson, on "The Care of Food Exposed for Sale."

To those engaged in the study of textiles or in teaching sewing, the "Lesson in Cotton," found in the "Teachers' Magazine," should prove most helpful.

"The Gospel of Simplicity," found in "The Craftsman," gives us, in an interesting way, a description of an experiment being conducted in New York, in what has come to be called "The Model Flat." Here, amid surroundings such as might be had in any of their own homes, the children of the tenements are being taught that, "It is not money that makes comfort, or beauty, or artistic effect in a home. It is Thought." Here too, they are taught cooking with just the utensils that are to be found in their own homes, and thus they can apply them at once.

Other articles of interest are: "Sanitation of the Country House," in Country Life in America, by L. C. Wroth; "How to feed Children that they may escape the chronic ailments of their parents," in Dietetic and Hygienic Gazette; "Supervision, Personal Elements," in September number of School Arts Book.



Athletics.

Review of the Football Season.

DOWN and out. This phrase exactly characterizes the position of our football team during this season. But we don't wish anyone to run away with the idea that the Ontario Agricultural College cannot play football.

We know that it is inexcusable to make excuses; but the fact remains that circumstances alter cases. In the first place, we are decidedly out of our proper sphere in Rugby football, when we try to compete against teams like those of which the O. R. F. U. is composed. We cannot hope to win against men, who have played together for several seasons, and who can get out to practice as soon as the smell of Rugby football is in the air. College teams should stick to College leagues, is an aphorism, which is true, though it may not bear the flavor of age. Consequently, the sooner the O.A.C. leaves the O.R.F.U. and tries the Inter-Collegiate Union, the better will be her chances on the faster field.

Secondly—Our forward line had too much weight and too little speed. To make such an assertion may seem like running one's head into a noose, yet it voices the opinion of a large percentage of our football enthusiasts. To prove this statement, a comparison with the Dundas team—if it be not odious—will perhaps be in order, as they have won every game in this district and are the prospective champions of the Intermediate O.R.F.U.



ONE OF THE HOSE REEL TEAMS.

Such is the character of the rules in the Ontario Union that mass plays are at a discount, and fast open work is the best policy. The Dundas men are not too heavy, and they are fast enough to play the snap back game as it should be played. They are also good tacklers, their small men being the best; and the writer has noticed that with one exception all the best tacklers he has seen are either small or of average weight. Dundas has some heavy men; but they are placed in their proper position, in the middle of the forward line, and are useful whenever it is necessary to buck the line. But the point to notice is that they don't sacrifice speed to weight in the wing division.

Lastly—Our combination has been poor. This is a matter that must be

remedied, if we are to play championship football. Everyone sees the need of it, and recognizes the fact that it was the *raison d'etre* of Dundas' victory at the College.

Now, though some of the statements in this article may seem rather strong, they are not meant to be discouraging; nor are they intended to cast a reflection on the powers that be. Rome was not built in a day, neither can a champion team be sent out in a single term. We have, in this College, material good enough for a first-class team. Furthermore, this year's team has been better than any we have ever had within present knowledge and, no doubt, as we have begun climbing, we are on the fair way to success.

One of the essentials of success we possess in large measure, enthusiasm. The football talk, we hear on all sides, points out this fact, and the largest and most regular attendance at practice we have had in years, ensures it. One thing only is lacking, courage. Several of the smaller students have expressed a fear of getting hurt and have consequently refrained from turning out to practice. Get into the game and see whether you think of being hurt. Why! people often get their ribs broken at the beginning of a game and never notice it. Try for yourselves and see.

Both our last games were played against Dundas. The first one on October 20th, on the College grounds. Owing to an accident on the Grand Trunk Railway, the Dundas team were unable to be on the field until 5 p. m. The day was so cloudy and the hour so late that the game had to be played in halves of 20 minutes each. The College won the toss and elected to kick with the wind. Soon after play was started Dundas forced a rouge; after this the game was

close and hard. At the middle of the half, Bower had to retire with a wrenched knee, and Clowes replaced him. Towards the end of half time Dundas crossed our line for a touch down, after a splendid piece of combination work. At half time the score stood 6-0 in Dundas' favor. At the beginning of the second half Dundas scored a touch-down by a clever trick play. They pretended to buck the line and sent one of their halves around the scrimmage. This try was also unconverted. This touchdown was disputed, on account of an off-side play made by Dundas just before the scrimmage, but neither umpire nor referee had noticed it, so the matter was dropped.

After this final effort Dundas began to tire, and the superior stamina of the College showed itself, but owing to the shortness of the time, they were unable to score. When the whistle blew, at the close of one of the most interesting games of our football history, we had lost by 12 points to nothing.

With Baker's broken rib, and Zavitz' enforced absence, the College went down to Dundas on Thanksgiving Day, with very sore hearts but a stern determination to play the game of their lives. The wind was very strong and both sides readily agreed to play in quarters of 15 minutes each. At the beginning of the first quarter, Dundas forced a rouge; soon after Bracken kicked a drop goal, making the score 3-1 in our favor. There was no more scoring in this quarter. The second quarter was prolific for Dundas, in rouges, they gaining 4. They also kicked a touch in goal. At half time the score stood 6-3 against us and the game was anybody's.

The 3rd quarter was nearly over when Dundas scored their only touch-down, making a total of 11 points for them.

The last was the most interesting from a College standpoint, and was marked by the most brilliant playing of the whole game. Bracken got in two of his phenomenal runs, and proved himself the best player on the field. One of the Dundas men was sent to the fence for attempting to trip Bracken within our 25 yard line. This was rather a doubtful favor, as we had to scrimmage the ball where the foul was tried, while Bracken had had an open field. In view of such a decision, one wonders whether it is not politic to try tripping and be sent off for a few minutes.

