

Volume XXVI.

Number 7

O.A.C REVIEW



APRIL
1914

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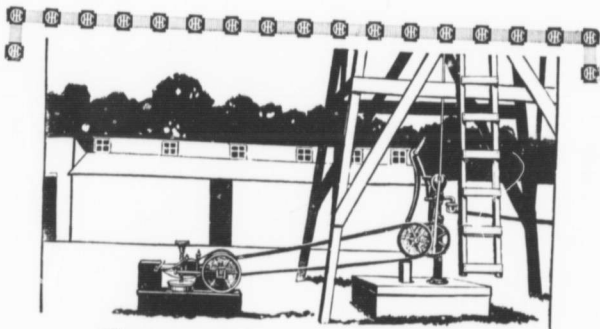
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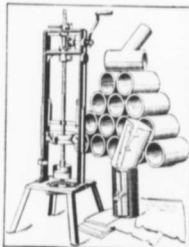
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CONTENTS

VOL. XXVI.

APRIL, 1914.

NO. 7.

| | Page |
|--|------|
| Editor's Page | x. |
| College Meat Supplies—by A. M. McMillan, B.S.A. | 329 |
| The Bee Factory in Seymour—by Justus Miller. | 331 |
| Cartoon—Examination Night-Mares | 335 |
| Notes on Winter Egg Production | 336 |
| Taxation—by Charles I Brown, '16. | 337 |
| Snakes—by Gyp. | 341 |
| The Physiology of Sap Flow—by H. S. Fry, '14. | 347 |
| Queries | 355 |
| Macdonald | 356 |
| College Life | 362 |
| Athletics | 365 |
| Alumni | 367 |
| Editorial—Various Viewpoints | 369 |
| His Deputy and Her Warden—Ebenezer's Spouse | 377 |
| Courtship Under Difficulties—The Rolling Stone | 380 |
| Locals | 382 |

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The Editor's Page



There is evidence of interest being taken in the columns set aside for discussion and it is my earnest hope that such interest is not a mere brief flash in the pan. During the summer it will be impossible to find college subjects for discussion and it is then I intend to touch on problems and questions more strictly agricultural; I must therefore appeal in particular to ex-students and graduates to give me their opinions on the views expressed from month to month and to themselves open new fields for argument.

By the time this issue reaches my readers the Review elections will have come and gone. Let me then thank my coadjutors for the hearty co-operation and assistance they have afforded me and for their unflagging endeavours to provide interesting copy in spite of great difficulties and with little or no encouragement, appreciation or even recognition. Some of them will be re-elected and to them and to those new to the work I extend a hearty welcome and a hope that we will together make the old rag a rousing success in the months to come.

THE O. A. C. REVIEW

THE DIGNITY OF A CALLING IS ITS UTILITY

VOL. XXVI.

APRIL, 1914.

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College Meat Supplies

By A. M. McMILLAN, B.S.A.

THE supply of fresh meat for the dining department of any residential college has always been a big problem and now that meat is being sold at famine prices, while at the same time large quantities of inferior and unfinished animals are being marketed, the college meat supply will present still greater difficulties. Moreover, meat is perhaps the most important nutrition factor in the student's diet. It is at the same time the most expensive commodity which the dietician in a limited allowance has to provide. It would seem therefore, that, for the sake of the student and college, no effort should be spared to secure the best system of meat supply.

Various practices are followed in the different colleges, but in meeting this question agricultural colleges are privileged institutions, in that, they may through their animal husbandry departments which are always important features of the institution furnish the entire supply of meat. Some colleges are now doing this and

it would seem with advantage in many ways to the institution. The undergraduate particularly, however, will judge the success of the system by the effect on the student especially as manifested in his attitude toward the "College Grub." Such evidence however, must be stated with discretion. Invariably the student complains and not always without reason.

The student develops a very fastidious taste. He comes to college with a marvelous appetite which has been worked up to its present capacity by repeated tonics administered through the plough, the harvest field or the woods. Natures' tonics have been so healthful that the youth from among

the tall grasses is seldom troubled with digestive troubles or the need of special inducement to partake. The new mode of life adopted by the student necessitates a readjustment of the diet together with discrimination as to quantity. However, the student knows nothing of this and large quantities of foodstuffs are still passed over the back teeth, partly masticat-

The writer is a graduate of Class '12. He is at present Lecturer in Animal Husbandry at Macdonald College. The meat supply of that institution is fed, killed, dressed and cut on the premises, so Mr. McMillan is in a position to know whereof he writes.

ed and insufficiently mixed with saliva, with the result that by the time the first Christmas examinations are over his desire for food has somewhat abated. A state of physical depression exists which has only been re-adjusted by the open-air-life of the Christmas vacation. It is seldom that a college student is prone to express any serious complaints about the meals until the second term is begun, but by the time the junior year is entered the complaint has become chronic. The student is forced to live a somewhat sedentary life, especially if not atheletically inclined. The oldtime relish is gone and so far as the college fare is concerned all pies go into the same class, so that the students' verdict on meat quality is not infallible.

However too often his grievance is a reality and too often unnecessarily so. If the meat is supplied by contract and only special cuts ordered, as is the case in many instances an exorbitant price will be extorted, but in any case this would seem the safest plan and such an institution would suffer less imposition, especially in the present meat situation. The cheaper cuts are often questionable buying because while the best cuts of a poor carcass may be fairly palatable, the cheaper cuts could only be used for certain purposes and in limited quantities. A college department in connection with its feeding work should be able to eliminate the middleman and to give the dining department the benefit of its high-class meat products at a price that would

mean something to both departments. True, the dining department must take the whole carcass, the meat should be of such quality that the dietician could profitably use all cuts. If not, either equipment, management or household science must shoulder the responsibility.

The undertaking on the part of the animal husbandry department may mean more work and extension of the feeding practice, but with a first-hand market outlet and a larger field for experimental work this should prove an asset. More thorough work should be possible when it can be followed to the absolute destination, the results being available to both student and teacher of animal husbandry. The business aspect of the work is not without its importance to both, and the study of questions relative to marketing could be much facilitated and given fresh interest where the meat is retailed direct to the consumer within the college.

Demonstrations in animal meat, Biology and veterinary study may be given a practical touch which is impossible without the slaughtering feature. For the student of Household Science special opportunity is given to study meat first-hand, as already stated. The work may be extended even farther than the supply of fresh meat. The curing of meats for summer supply is a problem vital to any farming community and gradually becoming more serious. Here, alone, is ample room for investigation and instruction work of unlimited capacity.

The Bee Factory in Seymour

By JUSTUS MILLER

WHEN foul brood crossed Northumberland county it left ruined apiaries in its wake. A few have been rebuilt and are stronger than ever, but empty hives are all that remain of most of them.

I had heard of one apiary that had been built up in the danger zone by two young girls. They are known as the Scott Sisters, and are noted throughout the north of the county as the most successful bee-keepers in the district. So I hied over the hills to Seymour to see them at work in their farm factory.

"Well, we haven't done so badly," replied Margaret Scott, "considering the obstacles in our way. When foul brood came into the apiary Dad gave the bees to us. We had forty colonies to start with but shook them to twenty-four. That was three years ago. Now we have ninety-four colonies all told. This season they gave 10,600 pounds of honey, which sold for just about \$1,060. Not counting our own work we cleared \$960. It's pleasant work and we like it. We are planning now to buy an automobile with honey money."

Unseen Foe at Work.

"But the fight to bring the old apiary back was not so easy as the telling of it. European foul brood is a bacterial disease that has just about got scientists stopped. It lives in the honey and destroys the young larvae when eaten by them. It spreads very rapidly, as the organism divides every half hour. If a little honey is contaminated it spreads throughout the colony and it will be carried on the feet and bodies of the bees to every colony in the apiary and to all the

apiaries in the vicinity. So great is the havoc that in some counties whole districts have been left desolate in a short time.

"We knew we had the disease in our colonies," continued Miss Scott. "The healthy larvae have a well-rounded, creamy appearance. Ours turned brown and greasy-looking and one end dropped to the bottom of the cell. They became darker and finally dried up to a scale. The cells were not usually capped at all."

"Now there are two remedial measures. One is to re-stock with Italian queens, which are less susceptible to the disease, and the other is to shake the bees into clean hives and to destroy all contaminated comb and honey. We did both. It was a trying task, too. In fact it was the hardest problem we have ever had in the bee business.

"First, the bees were shaken into hives that had been thoroughly disinfected. They were burned out with gasoline, and all things used about the apiary were boiled for forty minutes. When bees are disturbed they fill up with honey, so these new hives were given frames of half-inch foundation. In three days the honey was consumed and the bees were shaken again into new hives with full sheets of foundation. So much for that remedy. Its success depends upon the accuracy with which it is applied. But there are apt to be stings about it—bee-stings and other kinds.

"When we had finished this process," continued Miss Scott, "our forty colonies had shrunk to twenty-four. Some were so weak that we had to unite them with stronger ones. This is accomplished by sprinkling

both with peppermint, killing the poorer queen and setting one colony on top of the other. They gradually unite and form one colony.'

Adopting a New Mother.

"During June and July of the first year we requeened with Italian stock. The black bees are more vicious and are more susceptible to the disease as well. We secured them from various sources, and used only young vigorous queens. And right here is a truth that some people may not know. Everyone is versed more or less in the science of animal breeding. It is common knowledge that vigorous, healthy stock will transmit these qualities to their offspring. But how often does the lay mind think of these factors as applied to bees. But they apply just as truly, and results are obtained even more quickly, as a matter of fact."

Now some features of the process of requeening are not very pleasant for the outsider to think of, as the Scott Sisters soon discovered. First, the old queen must be hunted out and put in a little cage supplied for the purpose. She is left in it between the frames within the hive for six hours. After that she is taken out and killed and her body is crushed over the sides of the cage. The new queen is then installed in her place, and after the bees eat through a partition made of candy they accept her.

"We do not buy so many queens now," continued Miss Nellie, when her sister had paused. "We find we can raise these to great advantage ourselves. We select a colony that is the quietest and that gives the best returns and raise the queens from it. To do so we place sections of uncapped larvae in an upper super separated from the lower ones by a queen excluder. The bees think they are

queenless and promptly build queen cells in the upper section. Just before these hatch we transfer them to queen cages or the young one that hatched first would kill all the others as they emerged. Bees work on the principle that there can be but one boss in one home.

"We secure good drones for mating purposes from our second best colonies. In weak colonies only worker cells should be permitted to remain. It is always a mistake to attempt to rear stock from the weaker members of the apiary."

After the colonies had been treated for European foul brood and had been requeened the Scotts found themselves up against it in another way. The young bees started to think of housekeeping.

"But we didn't want them to swarm," said Miss Nellie. "Strong colonies always make large returns and besides it is too much trouble to catch the swarm when it gets away. We have always tried to prevent our bees leaving the hive. They only do so when they are too crowded or too hot or have poor ventilation. We have the hives situated in the shade of the orchard and during the honey flow we adjust the width of the entrances to meet conditions. Then we give the queens another super when the bees begin to crowd. After the honey flow we divide the colonies and thus secure the increase without weakening any of them during the honey season.

"The first fall when we took stock we found we were getting on. The foul brood had been checked, our apiary had increased to fifty-two colonies and had returned 3,400 pounds of honey. We felt like bee keepers already in the face of our difficulties. But we had become aware during the first season of the amount of study

that is necessary to make anyone a competent apiarist. It is technical work that requires a great deal of technical knowledge. One must understand the nature of bacteriological diseases and must have much practical experience in the actual work of running any apiary.

That fall the girls fed the bees a syrup composed of two parts sugar to one part water to prepare them for the winter. This was given in a pail or pan with a perforated bottom, which was placed in a super above the brood chamber. An eight frame hive with winter stores is supposed to weigh sixty pounds. When this weight was reached they were stored in the cellar.

"We have had no experience in outside wintering," said Miss Margaret. "We have a cellar well adapted to the purpose and have been well satisfied with it. The first winter we had eight colonies die, however, for some reason and we united four others. That left us forty to begin the second season with.

A Stitch in Time, of Course.

"Now you will hear a lot of spring management. So did we. But we have found that spring management really begins the previous summer; "an ounce of prevention," you know. And besides management at the proper time makes much of that usually given in the spring unnecessary.

"In August the colonies should all be examined. The old or failing ones should be requeened, and, indeed, I believe it is best to requeen every one. It is the best insurance policy for the bees I know of. During the last of September or the first of October the colonies should be weighed and fed up to the proper weight. A queenless and a starved colony sails in the same boat

and they sink together. The apiarist who allows them to exist has to go into the undertaking business very soon.

"In moving to winter quarters certain features make for success alone. We prefer changing them about dusk after a warm, sunshiny day. If they are restless we close the entrances with wet cloths, which are removed after all are placed. When the bees crawl out they remain on the front of the hive awhile and go in during the night. If moved earlier in the day they will rush around the cellar and become lost.

"By employing these methods the colonies are strong and healthy in the spring, and much work that would otherwise be necessary is avoided. However, there is much to do in any case. We try always to protect our bees from the cold. If we could only get at the weather man the task would be easy. But he will never listen to reason. Two factors are of most importance. In the first place, the apiary should be in a sheltered location, as behind a hedge, building, orchard or side-hill to keep out the cold. In the second place, a super filled with shavings or leaves should be placed on top of each hive to keep the heat in. Sacks or other coarse cloths should be tacked on the bottom to keep the filling from dropping on the bees. A combination of these makes an ideal spring condition.

"Soon after the bees are put out the hive bodies should be lifted and the bottom boards cleaned. We can do it in a few minutes, and it would take the bees days. They appreciate and repay many-fold any little kindness we may do them.

"If any colonies are short of stores we next feed them the sugar syrup

already mentioned, with one teaspoonful of tartaric acid to every twenty pounds of the mixture.

"Care must be taken, too, to guard against robbers. The entrances should be contracted to half an inch, with no large cracks allowed. If the robbers insist upon loafing around we wipe the crevices with a cloth saturated with kerosene or paint them with fresh paint.

"In case any colonies are queenless they must be given a queen. If any are weak they must be united, or if the queen is particularly good we shake frames of baby bees from other colonies, which go into the weak hives. The old bees in the fields always return to the old hives, and so they are not weakened harmfully.

"These features of the business did not come to us all at once. We learned by experience—by our successes and our failures. The last two years have been a repetition of the first. We have had fair success. Our brother has joined the bee company now, and we have ninety-four colonies this year. We are laying plans to extend our plant to large proportions. That will be a story the next few years alone can tell."

A Source of Revenue for Women.

"What inducements does bee-keeping offer to women?" I asked. "Is much nerve or muscle required? Are you afraid of getting stung?"

"Bee-keeping has much to commend it, and it is especially adapted to women. Yes, the bees sting. Good little bees! If the persons who get stung would stop fighting them they wouldn't be harmed. Fighters are not welcomed in the apiary, and I wonder how often the school teacher, nurse, stenographer and clerk are "stung" by their employers, leaving a hurt worse than that

caused by a self-respecting honey bee.

"The independence of the life is its charm for one of the Anglo-Saxon temperament. There aren't any employers to make life miserable for us, and the work isn't hard except for a few operations, such as extracting. We spend only a small part of our time with the bees—probably not over \$100 worth all told. Our running expenses amounting to about another \$100. Our receipts this season totaled \$1,060. So we didn't do so badly for beginning, relatively speaking.

"I wouldn't like to say how much a person could make on her investment. I know we can make a larger percentage than is promised on many mining stock propositions. And we can show the real money, too. For those who care to start I have only to say that they should consider location regarding honey-producing plants and markets. Then I wouldn't advise them to start on too small a scale. It is like starting a dairy herd with a young calf. Better get experience by working in an apiary for a whole season. Then a person can handle several hundred colonies if she wishes, and can begin with real money. It is a paying venture from every angle, for a colony will pay for itself in a good average season—if handled by an expert.

"As a last word I might give a slogan which if followed is sure to lead to success: 'Keep only strong colonies and young, vigorous Italian queens.'"

So this is the story that was told me in Northumberland. The hum of the bees to some ears was singing "fifteen dollars net a day." And I left the girls looking up automobile advertisements and which is more important—a reputation. It is widening each year. You will hear of them yet as owners of one of the largest apiaries in Canada.



Examination
Night-mares!

Notes on Winter Egg Production

ABOUT October 1st the egg production of the average farm flock rapidly decreases and in some cases ceases altogether. The chief reasons for this being that the old hens have gone into their moult and the pullets are either not sufficiently mature or are of a poor laying strain and consequently have not as yet commenced to lay.

To secure pullets for winter egg-production it is necessary to start with eggs from a strain that has been carefully bred for winter egg production. These eggs may be procured from such a source as the Poultry Department of the O. A. C. It is hardly within reason to expect chicks hatched in June to lay early in the fall, hence it is essential to hatch the chicks early, preferably between April 1st and May 1st.