In this game we did not feel the loss of one half-back and quarter as much as we expected, as both their substitutes, Rowe and Clowes, played splendidly—indeed, the whole team played up to their best form.

On November 4th we were visited by the Intermediate Tigers. They won the toss, and decided to kick with the wind. With a strong wind behind them and the sluggishness behind the College line to favour them, the Tigers scored 6 points on their kicking; so that at half time their total was 6 to our nil.

In the second half the College settled down to hard work, but the wind was much milder, so that they gained no advantage from that quarter. Though no scores were made, the Tigers once had the ball well within our 25 yard line; but the College men did some brilliant work, and after three ineffectual attempts to get over our goal line, they had to relinquish the ball. We also made matters look dangerous for them two or three times, but each time they relieved

with kicks. When the time was called, the score was 6—0 in Hamilton's favour,

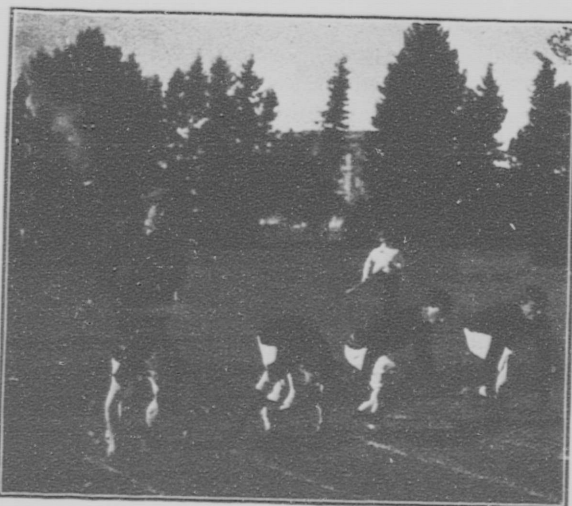
The moral to be drawn from this game is—*Play no men who cannot turn out to practice.*

The remainder of the season will be taken up with the year games. The schedule is as follows:

Saturday, Nov. 11—1st vs. 4th A.
2nd vs. 3rd B.

Wednesday, Nov. 14—1st vs. 4th A.

Thursday, Nov. 15—2nd vs. 3rd B.



OFF FOR A RECORD.

Saturday, Nov. 18—Winners of A vs. winners of B.

Wednesday, Nov. 22nd—Winners of A vs. winners of B.

Points, not games, are to decide. Some of the students have been questioning the wisdom of this method; but if they review the situation carefully they will see that it is the best way.

To decide properly between two teams they should play more than one game; therefore, if each year played the other years separately, we would have twelve games; whereas, under the present schedule, we have only six.

A few of our men are of the opinion that the year games ought to be abolished, and the writer is rather inclined to agree with them. First, they are detrimental to a true college spirit; and we foster the year spirit too much in this College. If this only showed itself in football, we would not mind; but the evil spreads itself throughout everything we undertake. It is a difficult matter to get a committee chosen from all years to work amicably together, and we never will, until we destroy everything that tends to uphold our year dislikes and disputes.

The second reason follows from the first. The year games are not exhibitions of football—if our men played in the same manner against outsiders they would be decorating the side lines the whole time. Of course this could be remedied by having the referee interpret the O. R. F. U. rules in the strictest manner possible.

There is only one good reason for having these games, and that is, that the best players may be chosen for the following season. This is certainly a strong point; but it will only hold good, if proper football is played. No matter how good a man may be, he cannot show to the best advantage if he is continually mauled.

Hockey now begins to appear on the horizon of our sporting world. Plans are out for two spacious rinks—one 180 feet by 90, the other 180 feet by 60 or 70.

The larger rink will be surrounded by a 4 foot fence and will, doubtless, be used exclusively for hockey. With a large hockey rink, the game as played at

the College, ought to improve greatly. We have good material in hockey just as we have in football, in fact we ought to have better and more of it, as nearly every village and town in Canada has a hockey team. It only remains for the fellows to get out and work, and when the season begins, turn out to play. All work and no play makes Jack a dull boy; and the converse holds equally true—at least in College hockey.

The second rink is for skating, presumably the Macdonaldites will share in the enjoyment of this rink. We have long felt the need of a separate rink, on which the novice could learn, and now the opportunity is at hand, we hope and believe it will be used to the utmost advantage. With these two large rinks, in view for this season, our covered rink does not seem so far away. We may see one next year; in that case those of us, who have failed in our third year or may fail in the fourth, will feel some compensation for the interest of the professors.

Our energetic physical instructor has begun to make things hum in the gymnasium. We now have a long felt want supplied, our new mats have come. The Freshies may feel perfectly safe now, and need anticipate no broken bones, if they climb to the dizzy heights of the vaulting horse. The rings have also been provided with adjustable straps, so that a Dan Patch may use them with the same comfort as a Pat Twigg.

Basket ball bids fair to rival the popularity of indoor baseball this winter, at least the Freshmen have taken to it like ducks to water, and a few of them will make good players.

Locals.

'09.

He comes from the pasture fields lazy,
Where the mild-eyed Jerseys browse,
And we ask: How he grew 'midst the
daisies,
And escaped the omnivorous cows.

—*Acta Victorianna.*

Willie Boddy is said to be trying to
work out by the laws of capillarity,
when the hair-like particles will reach
the surface.

Mr. Buchanan—When was wheat first
cultivated?

Foysten—Before man was born.

Another ingenious answer to this
question was: "Early in the spring."

Economy is one of the main points to
be observed in Domestic Science, and
with this in view a Domestic Scientist
made the remark that: "Eggs not
strictly fresh" were used in making
pastry!

High grades by seniors reached and kept,
Were not attained by main and might,
But they, while sophs and freshies slept,
Were stealing turkeys in the night.

TO WHOM IT MAY CONCERN.