In choosing a hen to set, take a quiet, medium sized one, separate her from the rest of the flock and place her where she will not be disturbed. Do this preferably at night. Set her in a good sized box, place a sod or some earth in the bottom, and cover with cut straw or chaff, being careful to fill up the corners of the box. Place two or three eggs in the nest and leave for a day or two. If the hen sets well take these away and give her the eggs which she is to incubate. Except when the hen is off to eat and drink the nests should be closed. This is necessary to prevent quarreling and consequent breaking of eggs. If any eggs are broken, however, clean the soiled ones with luke-warm water.

Feed setting hens only hard grain. Whole corn suits them excellently

because of its heating properties, but practically any of the common grains may be given with good results. Keep grain, grit and clean fresh water constantly before them. Provide a dust-bath in which insect powder has been mixed. It is also advisable to dust the hen with insect powder before setting her, again about the eleventh day and finally on the eighteenth day.

When the eggs commence to hatch leave the nest closed, if the hen appears alright. You should, however, remove the empty shells and, if the membrane has dried around the chick, you may help it out.

After the hatch is completed, remove the hen and chickens to a clean, dry, roomy coop. Do not feed the chicks until they are at least thirty-six hours old, then feed small quantities of food four or five times a day. After about ten days you may reduce the feeding to three times a day. Commercial chick feeds give very good results. If you feed a mash be sure it is barely moistened — never feed a wet one. For a drink use sour milk or butter milk.

When the chicks reach the age of about eight weeks, take them away from the hens, and place them in a colony house or some other suitable structure, and let them have the run of the cornfield or orchard. A colony house six by eight feet will accommodate 100 chickens until the cockerels are ready to kill as broilers. Under the above conditions of housing and free range the most convenient way to feed the chicks is to hopper-feed them. Hoppers are easily constructed and reduce the labor of feeding to

a minimum. During this period of rearing it is a good plan to paint the roosts and cracks with 3 parts coal oil to 1 part of crude carbolic acid, to hold the mites in check.

About the first of October the pullets should be moved into winter quarters so that it will not be necessary to move them after they once commence to lay. When this change from free range to winter quarters takes place it is essential to provide an abundance of fresh air and green feed. If these two essentials are not looked after much of the previous work will be lost. After about ten days have elapsed let the pullets outside at about four o'clock in the afternoon, and if they go back to the proper quarters at night, they may be allowed out in the day time as long as conditions warrant such a practice.

Owing to the fact, that pullets are not usually mature before they commence to lay, and that egg production does not take place until surplus food is at hand, it is necessary to feed them liberally. Do not be afraid of feeding too much. Egg produc-

tion is retarded more, in the majority of cases by under-feeding then by over-feeding. An underfed bird won't lay, because it keeps her on the move to secure enough food to supply bodily wants, let alone the securing of an extra supply for egg production.

Many fail in securing winter egg production because of starting with eggs from a poor laying strain, having poor incubating facilities or because of faulty conditions of rearing. Some of us can raise the chicks, but fail because of faulty conditions of housing and feeding the grown pullets.

The housing faults are usually due to the presence of drafts, dampness, impure air and lack of sunlight. The errors in feeding are usually due to under-feeding, feeding of very poor rations, and the absence of one of the following:—green food, animal food, drink, oyster shell and grit, sprouted oats, cabbage, mangels and alfalfa make good green foods. Butter milk serves best as a drink and an animal food.

Taxation

By CHARLES I. BROWN, '16.

THE raising of public revenues is a question to which most Ontario farmers do not give enough attention. Their attitude is much the same as that of a dweller in a rural community in the Southern States, who, when asked why he paid his taxes, replied, "I don't really know. I always look on it as a disagreeable business to be dispensed with as soon as possible. I just do it and that's all."

In Canada there are three different

taxes that everyone is obliged to pay either directly or indirectly. The first is the municipal tax, collected by cities, towns, villages and townships for the purpose of carrying on local government, making public improvements and partly aiding in education. It is levied by a direct tax on real estate and incomes. The taxpayer is more keenly interested in this than in the other two, as it is levied directly on what he possesses.

The provincial governments require

annually large sums of money for the purpose of running the business of the different provinces. The estimates for Ontario for the fiscal year 1913-14 are over nine million dollars. This money is not collected from the tax payers of the province. A large subsidy is received annually from the Dominion Government; large sums are raised by taxing the estates of deceased persons; license fees are a third source; and in addition the selling of timber limits, mining rights, and other national resources brings in large amounts. The Dominion Government's yearly revenue comes mostly from customs and excise duties, the Post Office and some other minor sources. The taxes collected from imports during the last fiscal year amounted to one hundred and fifteen million dollars. When we consider the sums required by the provincial governments and also the huge sums required for municipal purposes from one end of Canada to the other, we get some idea of the great burden of taxation borne by Canadians. When we further reflect that the population only numbers around the seven and one-half million mark, we begin to think that the remark of one man "that Canadians are the most heavily taxed people in the world" is not far astray.

Placing a duty on manufactured articles coming from foreign countries is supposed to serve a two-fold purpose—to provide revenue and to protect home industry. We will pass by the latter and consider the justice or injustice, as the case may be, of the former. Some people consider it a fine thing as it bears evenly on all the population and everyone is compelled to pay his quatum in proportion to the amount of dutiable goods used

whether he likes it or not. They argue that the rich man with his big income must pay much more money into the public exchequer than the man with a small income, as Dives will use much more dutiable goods. They also tell us that our manufacturers would be crushed if exposed to outside competition, and that the working man would be ruined, and other catastrophies occur. According to their ideas any other scheme for taxation would be rank injustice to all concerned.

These statements in favor of indirect taxes do not bear investigation. An indirect tax is simply one that can be shifted by the first payer from himself to others. This is accomplished by means of their tendency to increase the prices of the commodities upon which they fall. Their magnitude is thereby disguised. A French economist of the eighteenth century well described them when he said, "It is a scheme for so plucking the geese as to get the most feathers with the least squawking."

The cost to the real tax payer of indirect taxation is much more than the sum received by the government owing to the fact that all middlemen through whose hands the goods pass are enabled to collect compound profits upon their taxes. A tax upon shoes for instance, is paid first by the shoe manufacturer. It enters his prices and is recovered with the usual rate of profit from the wholesaler, who in turn collects from the retailer. The retailer collect from the consumers. Thus what appears on the surface as a tax on shoemakers is really a tax on consumers who pay an accumulation of profits upon the tax considerably larger than the

government receives. For collecting these taxes many expensive buildings and hordes of officials are needed. It favors corruption by concealing from the people the fact that they contribute to the support of government. It tends to obstruct production, thus crushing legitimate industry and establishing monopolies. If a voter fairly sums up the merits and demerits of indirect taxation there is no course open but to reject it in all its forms.

This brings up the question of direct taxation. When this subject is broached a howl goes up from the so-called friends of the laboring man and the farmer, as to the disastrous effect it would have on these two classes. All sorts of dire prophecies have been made by some politicians as to what would happen if land were taxed according to its value. One member declared that as the farmers held the most land on them the heaviest burden would fall. One of our cabinet ministers is fearful lest it breed anarchy, rend marriage asunder and lead to other calamities too numerous to mention.

Direct taxes fall into two classes; (a) taxes levied in proportion to the ability of the taxpayer to pay, and (b) taxes levied in proportion to the benefits received by the taxpayer from the public. Income taxes come under the first head. Land value tax is the only important one of the second class.

The first is evidently unfair, as it is not in accord with the principles of just government to tax in proportion to ability to pay regardless of benefits received. The latter, in spite of all objections, comes nearest to the ideal tax. Some men claim that voters are not taxed in proportion to bene-

fits received unless they pay taxes on every kind of property they own that is protected by government. Others object that it is impossible to measure the value of the public benefits that each individual receives.