Whereas, William Boddy and Ferguson of the Freshmen year at the O.A.C.,
have this day, and before this select and
high tribunal of their peers, been ac-
cused of undue familiarity expressed to-

ward their seniors, and of undue empha-
sis of their own freshman characteristics,
we, their lawful judges do decree that
they answer the following questions
truthfully, readily, without one iota of
conjecture or one moment of hesitancy,
or, failing in this, that they submit to
have one pound of hair removed from
the superior region of their craniums;

? ?

"If forty-seven janitors, for forty-seven
days,

Should scrub the life insurance graft
along the mystic maze,

How many things would happen in how
many different ways?

"If forty kalsominers, with forty tins of
white,

Should work on the insurance dodge em-
ployed both day and night,

How long would it require, think you, to
make things right?

"If ninety dozen bookkeepers attempted
to inscribe

The fakes and facts and fancies of the
Equitable tribe,

How many years would it require to
make the figures jibe?

"If twenty thousand ministers should
pray on bended knee

For all the fake directors who have done
for you and me—"

(But the father answered never a word,
for a frozen corpse was he.)

—
Bell has tolled us that he is picketed

at the Macdonald Institute. If this is the case there must be another belle in the case.

—
GOING AWAY TO SCHOOL.

The student packed a dozen fancy shirts,
And twenty books of Greek and Latin
prose ;

His mother wiped her eyes and said, " It
hurts,"

His father sighed and sadly wiped his
nose.

The student packed a lot of Hebrew
notes,

And seven suits of union underwear ;
His sisters coughed the sorrow from their
throats,

His brothers slowly scratched it from
their hair.

The student packed a score of English
verse,

And thirty pairs of socks with seam-
less toes ;

His mother cried awhile and said, " It's
worse,"

His father struggled harder with his
nose.

The student packed some French and
German works,

A dozen knives and forks and twenty
spoons ;

His sisters eyes dropped tears with pain-
ful jerks,

His brothers watched him fold his
pantaloons.

The student packed a roll of music
books,

And forty handkerchiefs of Irish mak ;
His mother showed the sorrow in her
looks,

His father showed it like the çoliç-
ache.

The student packed a lot of pens and
ink,

And seven suits of nicely folded clothes ;
His sisters shivered, then began to shrink,
His brothers stood around upon their
toes.

The student packed a book on moral law,
And thirty bags of fine tobacco cured ;

His father held his hands upon his jaw,
His mother looked as though her grief
matured.

The student packed a dozen cans of beef,
A punching-bag, a razor and a rule ;

His relatives give way to schools of grief,
And grief held sway when relative to
school.

—
The night of the freshmen reception :

First freshie—"Where are you going?"

Second freshie—"Oh, down to the
Hutt."

—
The Sophomores have recently adopted
the practice of exacting a pound of hair
from freshmen who are too fresh. It
seems rather a barber-ous punishment,
but it adds a peculiar force to the familiar
admonition—"Keep your hair on."

—
The number of fines which have lately
been inflicted upon the first year for
broken jugs, would lead one to suspect
that they had been using them for mir-
rors.

—
Mr. Jackson, while presenting the
medals to the First Year Hose Reel Team,
made the remark that on the night of
the initiation, the first year made their
acquaintance, not with the Hose Reel,
but with the real hose, (filled with lamp
black). Some first thought he meant

Continued on page xiv., advertising.

WHEN YOU BUY A

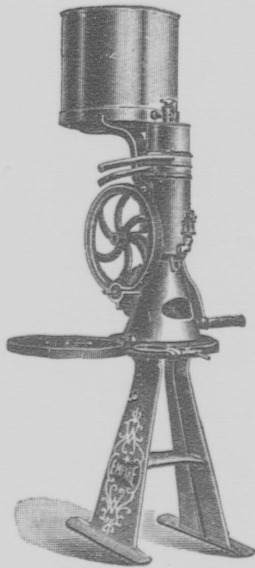
Cream Separator

THERE IS ONLY ONE KIND
THAT WILL SUIT YOU

That's the Best

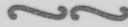
THE "BEST MACHINE"

Is the one that Runs Easiest, Lasts Longest, Costs Least
for Repairs, Uses Least Oil and Skims the Cleanest.



THE EMPIRE

POSSESSES ALL THESE POINTS.



We don't ask you to take our word for it, but want you to prove it to your own satisfaction before buying. Write us for a trial of the machine, or apply to your nearest agent.



Our Catalogue gives a great deal of information that will be useful to you. It is free for the asking.

Empire Cream Separator Company of Canada
LIMITED
TORONTO, ONT.

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

Continued from page 94

a different kind of hose, until we remembered that the Sophomores all fell off the water wagon long ago and could not call that kind of hose into play.

On Friday evenings, when Diaz is comfortably established in the cosy corner at foot of the Macdonald stairway, he wonders whether the strains of "See him smiling, see him smiling just now, etc," which come floating down from above, are meant for him. He smiles anyway and not in Spanish either.

In debating upon the advisability of granting the franchise to women, Baker showed us in rapid succession the heights of distinction to which women are capable of rising. Finally he cited instances of directors' meetings, in which women

had been found sitting on the boards. The majority of our lady friends would probably feel badly "flooded" if their political aspirations ever reduced them to "sitting on the boards," especially if the boards were discarded planks from the party platform.

Some few days ago an open letter from a matrimonial bureau was posted on our bulletin board. This year's graduating class will evidently be in great demand.

Evidently the Hamilton Tigers reckoned without their host or rather their hosts, when they attempted to abscond with our ball. A couple of hundred students, a dozen professors and our President form a pretty strenuous reception committee, on occasions when a ball

Continued on page xxii., advertising.

The Farming World

A SEMI-MONTHLY,



THE PAPER for the FARMER

whether

a **SPECIALIST** or **General Farmer.**

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

One Year - 60c. Two Years - \$1.00.

A SAMPLE COPY ON REQUEST.

SPLENDID INDUCEMENTS TO AGENTS



The Farming World

90 Wellington St., W. - TORONTO

THE FAVORITE OF THEM ALL IS

Colton's No. 1

Double Root Cutter

POINTS OF MERIT.

1. To change from pulping to slicing is but the work of a moment.
2. There are two separate wheels, one for pulping and the other for slicing.
3. The united force of both wheels is always used in doing the work in either capacity.
4. The hopper is between the wheels, and does not choke.

The Only Double Root Cutter Manufactured

Fitted with Roller Bearings, Steel Shafting and all that is latest and best in principle, material and construction.

OTHER SPECIALTIES:

PEA HARVESTERS, HAYING TOOLS
AND HIGHEST GRADE
OF STEEL HARROWS.

TOLTON BROS. Limited

GUELPH, - ONTARIO

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

FROST & WOOD

IMPROVED No. 3 BINDER

Is THE Binder that the farmers throughout the land are placing their orders for, for 1906. It will pay you to "get in the swim." The Improved No. 3 is a machine that we have been working on for the past three years, and on which, to-day, the farmers who have used it, have passed the verdict of "PERFECT." We do not ask you to accept our word for it, but ask you to read what your fellow-farmers state about it. We did not come across one farmer during the past harvest who had anything but unlimited praise for it.

It is constructed throughout of the very best materials and these, in combination with expert-workmanship, make it the easiest running, strongest and best Binder on the market.

Send to us for our descriptive pamphlet "A" which contains some very valuable information for the farmer who is desirous of getting the most out of his land.

Here's What One Prominent Farmer Says

Springfield, Man., October 2, 1905.

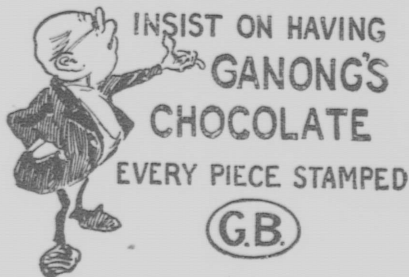
GENTLEMEN,—I cut 75 acres of crop with your Improved No. 3 Binder and I must say it gave me great satisfaction; and I tried it in all kinds of grain. It has great elevating power, light of draft, positively no side draft and is light on horses' necks. It is certainly the best binder I ever used, and I have had several different ones on my farm.

Yours very truly,

(Signed) D. MUNROE.

THE FROST & WOOD CO., LIMITED

Winnipeg, Toronto, Montreal, Quebec, St. John, N.B., and Truro, N.S.



G. B.

Chocolates

ARE THE FINEST MADE.

They are so Delicious that you always want more.

The Largest Assortment. Neatest Put Up.

If you are making a Present be sure and give

"GANONG'S"

SOLE AGENT IN GUELPH—

A. B. PETRIE

Drug Store - Lower Wyndham St.

The Bond Hardware Company Limited

President :

JOHN M. BOND

Vice-President :

W. GEO. BOND

2nd Vice-President :

T. A. KEATING

Secy-Treasurer :

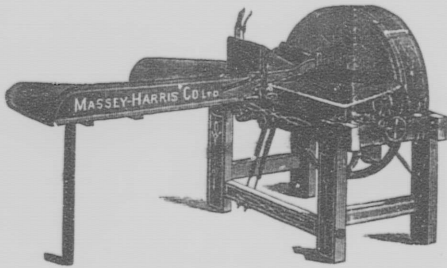
J. S. MILLAR

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

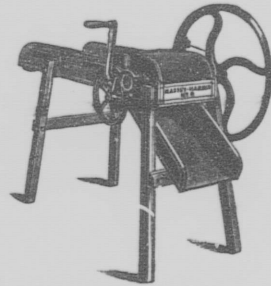
Our Prices Are Always Right

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

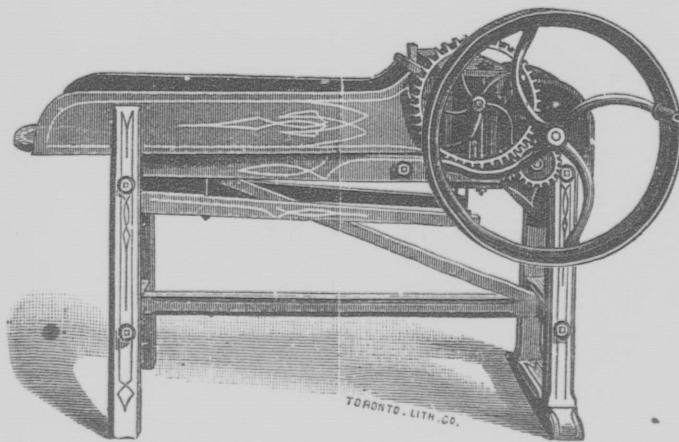
GET A GOOD STRAW CUTTER
AND ROOT PULPER. THEY
GIVE LASTING SATISFACTION.



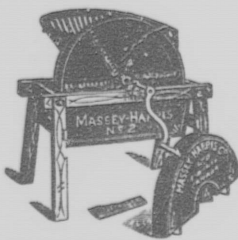
No. 2 Straw Cutter.



No. 8 Straw Cutter.

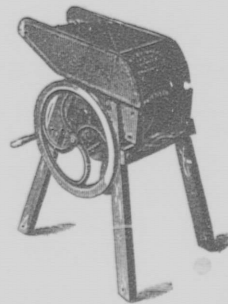


Cummings' Straw Cutter



No. 2
Side Wheel Pulper.

THE MASSEY-HARRIS
FEED PREPARING
MACHINERY STANDS
OUT AS THE BEST
OF THIS CLASS OF
IMPLEMENTS. :: ::



No. 1 Root Cutter
and Pulper.