Neither objection will have any weight if the fact is perceived that the value given by the public to each individual is fairly measured by land value taxation. To prove this we have but to consider that land values are higher in a country where good government prevails than where there is poor government, other things being equal. They are higher for instance on the American side of the Rio Grande than on the Mexican side. They are higher in a city during a period of good government than in a period of poor government. Building lots rise in value when the city authorities build pavements or put in water mains along a street. Good roads in farming communities mean increased prices for adjacent lands. In districts where co-operative societies are working successfully, the fruit lands rise in value. Everyone knows of instances such as these, and it is only reasonable that they should be so. It is easy to see that by putting a tax on land values, the taxpayer is only paying for benefits received from the public. Some landholders may raise the cry of class taxation which is rather out of place when we consider that under our present system of taxation they do not pay their fair share. Every class in the community is compelled to pay landowners for the public benefits that come their way; and in addition are compelled by indirect taxation to contribute to the support of government. It is no wonder that we have slum conditions

in our large cities, and a depleted population in the country districts. Landowners as a class enjoy the protection of the courts, of the police and fire departments, the use of schools, the benefits of highways and all other improvements. Where their lands are considerable (as in the case of New York, where nearly all the most valuable land is owned by a few estates) they pose as the real taxpayers. As a class they receive a pecuniary benefit which government confers on no other class of property owners. Therefore to tax all land according to its value is not to discriminate against them; it is to charge them for what they get from the public. Adam Smith's four classical maxims in regard to an ideal tax were:

That it bear as lightly as possible upon production.

That it be easily collected and fall as directly as may be upon the ultimate payers, so as to take from the people as little as possible in addition to what it yields to government.

That it be certain, so as to give the least opportunity for tyranny and corruption on the part of officials and the least temptation to law breaking and evasion on the part of the taxpayers.

That it bear equally so as to give no citizen an advantage or put any at a disadvantage as compared with others.

The indirect tax does not confirm

to any one of the above maxims. Direct taxes on land values tend to force land into use. They do not check production. They are easily collected and cannot be shifted from first payers to final consumers. They are certain. Land lies out of doors and cannot be hidden. Its value is the common knowledge of all. They bear more equally than any other as they fall in proportion to the pecuniary benefit each one receives from the public.

With regard to the "poor farmer," the pet friend of the political parties at election times, he have everything to gain and nothing to lose. Farmers at present pay nearly one-half the countries taxes and it is certain they do not own half the land values. One American writer states that in the United States farmers pay 50 per cent. of all taxes and own but one-tenth of the land values. At present the farming class is the largest consumer in the country. Therefore, they must contribute the most by indirect taxation. Farm land exclusive of all improvements (which would, of course, be exempt from taxation) is worth comparatively little compared to land used for community purposes, the value of which is largely made by those who toil. By this system a large burden would be lifted off the forces of production and would be placed where it justly belongs, on those who by gaining control of the sources of wealth, are enabled to live on the labor of others.



Snakes

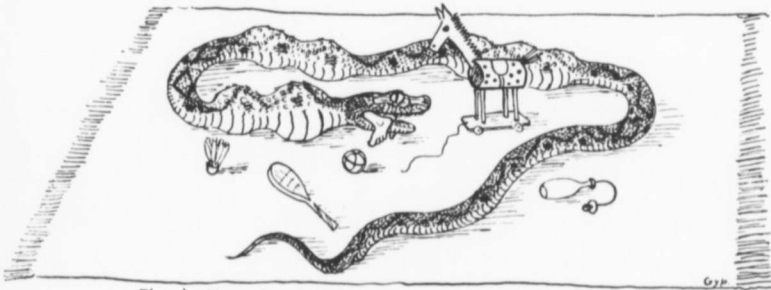
Their Use on the Farm and the Farmer's Duty Towards Them.

BY GYP.

KING David once got in a temper and made a very nasty remark about mankind in general. This was a little before my time, and I do not consider his remarks apply to me, and anyhow a man in a temper is careless about what he says. Do not imagine from the foregoing that I am attempting to guarantee the veracity of the following anecdotes; I will not vouch for them, I refuse to vouch. Vouching is an expensive

yarns may sound rather rummy to the uninitiated, yet "in vins veritas," you know. I have very little experience of alcoholic snakes, though I have seen many snakes badly pickled, therefore we will study only the plain snakes.

This claims to be an agricultural journal, and it is my intention as you can see from the sub-heading to discuss snakes as they concern the farmer. The chief way in which I have



The Python it is kittenish, the Python it is mild,
And makes a pretty playfellow for any little child.
The mothers of large families with claims to commonsense
Will find a Python well repay the trouble and expense

Apologies to Bad Boy's Book of Beasts.

business requiring lawyers, affidavits, signatures and other such red tape extremely trying to a man of fixed and indolent habits. But you can take the following statements as true: If you cannot, then take them as near true; and after the time-honored process of salinification we will leave it at that and proceed.

Snakes may be divided into two classes—alcoholic snakes and just plain snakes. Although some of these

found them to concern the farmer so far, is that said farmer, when he does see one of the poor innocent little creatures, jumps about four feet in the air and jabs it violently with a pitch fork. The fact is that the ordinary farmer is unsympathetic towards snakes—he cannot at a glance see the beauty and beneficence of his humble little friends. There are notable people like Lord Roberts and my mother-in-law who have a noted aver-

sion to cats and cannot bear to stay in their vicinity. Their dislike is very natural. The cat is a highly overated, deceitful and scratchy animal, as prolific as a bred-to-lay B. R., a much worse singer than the average trained canary, and steals more food from the larder that it does mice from the granary. But snakes! Whence that repulsion that man at large feels for them? They do catch mice, they never sing except in a whisper, and as for stealing from the larder or spreading rabies—well, I never saw one do so yet.

Brother farmer, it is my one ambition and goal in life to get you acquainted with snakes. Mistake me not, brother! Plain snakes. Yours is an unreasonable prejudice. Did not the first farmer of us all so fall to the fascination of the genus "derved varmint" that he robbed an orchard? And there is certainly no account of his wife lifting her skirts and screeching. It is true that the serpent is claimed to be the cause of our fall from grace, but that was when he had four legs, and it certainly seems malicious and nasty to go on hitting him now he is down.

You ought to know more about snakes before you condemn them unheard, you ought to get intimate with someone who really loves them and learn to love them too. I always loved snakes. From my early youth when I took off my hat to a lady at a picnic party and the snakes fell out, I have adored them. Being twelve at the time, I was naturally a misogynist and whatever the lady thought about it I didn't care; I only know that my uncle, sobbing, took me on his knee and caressed me with a few sprays of sweet betula (B. lenta-refer Prof. Howilt). He sobbed because I had

a baby hedgehog in my pants pocket, and he thought he had sciatica. He told me that he thought he would send me to South Kensington Museum, not as an exhibit of course, but to train for a curatorship.

Now being of a sedentary nature, especially at that particular period of my life, I used to roam the fields far and wide, always hunting snakes. Such was my love for them that I even took them to church with me, and as a cherubic choir boy I once saw a serpentine friend of mine meander gently down the aisle to the feet of the unappreciative school matron. I was so disgusted at the rank ingratitude that I disclaimed all ownership. I had nursed a serpent in my bosom and I disowned my friend from that day. Anyhow it was the matron's fault that I had a hole in my pocket. The only excuse I could make for the snake was that there might be some truth in the saying that snakes dislike the sign of the cross, and that the poor beast was appealing to the matron to take it out of hallowed precincts. But I never took snakes to church again, it didn't seem right. After that I used to race caterpillars along the choir rail instead, and my attitude of lowly reverence as I watched a close finish led to my being a great favorite with my house master, so that even from that date I owed peace and plenty to the direct instrumentality of a humble serpent.

Do not get a false idea of my countrymen's intelligence, but snakes of all kinds are a highly saleable commodity in England, which led to my friend Bromley and myself reaping a lucrative harvest from a manure heap. I do not mean we used it as fertilizer, we had been far too well brought up in farming districts to

waste precious time pitching dirt off a wagon tail. We used that manure heap as a snake incubator. It lay on the sunny side of a hedge, was highly odoriferous, greasy and moistly warm. To it all the would-be mother snakes of the district did congregate, and there throughout the summer months they would deposit in the warm filth great cluster of white parchment-like eggs.

The farmer who had at one time or another horse-whipped many a boy for trespassing, came upon us in great wrath one day, and seized our caps for purposes of identification and subsequent report; but when he began to empty our pockets for possible apples he fled in great haste to the middle of the field. We almost needlessly explained that we were catching snakes. The man was an imbecile. He actually thanked us for removing his sworn allies against mice and other vermin, and assured us that we were kindly welcome in his fields. That farmer had a disused root house, and what with that, which we used as a warehouse for captures and the manure heap, Bromley and I raised more snakes in that confiding farmer's land than I have seen in my life since. Of course we only did it for his good!

The greatest heroes imaginable at that time of my life were Captain Kidd, of buccaneering fame and a gentleman called Stradling, who was veterinary surgeon to the London Zoological Society and a herpetotomist. He has since died from the after effects of nursing a strange cobra that was peevish. I used to spend all my holidays in the reptile house of the Zoo, partly to worship Stradling from afar, and partly to see sulky serpents forcibly fed with live guinea pigs and

other little hot, warm, palpitating luxuries. The keepers were very friendly, and I started up in business as a purveyor of white rats.

White rats are not fierce or likely to fight with valuable snakes and hence are purchased by the Zoo in great quantities as snake food. I had got so far as raising fifty-two rats, and was about to realize on them at threepence apiece, when they got loose. I was worse than bankrupt for two of the wretches set up housekeeping in a wardrobe. They raised a large family in the bustle of my mother's very best dinner gown, and then must have fallen upon hard times, for the whole family died, and my mother, after wondering what was wrong with the plumbing arrangements, nearly got ejected from a fashionable restaurant. Although I felt personally sore about it for some time, you can again see that snakes were indirectly responsible for good. Bustles were not only a hideous and foolish fashion, but no self-respecting mother should leave an innocent child at home while she gads about at gay resorts. It was a direct warning against extravagance and a plea for the virtues of domesticity. Snakes then found my mother. I can never cease to bless them.

In the years that followed I kept several pet snakes, and my love had extended so far as to embrace every member of the reptilia. I bought an African chameleon. Have you ever seen one? In any case it is as well to explain that they have a strong prehensile tail, legs like a hair broom with a hinge in the middle, two eyes that work independently on the ball and socket principle, so that one eye can be reading the latest baseball items behind the creature's back,

while the other keeps up a roving interest in a blue bottle. Their rate of progression on the rare occasions on which they move anything but the revolving light-houses, is about four yards a week—if they are sprinting. Add to these features a head and body like a child's caricature of an amiable dragon, and a split-mouth grin that won't come off, and you have an African chameleon.

If you are hardup for a cigar-holder or want to say d— by proxy in seven languages without being audible, buy a chameleon—I can supply them—at \$8 apiece. A chameleon, especially if bad-tempered, will hold on to a cigar butt with his toothless mouth while you smoke the other end, till the cigar gets short, and the chameleon gets feverish, then he will open his ugly cavern of a mouth, revolve the light-houses and swear volubly in a husky whisper, better than any parson who ever slipped on an orange peel.

Now chameleons, as you know, change color, not so rapidly or effectually as scientific articles in the "Wide World," would have you believe, but they do change. Mine could change to any color from that of an azalea in full bloom in a variegated pot to that of the corpse-like hue of a cigarette ash. It always turned the latter color at night, except on gala days when it kept a few zebra like stripes, just to be 'chic,' you know. When it was hungry it tried to imitate a piece of raw meat with great success. Have you ever tried to imitate a piece of meat? It is very difficult to do so. Well into the lonely but peaceful home that contained the chameleon—Bob was his name—entered the serpent. From that day Bob became a reprobate, a habitual swearer. The serpent was a very active lithe, green, tree snake from German East Africa, with

an enormous appetite that stuck at nothing not even chameleons. Bob weighed quite as much as the snake, but the latter had picked up German habits and had a swallow on him that put Bob in the shade completely, that is, all except the end of his tail and the branch he hung on to. As long as there were frogs in plenty in the vivarium Master Greeny devoted his attention to them like a regular Frenchman, but no sooner were they off the menu than he would remember the country of his origin and have another go at Bob. He could swallow him alright but he couldn't swallow the whole limb of a dead tree that Bob was glued to, and generally when Bob was half way down he would start that horrid habit of swearing. It must have been ticklish for Greeny, who would sick Bob up instanter and go and sulk in a corner until he was ready for another try. When I say he would sick Bob up, I mean he would vomit himself off Bob, the latter being a fixture. Every time Bob went down he turned nearly white. It may have been temper or perhaps he thought it was bed time.

I eventually removed Greeny to other quarters and Bob died shortly afterwards, probably for want of exercise, or it may be of a broken heart—they had been so very intimate. During all the time I had her I never discovered 'Bob's' sex. He always seemed to look anxious, as if she wanted to lay something, but that may only have been a deep-laid plot to mislead me. I asked her several times but he never divulged the secret. Perhaps time will cast light upon this profound mystery. She, himself, never can.

I find I have four hundred and thirty-two more snake stories still left but as it is time I got to the agricul-

tural side of the question, I will only tell you a few more just to put you in complete sympathy with my subject before proceeding to the serious and practical side of it. Fate and a P. & O. liner took me to where the "spicy breezes blow soft o'er Ceylon's Isle." The writer of that hymn had never smelt smoked mango fish softly blowing in the Pettah bazaars or he wouldn't have been so keen on the spicy breezes, unless he was one of those silly, would-be humorous fellows. Ceylon fairly reeks with snakes, they swarm, they cluster. Some of the oldest residents admit to having seen one and even two, but "Baedeker's Guide" gives a list of seventy-two species mostly non-poisonous, and Baedeker surely ought to know. However that may be, I certainly saw snakes. I had trained myself and kept on training myself to see snakes, —I beg your pardon!—and if you like to come with me to a certain blue-thorn hedge at my last bungalow, called in the vernacular "Teldeniyagamahalinia - urugasmanhandiya." I will gladly put your hand on the sweetest little green asp you ever touched, just the color of the green of the hedge and with the dainties little blue jaws, matching exactly with the azure of the hedge blossoms. The first time I saw one, I was going to a temperance meeting and wore it as a buttonhole. A lady asked me to give her my forget-me-nots.

Among other snakes I once made the acquaintance of a king cobra, a very handsome fellow wearing spectacles like the rest of the tribe, and about 8 feet long. We had quite an argument about passing each other on a very narrow path. I would have been quite willing under ordinary circumstances to give him the wall and step off into the gutter, but it was

such a beastly steep step of about 400 feet down on one side and 323 feet up on the other side, that I didn't feel like the exertion. It was a hot day even for that latitude and he seemed dreadfully irascible and dictatorial. I thought he might be fractious with the heat or teething, or something so I opened my green sun umbrella and offered it to him. The nasty fellow was so ill-mannered that he snatched at the rim and refused to let go. You never know where you are with Royalty. Just to show I bore no malice I spun that umbrella and gave him quite an exciting merry-go-round ride. He finally let go as he had urgent business in the next district down, he went whistling on his way, evidently quite satisfied, and that was the last we saw of each other. Now if you meet a King Cobra or even a republican puff adder in the street who seems a stranger in the city you will know how to keep him amused.

Bad times lay in store for me however. I suddenly and unaccountably became unpopular, I never have been able to understand why. I suppose I must have unwittingly offended a debt collector, the Lieutenant-Governor, or somebody else in authority. I had pledged my heart to the adorable Nelly. She was a dazzling, I might almost say an irridiscent, brunette. She had liquid amber eyes that would look any man answeringly in the face, and the slimmest little bit of a waist that ever infatuated man got an arm around. She only weighed sixty-six pounds, though she was very tall for her weight, and oh! the grace of her, the light sinuous movements of her lovely form. Every evening she would cuddle up to me and when I put her to bed at night it wrung my heart to leave her. And to see her swim! Every morning we would

bathe together in the tank and when tired we would float upon the surface, her lovely classical head upon my shoulder. One day a friend came to visit me; it was the beginning of the end. He brought a little dog with him. My darling Nellie was in a new dress and looked charming. She took a fancy to the dog at once and when my friend was not looking concealed it in her person. It was a nice plump little dog. My friend on leaving the house said "That beastly dog must be lost." I agreed with him and we parted. I reproached Nelly, but she simply would not rid herself of the animal.

There were exceptions but as a rule she was very fastidious. She had been used to a free and roving life since her infancy and her appetite without sufficient exercise was capricious and as a rule had to be tempted with pullets and young liverets. Alas, I fell ill (about 30 feet with complications, while out driving). I confided Nelly to the charge of my friend. He must have suspected her of stealing Fido, for though not cruel to her, he was very inattentive and offstandish. No more did she get young hares and dainty chickens. My friend would not permit her to leave her room. She moped. She missed her bath and became verminous, and the daintiest, most affectionate of creatures died without a friend beside her to smooth her brow. My suitcase is a lasting memento of her. The suit case manufacturers said she had the nicest skin they had ever seen on a python.

Are you converted yet, friend farmer? Will this pitiful tale of a blighted life not move you? Then, Philistine, I must descend to sordid and practical details. You are only out for the dollars. Do not kill

snakes, they are your friends. They kill many mice and rats. I have found six field mice in a snake less than eighteen inches long. They seldom kill toads, who are also your friends, unless very hungry indeed. They cannot possibly suck your cows dry, though such a rumour may have been started by someone seeing a snake leave the vicinity of a dripping udder. No snake found in this country could hold a quart of milk if you injected it into it with a force pump. No cow would allow such abrasive attentions as three sharp rows of tiny teeth would pay to her. A snake only strikes to about the height of one-third its total length, hence you are safe even against poisonous snakes if you wear leggings. Very few snakes are poisonous. A snake will always run away when it can unless you tread on it before it has time to, and if anybody trod on you you would bite too.