Craigieburn Stock Farm

CLYDESDALES, SHORTHORNS,
and SHROPSHIREs,

Imported and Canadian Bred.

Young Stock Always For Sale.

For particulars apply to

G. A. BRODIE
BETHSEDA, ONT.

Stations—

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

CLYDESDALES

SMITH & RICHARDSON
COLUMBUS, ONT.

Importers of Clydesdale Horses.

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

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

Long Distance Phone at Residence.

Shorthorn Bulls
Shropshire Sheep
Yorkshire Swine

of the highest standard
of their respective breeds

Richard Gibson
DELAWARE, ONT.

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

Pine Grove Stock Farm

Rockland, Ontario, Canada

BREEDERS OF CHOICE

SCOTCH SHORTHORNS
and SHROPSHIREs

W. C. Edwards & Co. Limited

PROPRIETORS

JOSEPH W. BARNET, Manager

Dentonia Park Farm

COLEMAN P. O., ONT.

BREEDERS OF

Jersey and Guernsey
CATTLE

Stock of Both Sexes For Sale.

Photographs and Descriptions Sent on
Application.

Alva Farm Guernseys

Awarded First Prize at Montreal
for Breeder's Young Herd.

Young Animals of Merit For Sale

Pedigrees and particulars to parties
wishing to purchase, address:

SYDNEY FISHER, Knowlton, Que.

J. DRYDEN & SON

Maple Shade Farm, Brooklyn, 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.

**Get Top Prices
For Your Butter.**
The use of a little care, and WINDSOR SALT, will improve your butter 100%.

**Windsor
SALT**

is absolutely pure—
dissolves quickly—and
is easiest to work. It
makes the most deli-
cious butter that read-
ily brings the highest
market price.

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



**OFFICE,
SCHOOL,
CHURCH,
& LODGE
FURNITURE**

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

SEND FOR CATALOGUE

Dominion Bank

GUELPH

Capital Paid Up - - \$3,000,000

Reserve Fund and

Undivided Profits - - \$3,565,000

A General Banking Business Transacted.

Savings Bank Department in connection with
all Offices of the Bank.

Deposits of \$1.00 and upwards received.

BANKERS FOR THE O. A. C.

Manager Guelph Branch

H. C. SCHOLFIELD

The Busy Bookstore

26 Lower Wyndham Street

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

College Text Books,
Fine Stationery, Etc.

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

Scott & Tierney

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

In the December Number

of this Journal the following writers will discuss
some particular phase of their own special work :—

PROFESSOR J. B. SMITH

The Extermination of Mosquitoes in New Jersey.

Dr. JUDSON F. CLARK,

Grazing in Woodlots.

W. C. GOOD, B. A.,

Economic Status of the Farmer.

MALCOLM ROSS, B. S. A.,

Estate Management as a Profession.

P. W. HODGETTS, B. S. A.,

Power Spraying in Ontario.

F. W. HODSON, Dominion Live Stock Commissioner,

Ontario as a Stock Producer for the West.

KERRY O'BYRNE,

A Poem.

J. BUCHANAN, B. S. A.,

Improvement of our Grains.

Young Men—Look!

Every young man hopes that between the ages of forty and sixty he will be engaged in enterprises requiring large reserve funds.

If you believe this, why don't you at once prepare for this period by starting a good Endowment Policy?

The sooner started, the sooner it will be ready for use.

Get rates from

**Manufacturers Life
Insurance Co.
Toronto, Can.**

ESTABLISHED 1817

BANK OF MONTREAL

HEAD OFFICE, MONTREAL

Incorporated by Act of Parliament. Capital, all Paid-up, \$14,000,000. Rest, \$10,000,000.00
Undivided Profits, \$665,000.00.

BOARD OF DIRECTORS

RT. HON. LORD STRATHCONA AND MOUNT ROYAL, G. C. M. G., President.

SIR GEO. A. DRUMMOND, K. C. M. G., Vice-President.

SIR WILLIAM C. MACDONALD.

A. T. Paterson, Esq.

E. B. Greenshields, Esq.

R. B. Angus, Esq.

James Ross, Esq.

R. G. Reid, Esq.

Hon. Robt. MacKay.

E. S. CLOUSTON, General Manager. A. MACNIDER, Chief Inspector and Superintendent of Branches. H. V. MEREDITH, Assistant General Manager and Manager at Montreal. F. W. TAYLOR, Assistant Inspector, Montreal. F. J. HUNTER, Assistant Inspector, Winnipeg. MONTREAL C. W. DEAN, Assistant Manager.

BRANCHES IN CANADA

Province of Ontario—Almonte, Belleville, Brantford, Brockville, Chatham, Collingwood, Cornwall, Deseronto, Ft. William, Goderich, Guelph, Hamilton, Hamilton, Sherman Ave., Kingston, Lindsay, London, Ottawa, Paris, Perth, Peterboro, Picton, Sarnia, Stratford, St. Marys, Toronto, Toronto, Yonge St. Branch, Wallaceburg.

Province of Quebec—Montreal—Hochelega branch, Papineau Ave. branch, Point St. Charles branch, Seigneurs St. branch, Westmount branch, West End branch, Quebec, Sawyerville, St. Raymond, Warwick.

Province of New Brunswick—Andover. Bathurst, Buctouche, Chatham, Edmundston, Fredericton, Grand Falls, Hartland, Moncton, Shediac, St. John, Woodstock.

Province of Nova Scotia—Amherst, Bridgewater, Camro, Glace Bay, Halifax—Duke St. branch, North End branch, Lunenburg, Mahon, Mahone Bay, Port Hood, Sydney, Wolfville, Yarmouth.

Province of Manitoba—Altona, Brandon, Greta, Oakville, Portage la Prairie, Winnipeg.

North-West Territory—Calgary, Alta., Edmonton, Alta., Indian Head, Assa., Lethbridge, Alta., Raymond, Alta., Regina, Assa.

Province of British Columbia—Armstrong, Enderby, Greenwood, Kelowna, Nelson, New Denver, New Westminster, Nicola Lake, Rossland, Vancouver, Vernon, Victoria.

In Newfoundland—St. John's, Nfld.—Bank of Montreal, Birchy Cove, (Bay of Islands).

In Great Britain—London—Bank of Montreal, 22 Abchurch Lane, E. C. Alexander Lang, Manager.

In the United States—New York—R. Y. Heblen and J. M. Greata, Agents, 59 Wall Street. Chicago—Bank of Montreal—J. W. De C. O. Grady, Manager. Spokane, Wash.—Bans of Montreal.

Bankers in Great Britain—London—The Bank of England. The Union of London and Smith's Bank Limited. The London and Westminster Bank. The National Prov. Bank of England. Liverpool—The Bank of Liverpool Limited. Scotland—The British Linen Company Bank and branches.

Bankers in the United States—New York—National City Bank. The Bank of New York, N.B.A. National Bank of Commerce in New York. Boston—The Merchants' National Bank. J. B. Moors & Co. Buffalo—The Marine Bank, Buffalo. San Francisco—The First National Bank. The Anglo-Californian Bank.

General Banking Business Transacted. Farmers' Notes Discounted. Interest at Best Current Rates Allowed on Deposits in Savings Department.

H. LOCKWOOD, Manager at Guelph.

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

ALL O. A. C. GRADUATES

Should Subscribe for
Guelph's Leading Paper,

The Weekly Mercury



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



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

McIntosh & Galbraith.

THE GUELPH
HERALD

Job Department

FOR FINE
PRINTING



The Daily Herald delivered to all parts
of the city for 35 cents per month.

H. GUMMER, - - Proprietor.

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

Continued from page xiv., advertising.

is to be held. When the Tigers embraced the opportunity to run the ball their own way we were forced to embrace them to prevent it. We hope they enjoyed our embraces, even if they cannot enjoy our ball.

The boy stood on the burning deck,
His fleece was white as snow ;
He stuck a feather in his hat,
John Anderson, my Jo !

Come back, come back ! he cried in grief,
From India's coral strands,
The frost is on the pumpkin, and
The village smithy stands.

Am I a soldier of the cross
From many a boundless plain ?
Should auld acquaintance be forgot,
Where saints immortal reign ?

Ye banks and braes o' bonny Doon,
Across the sands o' Dee,
Can you forget that night in June—
My country, 'tis of thee !

Of all sad words of tongue or pen
We're saddest when we sing,
To beard the lion in his den—
To set before the king.

Hark ! from the tombs a doleful sound
And Phoebus 'gins arise
All mimsy were the borogroves
To mansions in the skies !

The above is an effusion compiled from "Duggy" Weir's poetic utterances, as he struggled upward and onward, returning from the Military Banquet.

Treichler claims that he always buys a good article when he can get it and by

Continued on page xxvi., advertising.

**Men's
Goods**

E. R. Bollert & Co.

**Ladies'
Goods**

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

Men's Section

Fine Ordered Clothing at Moderate Prices.

Fit-the-form Ready-to-wear Clothing, very good and very cheap.

Best Styles of Hats and Caps at closest prices.

Up-to-date Shirts, Collars, Ties, Gloves, and Fancy Furnishings, not at fancy prices.

Underwear, Hosiery, Etc., grand values.

Ladies' Section

Dressmaking at very reasonable rates. Ready-to-wear Coats, Skirts, Blouses, Etc., in great variety of new things.

MILLINERY—All the Novelties of a first-class Millinery Business constantly received.

The Underwear and Furnishing Stocks are crowded with good goods at low prices.

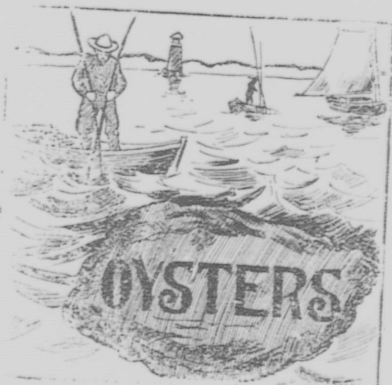
Belts, Collars, Gloves, Hosiery, Handkerchiefs, Etc., Etc.

**25 and 27
Wyndham St.**

E. R. Bollert & Co.

**25 and 27
Wyndham St.**

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



Oyster Stews

Come in and try them.
This is the season when they are
best.



HOT SODAS

Delicious, Refreshing, makes you
think of home and mother.



KANDY

We carry none but genuine goods
and our assortment is the
largest in the city.

The Kandy Kitchen

LOWER WYNDHAM STREET,

GUELPH, ONT.

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

Ontario Provincial Winter Fair

A Combination Exhibition of both

Live and Dressed Cattle, Sheep, Swine and Poultry.

Also a Seed Show, will be held at

GUELPH, ONT., DECEMBER 11 to 15, 1905.

Entries should be received by the following dates:

Live Stock	November 25
Live Poultry	November 27
Dressed Poultry, Seed and Judging.....	December 2

Over \$8,500 Offered in Prizes.

The attention of Students is called to the Judging Competition. Instructive Lectures by Practical Experts will be given each day of the Fair.

Railway Rates—Single Fare from All Points in Ontario.

For Prize List, Entry Form, Programme of Lectures, or other information, apply to the Secretary.

ARTHUR JOHNSTON,

President.

A. P. WESTERVELT, Sec'y

Parliament Buildings, Toronto.

SAM LEE HING

The College Boys patronize him because he does **GOOD WORK**, and always aims to please.

He calls on Mondays,
Wednesdays,
and Saturdays.