If you are good to them they will come and live in your house and play with your children. And here is a tip for farmers in the dry belt. If you want something new on your table try snake as a substitute for fish; those who have tried it speak enthusiastically about the dish. How would baby snakes do, dished up like macaroni?

Very few people get bitten by snakes, and if snakes do polish off 20,000 Hindoos yearly they are merely carrying out the principles of Malthus. Don't spend a sleepless night on account of even the worthiest 20,000 Hindoos. More than 100,000 of them were drowned in a flood at Allahabad a few years ago; it didn't affect you or me or India very much. There were still about 144,000,000 left to prevent the family dying out.

The Physiology of Sap Flow

With Special Reference to the Sugar Maple

By H. S. FRY, '14.

NEARLY everyone is more or less acquainted with the phenomenon of sap flow in the maple during the changing weather of early spring. The result of this "sap flow" is our sugar industry, which in the States is valued at more than two and a half million dollars annually, and represents a product of 45,000,000 pounds of sugar. Nearly everyone too, has heard and perhaps witnessed the so-called bleeding of many trees which occurs when such trees are wounded in early spring. This bleeding is often an argument against pruning at certain times of the year because of a supposed tendency on the part of the trees to bleed to death. In the grape this tendency to bleed is very marked, in the apple and pear less so, while in the stone fruits, peaches, plums, and cherries, bleeding is expressed by an exudation of gum near the wound or cut, after the period of growth within the tree has well advanced.

It is doubtful whether apples and pears are injured materially as a result of this bleeding, but I believe the vine occasionally is, and it is for this reason that grapes are pruned very early in spring, and in fact all through the winter. Bailey says in "The Pruning Book," that: "Pruning in the growing season exposes the plant to bleeding

—although it may be said that injury rarely follows. It is said, however, that the sap sours upon exposure to the air and injures the bark and cambium about the edges of the wound. Although this is a very common notion, I have looked in vain for a number of years for a single confirmation of it. Fruit trees rarely bleed to any extent, and on trees which do bleed, it is doubtful if this injury follows. The Japanese Walnut bleeds profusely. On the 10th of April, 1896, I cut a limb two inches in diameter from one of these trees. The sap ran freely and kept the bark wet for two weeks, for a distance of nearly two feet below the cut. At this writing, nearly two years later, the wound is healing well from all sides, and there has never

This article was read before the Senior Horticultural Society of the O. A. College by the author, one of this year's specialists in Horticulture.

been the least injury from the bleeding. Moist wounds, however, do not allow of the efficient application of dressings." Again he says with special reference to the grape: "Grape vines may be pruned at any time during the winter. It is the practice among most grape growers in the north to prune as time permits from November to late in February or even in March. The sap flows very freely from cuts made in spring and early summer, causing the phenomenon known as "bleeding" or in Europe as "weeping," and in order to prevent this loss, pruning is stop-

ped six weeks or more before the time at which the buds usually swell. It is yet a moot point if this bleeding injures the vine but it is a safe practice to prune early."

With regard to the moisture conditions mentioned by Bailey as retarding the healing of wounds. Sorauer writes as follows:

"The precautions we have to take to avoid the collecting of moisture at the cut end of a branch will also indicate that we should not choose as a season for pruning the time when plants bleed, that is, force out much water from their tissues. Although the wounds will be found to be provided with means of preventing the giving off of water, we often see old wounds giving off a considerable amount of water. A cut is least dangerous when inflicted upon a leafy shoot, first of all, because owing to the transpiration of the leaves, the shoot will not contain sufficient water to cause an accumulation of it on the cut surface; and secondly, because the leaves will at once supply sufficient food material for the healing of the wound. If one is forced to prune during the bleeding season, cloudy and cool days should be chosen, as the pressure of sap is least on such days. Prune as early as possible, trees producing strong shoots, which as a rule are rich in water, and therefore would suffer most from an excessive loss of sap. The consequences of such a loss would be a retarded period of flowering, irregular ripening of fruits, and an insufficient ripening of the wood."

So much and very little more may be said with regard to the sap flow of fruit trees. The remainder of this paper must of necessity be more or less of a digest of Bulletin 103 of the

Vermont Agricultural Experiment Station, entitled "The maple sap flow." Other literature on the subject is sadly lacking, but for a general and incomplete account of the action and conduction of water given in even the best of text books on the subject of Plant Physiology.

For this reason then, the remarks which follow are drawn almost solely from investigations relative to the conditions and factors entering into the production of the maple sap flow.

It seems only fitting at this juncture to make some mention and brief outline of the gross morphology and physiology of woody stems in order to better understand the action of the various factors (so far as they may have been estimated), in producing flow of sap.

Woody stems show division of the system into inner or heart-wood and outer or sap-wood. They are termed respectively duramen and alburnum, and appear in the maple reddish brown and yellowish white in color. The sap-wood contains the living cells and in the maple is thicker than in many trees, averaging perhaps six inches in thickness in a trunk thirty inches in diameter. It is the sap conducting tissue of the tree while the cells of the heart-wood are lifeless and almost if not altogether functionless except for purposes of strength. The woody tissue consists of closed cells and vessels packed together with no intercellular spaces in the maple, and consequently all the food substances, water, soluble matter (sugars, etc.), solid substances (chiefly starch) and gas are confined with the protoplasm within these firm walled cells. All the water enters through the roots but up to the present time no satisfactory explanation

of the ascent of water in large trees has been determined.

Suffice it to say in this connection that according to the best investigators of Plant Physiology the osmotic pressure generated by the roots of trees is not sufficient to force the water from cell to cell to the great height reached by some of our large trees. Furthermore, it has been a recognized fact for some time that water does not rise from cell to cell whether by osmosis or any other method but through special conducting organs called vessels, which are long and large, in some of our tallest trees being quite wide, to prevent the retarding effect of friction.

Neither can the rise of sap be due altogether to the sucking action of transpiration, which is exerted in the giving off of water. This sucking action and osmotic pressure are no doubt compensating factors in the rise of sap, but even combined are not sufficient to raise water even one-quarter the height of some of our trees. Recent work has supported the conclusion that protoplasmic activity of the living cells about these conducting tubes or vessels has to do with the forcing of sap upwards through the stem, but in what manner the protoplasm acts has not yet been determined.

The sap is essentially a very dilute solution of sucrose carrying also minute quantities of proteids, mineral matter more especially lime and potash, and acids, especially malic acid. One investigator has determined that even in 400 grams of sap there were but bare traces of any organic materials, water being the principal constituent of the sap. The sugar content of sap depends very largely on the leaf area of the previ-

ous year, since the starch and sugar is only manufactured under the influence of sunlight, and the leaf area of trees as well as the amount of sunshine varies considerably from year to year.

Excess of food gathered the previous summer is stored for use the following spring in the sap wood, particularly in the medullary rays, the storage of cells proceeding from without inward. Whether or not the starch thus stored up in the sap wood is sufficient to account for all the sugar and physiological changes exhibited in trees in the spring, is a matter of some doubt, and some scientists advance the theory that "mannan" as well as starch is stored as a reserve food. With regard to the transformation of starch into soluble carbohydrates, it may be safely concluded that these changes are produced by the action of ferments secreted by the protoplasm of the living cell.

The primary factor in sap flow in all trees is the water content of the tree and correlated with the water content is the gas content.

Water comprises variable percentages of the total weight of a tree. Different species contain different volumes of water and the same tree at different periods of the year will contain different quantities of water due largely to the wasteful action of transpiration upon the water absorbed by the roots. Variations in water content depend on the following:

- (1) The amount of water taken up by the roots.
- (2) The rate of transpiration from the leaves. These conditions are in turn dependent on climatic conditions, the nature of the soil and the part of the tree.

The outer layers of sap-wood are generally credited with playing a larger part in the ascent of sap than the inner layers, and thus they show a greater and readier response to absorption and transpiration than do the inner layers. They are the first to become highly charged with water in the spring before transpiration commences and the first to show a marked decrease in water content after it commences. During the growing season after February or March the inner layers contain more water than the outer layers, until June when the percentage content is nearly equal and remains so during the summer until late fall, when the outer wood gains the ascendancy.