**WORKSHOP AND OFFICE ON
ST. GEORGE'S SQUARE**

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

MEN'S FURNISHINGS

Just to Remind You

That I carry one of the Largest and Most Select Stocks of HATS, SHIRTS, TIES, SOX, COLLARS. UNDERWEAR and MEN'S FURNISHING GOODS IN THE CITY.

Ordered Clothing

I have a select stock of SUITINGS, OVERCOATINGS AND TROUSERINGS to select from. Styles, Trimmings, Fit and Workmanship the very best, and prices as low as any in the trade. Our motto is: "The best possible value for the least money." All goods marked in *plain* figures and *one* price to all. Be sure you come to **73 WYNDHAM STREET** for your Furnishings and Clothing.

R. E. NELSON

Next Traders' Bank.

Men's Furnisher, Hatter and Fine Tailoring.

The King Washing Machine

Wholesale and Retail

Dealers in

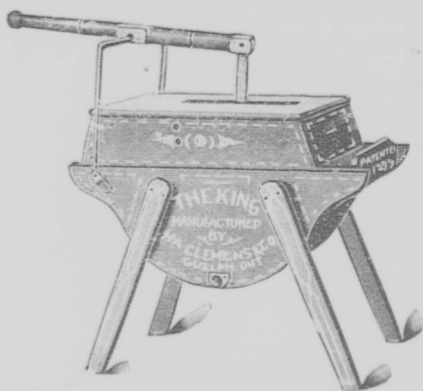
LUMBER

LATH

SHINGLES

All kinds of

BILL STUFF, Etc.



Manufacturers of

DOORS

SASH

FRAMES

All kinds of

BUILDING

MATERIAL.

The H. A. CLEMENS Co. LIMITED

Manufacturers of

WASHING MACHINES, STAIR BUILDING and INTERIOR FITTINGS A SPECIALTY

GUELPH, CANADA

Phone 50

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

ZENOLEUM
DISINFECTANT AND DIP

USED AND ENDORSED BY
ONTARIO AGRICULTURAL COLLEGE
IN ITS SEVERAL DEPARTMENTS

THE CANADIAN GOVERNMENT
AT ITS ARMY BARRACKS

CANADIAN PACIFIC RAILWAY CO.
THROUGHOUT ITS SYSTEM

PROMINENT VETERINARY SURGEONS
IN THEIR DAILY PRACTICE

LEADING LIVE STOCK MEN
ALL OVER THE WORLD

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

WRITE FOR FREE BOOKLETS
Zenner Disinfectant Co.
WINDSOR, Ont. DETROIT, Mich.

Continued from page xxii, advertising.

diligent enquiry has found out where most of the staff buy their cigars. We are tempted to question his sincerity though, when we hear him ask for a five-center.

Professor Jackson—"And these bright colored fruits attract squirrels and other animals in the winter months."

Promising Soph—"Would they taste good to us?"

Professor—"It would depend on how you were brought up."

Query—When is Boddy going to give another lecture in Norfolk St. Church, on the Macdonald Institute?

Even the President of the Fourth Year failed to corner Angle in the debate. He seems to be a right angle.

The demand for rubber soles in the gymnasium suggests that the average student is pretty "well-heeled."

The Traders Bank of Canada

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



It is the

Farmers' Bank



Next door to

the Post Office



WYNDHAM STREET.

SPECIAL ATTENTION Paid to FARMERS' BUSINESS

Loans Made. Deposits Received

The Most Favorable Rates and Terms Given.

A. F. H. JONES - - - - - MANAGER

—GO TO—

PETRIE'S DRUG STORE

FOR MEDICINES AND
TOILET ARTICLES,
SEED BOTTLES, Etc.

Headquarters in Guelph
for all kinds of

PHOTOGRAPHIC SUPPLIES

FILMS DEVELOPED AND
PRINTS MADE.

Latest designs in Comic and Picture
Post Cards.

Remember the place,

Petrie's Drug Store

Lower Wyndham Street.

Advance in

Fine Furs..



Is the latest report from the Big Fur Centres. This will make no difference this season with us. We have an IMMENSE STOCK bought and paid for; so it is up to you to get your money's worth this fall.

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

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

Keleher & Hendley



Interior View of Stewart's 20th Century Pharmacy
"The Store with a Good Record"

The Students

OF THE

O. A. C.

AND

Macdonald

Institute

Are invited to make
this store their buy-
ing centre for every-
thing in

Drugs,
Toilet Articles,
FINE
Perfumes,
College Supplies
Etc. Etc.

2 Doors Below
the Post Office

ALEX STEWART, CHEMIST

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

"A Square Deal for Every Man."

COLLEGE MEN!

THIS INSTITUTION HAS A CLOTHING CURRICULUM
THAT OFFERS MANY ADVANTAGES.

The advantages of skilful and perfect tailoring and Ready-to-wear Clothing.
The advantages of an organization empowered to find and buy only the best.
The advantages that must accrue from the Ryan Standard, up to which all our
clothing must come.

And the exceptional advantage of absolutely honest fabrics in all our clothing.

THE FALL AND WINTER TERM

Of clothes selling is in full swing, and a competent staff of considerate salesmen are on
hand to tutor you in the matter of proper clothing.

Black and Blue Suits, \$8.50 to \$18.

Tweed Suits, \$8.50 to \$20.

Evening Suits. Tuxedo Suits.

Overcoats, \$6.50 to \$25.

In Shirts, Collars, Ties, Underwear, Caps, Sweaters, Etc., you will find here a most
satisfying choice of all the newest and best. And there is no store that sells Good
Clothing and Furnishings at lower prices than we do.

G. B. RYAN & CO.

UPPER WYNDHAM STREET

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.
Farmers' notes discounted.

Drafts issued payable at all points in Canada and the
principal cities in the United States, Great Britain,
France, Berauda, etc.