Percentages of water content of sundry trees:

| | April 8 | May 1 | May 23 | Aver- age | Change |
|--------------|------------|----------|-----------|--------------|--------|
| Maple | 38.8 | 30.8 | 28.5 | 32.0 | -10.3 |
| Ash | 42.0 | 42.3 | 39.9 | 41.4 | - 2.1 |
| Beech | 37.9 | 42.8 | 44.5 | 42.0 | + 6.6 |
| Birch | 41.8 | 61.4 | 66.2 | 56.5 | +24.4 |
| Butternut .. | 37.9 | 42.4 | 45.0 | 41.8 | + 7.1 |
| Elm | 45.4 | 44.9 | 38.4 | 42.9 | - 7.0 |
| Hornbeam .. | 44.4 | 55.8 | 37.8 | 45.8 | - 8.5 |

The different percentages of water present in different trees are to be noted in the above table and three classes of changes in water content deserve special mention.

(a) A continual decrease (Maple, Elm).

(b) A continual increase (Beech, Birch and Butternut).

(c) An increase followed by a decrease (Ash and Hornbeam).

The significance of these changes with reference to sap flow is the fact that the divergent changes correspond very closely in all probability to the leaf-forming periods for the different trees, and we notice that the maple and elm contain their greatest

amounts of water nearer the time of year when we have alternate freezing and thawing, than do any of the other trees. The value of this will be dealt with more fully in the discussion of temperature changes which follows:

Thus we may conclude from the above that the maximum quantity of water within a tree occurs just prior to the beginning of the transpiration process, or in other words, just before leaf-formation appears. A greater volume of water passes through the tree during the growing season than at any other season, but less stays there. Sap flow is not directly dependent upon the water content of the tree, as is evidenced by experiments which showed that the greatest amount of water is contained fully a week after the sugar season closes, and that more sap flowed at the beginning of the sugar season than at the close. The minimum water content of the maple occurs in May or June, only a month or so after the maximum was reached.

Gases, composed of oxygen, nitrogen and carbon dioxide are usually contained in all woody tissues and averages of analyses at different dates of small maple branches show the following in percentages:

Cell wall structure, 36.4; gas, 24.4; water, 39.4.

Broadly speaking, the water and gas content vary inversely with each other, and it has been calculated that at sugaring time, the gas content of a tree is equal to fully one-quarter of the wood.

In a tree such as the maple, which contains no intercellular spaces in its wood, the water and gas must all be held within the cell and the cell walls act as wet membranes, which are less pervious to gas than to wa-

ter. The water of these cells as has been shown is easily drawn out by transpiration, etc., while the gas must remain within the cell except for small quantities which escape dissolved in water. Thus we see that the amount of water in a cell varies greatly while the amount of gas remains practically constant. But not so with gas tension. "Boyle's Law" states that a given volume of any gas at constant temperature varies inversely with the pressure. We also know that gases vary with changes of temperature, due to the expanding and contracting power of heat and cold. Thus in considering gas tension, we must take into consideration the fluctuations of temperature as well as the water content of the cell. Since more water is contained in a cell of maple wood about the time of the maple sap flow than at any other time of year, then we can easily see that the gas within the cell takes on a correspondingly smaller volume at this time. Added to the pressure produced by increased water content at this time, we have that produced by temperature changes, the alternate freezing and thawing so necessary to a good run of sap.

Different tensions in different parts of a tree are the result of rapid changes of temperature, while slow changes result in a fairly uniform gas tension. Internal gases during the greater part of the year are in a state of suction, that is, they exert a pressure less than that of the outer air and this pressure may sink to one-half or one-third of the atmospheric pressure.

From the above it is clear that gas tension must be considered in any explanation of bleeding pressure, but nevertheless, it is entirely inadequate

in accounting for such pressures as are found in the maple.

The greatest oscillations in pressure within a maple tree occur at the time of the "sap run" or "sugaring time." These continue until the buds begin to swell, when pressure decreases and during the growing season, the tissue is in a state of suction which condition obtains almost continually until mid-winter. From then until spring, except for certain times earlier in the period, when positive pressure may be shown, the pressure is nearly nil, neither positive nor negative pressures being at all marked.

Sap ceases to flow during a cold night or whenever the temperature falls below 0 degree C. and coincident with a rise above 0 degree C. and renewed sap flow, an increased pressure is always noted. What causes one, produces the other, and while perhaps not the sole cause of these variations, yet the immediately exciting cause is the fluctuation over and below 0 degree C. Therefore the relation of temperature to pressure is very important. Daily periodicity in bleeding cannot account for the beginning of sap flow in the morning when the temperature and pressure increase, and the corresponding cessation of flow at night, accompanied by decrease in pressure and temperature, because where temperature conditions are favorable, sap flow continues throughout the night. Further evidence of the relation of pressure to temperature is afforded by placing gauges on trees at different heights in such a manner that sunlight reaches the top, sometime before it affects the lower part of the tree. In this case pressure is recorded first in the upper gauges. It is very probable also that

a very few minutes of cloudy weather following a period of sunshine, will give rise to a noticeable decrease in pressure, showing that the tree responds very readily to external conditions. The relation of temperature to pressure, however, is not always the same, and these variations in relationship are most noticeably in evidence when temperature changes from below 0 degree C. to above 0 degree C. as compared with a temperature change from a point somewhat above 0 degree C. to one still higher or from one below 0 degree C. to one still lower. In the former case, that is from one side of 0 degree C. to the other, the pressure variations most closely resemble the temperature variations. During the latter part of the season, fluctuations in pressure gradually grow less, and finally cease altogether.

The effect of alternated pressure and suction is to produce a sort of pump action whereby the pressure exerted during the day forces the sap out of the tap hole from the adjacent tissues, and these depleted tissues are again filled during the night by the sucking of further material from other parts of the plant.

A few notes with regard to pressures exhibited in different parts of a tree may be of benefit at this juncture, although a full discussion is altogether out of the question.

Pressures are exerted in the root, trunk, branches and the inner and out sap wood.

Root pressure is no doubt commonly understood and it is sufficient to say that there appears to be a daily periodicity in root pressure, probably ascribable to physiological activities of the living root cells, since temperature changes would be inadequate.

Root pressure, however, is not sufficient to cause the maple sap flow, because the normal condition of the root seems to be a state of suction, nor is root pressure to be credited with any appreciable part in the ascent of sap from root to trunk at this season.

Variable pressures in trunk and top may be obtained but the trunk shows pressure first, and for a longer time than does the upper part of the tree. Generally speaking, the higher in the tree pressure is taken, the less it is.

Suction and pressure are also exhibited to a more marked extent in the outer tissues than in the inner tissues and the outer tissues are the quicker to respond to temperature changes.

Up and down and lateral pressures are also shown, the latter, however, to a very limited extent, owing to the fact that pressure is not readily transmitted through woody tissues in a radial direction. Early in the season of sap flow and on good sap days, the greatest pressure and flow are from above downward and vice versa. The causes of this are probably as follows: Since good sap days follow a good freeze, such low temperatures have developed strong negative pressure within the tree and sap has been drawn from the roots into the trunk and distributed according to mass. Sudden rises of temperature cause then, the quickest and strongest development of pressure in the parts most quickly influenced by this rise of temperature, and the result is a downward pressure. Moreover, the mass of tissue is greater above than below the tap hole and this mass also influences to a marked extent the amount of sap, while besides these factors, we must remember that the vast root tissues have been depressed by suc-

tion of most of their sap during the preceding night so that mass, temperature and suction affect on roots produce a greater downward than upward pressure and flow. In poor runs, and late in the season, the reverse conditions are true, and greater upward flow results.

The rate of sap movement does not depend solely on pressure. It corresponds with the amount of pressure providing there is a sufficient amount of sap within the tissues. Thus the greatest flow occurs when the greatest amount of sap is contained within the tree, combined with the greatest pressure.

From the foregoing discussion relating to the behavior of sap within the tree and the development of pressure together with correlated factors in sap movement, we are now prepared to turn our attention to a consideration of the causes and significance of bleeding and its probable relation to sap flow.

Bleeding may be considered to be the expression of sap movement throughout the whole trees. As nearly as I can make out from a careful study of the subject, normal bleeding as it occurs within the tree is synonymous with at least a part of the phenomenon called "ascent of sap." This seems to be the idea expressed by Jost in his chapters on the Conduction of Water.

It has been shown that gas tension cannot be credited with the power of producing all the phenomena observable at the time of sap flow in the spring, and attention has also been called to the part which is probably played by the living cells.