SAVINGS BANK DEPARTMENT

Deposits of \$1.00 and upwards received and current
rate of interest allowed.

Interest added to the principal at the end of May
and November in each year.

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

J. M. DUFF, - Manager

R. B. Kennedy



PHOTOGRAPHER



The best place to get a good
Group Photograph or a Por-
trait of yourself.

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

The Little Tailor Store

COLLEGE MEN

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

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

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

ABOUT OUR PRICES

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

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

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

R. J. STEWART

Opposite Knox Chu ch, Quebec Street.

McKee's Drug Store

Macdonald Institute Text Books.

McLellan's Psychology.....	\$1 00
Food and Dietetics.....	3 00
Cook Book— <i>Farmer</i>	2 90
Elementary Chemistry.....	1 00

Nature Study Department.

Sylvan Ontario	\$0 40
H. S. Botany.....	1 00
Science Note Book	35
Plants— <i>Coulter</i>	1 80

1st Year Books.


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

Noted Tea Store

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Wholesale and Retail Dealer in

Fresh Meats, Pickled Beef and Tongues,

Poultry for the Students a Specialty,

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Late Members of
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For Steam and Hot Water Heating,
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 Specialties in Sanitary Appliances.
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 PERFUMES, TOILET SOAPS,
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They are sure to please the students of
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The Estate of J. L. Luckham,
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 WE LEAD in the NEWEST FOOTWEAR

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Phone 370

South-west Corner from the Post Office

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150 Views of College Buildings and
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Real Photos, good enough to frame,

75 Cents Per Dozen

Duplicates of last year's classes always
on hand.

The Guelph Radial Railway Co.**TIME TABLE**

Cars leave College Landing for City as
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A. M.—6.25, 6.45, 7.05, 7.30, 7.50, 8.10,
8.35, 8.55, 9.20, 9.40, 10.00, 10.25, 10.45,
11.05, 11.30, 11.50.

P. M.—12.15, 12.35, 12.55, 1.15, 1.40,
2.00, 2.20, 2.45, 3.05, 3.30, 3.50, 4.15, 4.35,
5.00, 5.25, 5.50, 6.15, 6.40, 7.00, 7.20, 7.45,
8.05, 8.25, 8.45, 9.10, 9.30, 9.50, 10.15,
10.35, *10.55.

Returning, Cars leave St. George's Square 19 minutes later.
* Saturday Night Only.

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**ELECTRIC BOILER
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PHONE 396, BOX 409, GUELPH, ONT.

Walker's Electric
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High-Grade Lubricating Oils, Greases, Pack-
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Crystal Cream Separator Oil
A Specialty.

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FOR STOVES OF EVERY DES-
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86 Upper Wyndham St., Guelph

The Authorized College Pin

Adopted March 30th,
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elected by O. A. C. A. A.
Design Registered at De-
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For sale at

Pringle's Jewelry Store

Sterling Gilt, Price 50c

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FOR HARDWARE and
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AT LOWEST PRICES

G. A. RICHARDSON

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Thornton & Douglas

LIMITED

Makers and Importers of Wearing Apparel
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Dairy Suits
a Specialty

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KIEL GIVES STUDENTS THE
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BOOTS AND SHOES OF
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Highest current rates allowed.

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BY AN EXPERT OPTICIAN
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Manufacturer of all kinds of

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NEAR GEMMELL'S DYE WORKS.

FOOTBALL and HOCKEY GOODS

Made to Order in College Colors

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You find everything you want there.

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Steam Dyers and Cleaners

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Suits Cleaned, Dyed and Pressed.
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is the place to get the finest work in Guelph,
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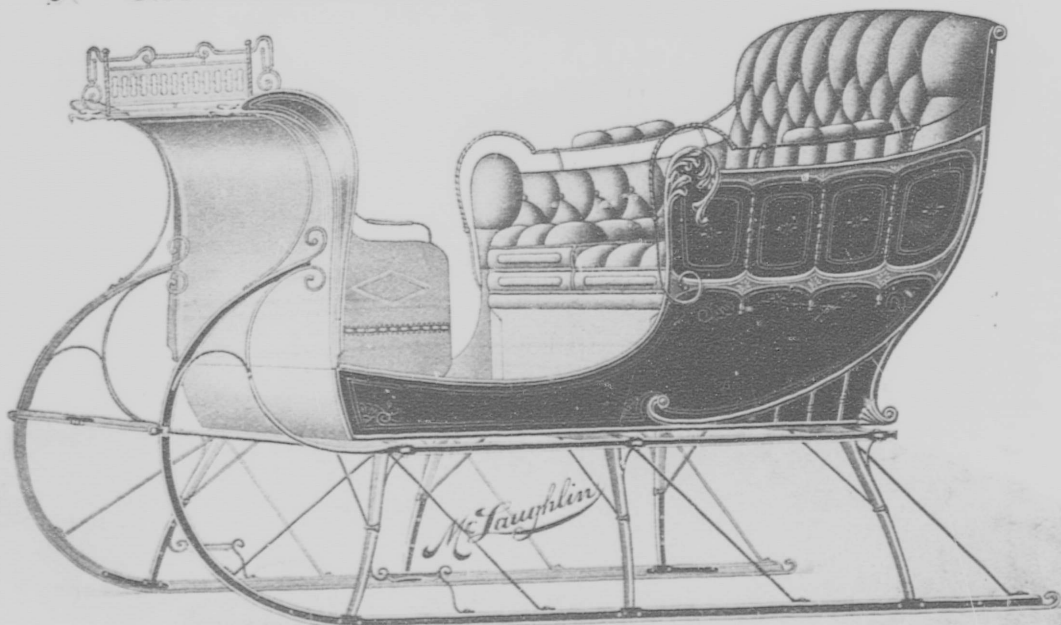
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EVERY ONE GUARANTEED FULLY

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