Jost gives a division of bleeding into two classes, local and normal, the former occurring generally in all cases

where amputation of leaves or branches has occurred. While normal bleeding is probably associated with the root only and is more like the ascent of sap within the tree, local bleeding arises from cells newly formed as a result of the wounding. Coincident with these activities, the lumina of the adjacent vessels may become impermeable to water, also to the entrance of various infiltration products, and consequently a marked pressure purely local, is set up. Several conditions are necessary for bleeding to obtain, the first and most general of which is the occurrence of living cells in close proximity to the vessels. Death of the plant stops all further bleeding as can easily be demonstrated by removing the oxygen supply or treating the plant with chloroform. Hence we may deduce the fact that bleeding is a vital phenomenon. Other conditions have been mentioned previously, namely a certain temperature, which generally speaking, is near 0 degree C, and an abundant supply of water. Bleeding or perhaps a better and more simple term would be "exudation of sap," takes many forms. It may occur in the form of drops from the apices of leaves. Many plants show this phenomenon particularly at times when transpiration is loosened and as much as 180 drops per minute may exude from a single leaf. All liquid substances excreted by plants come under the head of exudation of sap, whether secreted by insectivorous plants for digestive purposes or in the floral organs where excretion of sugar in the nectaries serves to attract insects. Certain fungi also excrete liquid substances often rich in organic materials.

The cause of bleeding has called

forth a number of hypotheses of variable worth, the most commendable one being that put forth by Pfeffer. It is well known that in a living cell different degrees of concentration of the cell sap may arise on different sides of the cell, and if such is the case, the inflow on the side of greater concentration must still exceed the outflow at the moment when equilibrium has been already established on the other side. Such a condition must give rise to bleeding or a unilateral outflow of water under a pressure corresponding to the difference in concentration on the two sides of the cell. If this outflow does occur and is maintained within the plant, then an expenditure of energy is necessary on the part of the living protoplasm, and this is in accord with the fact that bleeding is a vital phenomenon as shown already in this paper.

Bleeding as a vital phenomenon is of course injurious where external, but tests have shown that the maple tree can sustain a loss of about 9 per cent. of the sugar content of the tree, or about 3 pounds of sugar without serious injury. This in terms of sap is equal to about 60-80 gallons.

Nevertheless, loss of sap by external bleeding is injurious as is evidenced by the fact that internal or normal bleeding is evidently significant of a desire on the part of the plant to bring about the fullest injection of water in its tissues, possibly in order that the severe drain on the root system at the time of leaf formation may be ameliorated as much as possible. Young leaves cannot regulate transpiration as well as can mature leaves, and furthermore, they suffer more quickly from an inadequate water supply.



A Matter of Rank

As a magnificent vessel, one of the great South African liners, was steaming into Southampton harbor, a grimy coal lighter floated immediately in front of it. An officer on board the vessel, observing this, shouted:

"Clear out of the way with that barge!"

The lighterman, a native of the Emerald Isle, shouted in reply:

"Are ye the captain of that vessel?"

"No," answered the officer.

"Then spake to yer aiguals," said Pat; "I'm the captin of this."

QUERIES

Tillsonburg.

Query Editor:

Dear Sir,—How many spray applications should the ordinary bearing apple orchard receive? When should these be given?

Ans.—Three applications for most districts but four for the St. Lawrence valley, and for seasons when the month of June is wet and cold.

The first should be any time from one week before leaf buds burst up to the time when the leaves are the size of a ten cent piece. The second just before the blossoms open beginning with the earliest varieties. The third just after the blossoms have nearly all fallen. If the fourth spraying is necessary apply about two weeks after the third.

R. W.

Query Editor:

Dear Sir,—Should young apple trees be sprayed?

Ans.—Yes. The object of spraying is not merely to give clean fruit but to keep the trees healthy by warding off biting and sucking insects, and diseases that attack the foliage and trunk. They should receive the same application as old trees.

Ridgetown.

Query Editor:

Dear Sir,—Can you tell me what causes the black spots on the leaves of my roses? Many of the bushes have all the leaves spotted in this way, and some of the lower leaves have fallen off.

Ans.—Your roses are attacked by

a fungus disease known as the rose-leaf blotch, which is caused by the fungus *Actinomyces Rosae*. This is a very common fungus disease and is found to a greater or less extent every year on roses. In severe attacks the bushes are often nearly defoliated by the disease. The remedial measures for the disease are gathering up and burning all the diseased leaves, and trimmings from the rose bushes and spraying with lime sulphur. The first spray should be given early in the spring before the buds open with lime sulphur of a strength of 1.030. This should be followed by three or four other sprays at intervals of about ten days after the leaves open, using concentrated lime sulphur strength 1.008. If the disease appears later, when the roses are done blooming, the bushes should be sprayed again with lime sulphur of the 1.008 strength. It requires very thorough spraying to control this disease. Even the most thorough spraying will not entirely prevent the disease although it will very much reduce the injury.

Galt.

Query Editor:

Dear Sir,—The leaves of my hollyhocks are attacked by a rust. Will you please advise me how to control it?

Ans.—The leaves of your hollyhocks are attacked by the holly-hock rust, *Puccinia Malvaceorum*. This is one of the worst troubles with which growers of the holly-hock have to contend. The remedial measures are:

First, the destruction of the diseased parts of the plants in the fall, as the spores survive the winter upon them and produce infection again in the spring. Second, Picking off and burning the leaves first showing signs of the rust and thus preventing its

spread. Third, Spraying thoroughly with Bordeaux as early in the spring as possible. Fourth, As far as possible all the wild mallows in the vicinity of the holly-hocks should be destroyed as they act as a host for the rust.

MACDONALD

Kansas City and Return

THOSE who were privileged to attend the International Convention of the Student Volunteer Movement at Kansas City, Mo., look back on their experiences with genuine pleasure. Not the least part of their enjoyment was the journey to and from that great railway centre of

Toronto early on the morning of Tuesday, December 30th, 1913, it contained a cosmopolitan crowd of young men and women from all the colleges of Eastern Canada—men from Pinehill College, Halifax, N. S., chatted with students from Toronto or McGill. The delegation from the smaller



Happy

the Middle West, coupled with which was the opportunity of seeing one of the most typically American cities, of which the United States can justly boast.

When the delegates special left To-

colleges held aloof for some time, until the general atmosphere of the "delegates' special" seized them, and forgetting their dignity, they mingled with the masses.

For queer happenings, and random

friendships, for humorous situations and general incongruity, travelling in trains stand an easy first. By the time Hamilton had been reached, everyone had wakened up, and was willing to be amused. The nervous, shy people who had been looking out of the windows, and vainly trying to get inspiration from the snow-clad landscape, to keep up a hopelessly vague conversation, suddenly threw their reserve aside, and became their natural selves.

College yells, and old football songs, were sung with remarkable fervour and surprising harmony. Jokes were passed round which were as old as the hills, but ever new, while at a respectable distance, some cheerful spirits, of a theatrical turn, struck up the refrain of "There's a girl in the Heart of Maryland." Some played games which took the time by the wholesale, while the more sober sat in corners delving deeply into the insane philosophy of Bernard Shaw. So quickly did the time pass, that Brantford and Woodstock came and went, each place adding its quota of delegates, who received a warm welcome.

With a few necessary stops, Port Huron came, and our "special" glided swiftly into the State of Michigan, and the land of the Stars and Stripes. There was now the porter with his sanitary drinking cups; a legal necessity in this unnaturally clean state; and the filthy hand towels disappeared as if by magic. In the meantime, the rather flat and drab scenery was swiftly flashing past; a rather monotonous succession of fields and towns, and farmhouses. The monotony was pleasantly broken by halts at divisional points, where the whole train-load tumbled out to astonish the natives with organized college yells and war-

whoops. We might mention as an outstanding example, the rather disgraceful parody on the good old "Rickety, Rackety" yell of the O. A. C. which commences:

"Carrots, turnips, beets and squash!
O. A. C.! O. A. C.! farmers——" but you possibly know it, so why complete it?

Another yell, manufactured en route, and first hurled into space at Battle Creek, runs thus:

"Tapioca! tapioca! Sago and rice!
Cinnamon! cinnamon! curry and spice!

Currants and raisins! we'll ever sing
Household Science is just the thing!
M-A-C-D-O-N-A-L-D."

With these and kindred diversions, we reached Chicago, early in the evening, to find sleepers just across the track, and into these the delegates speedily found their way. With a perfect organization working smoothly, all went well. "Atchieson, Topeka and Santa Fe" called out the waiting brakeman as we climbed aboard. So we bade farewell to the good old Grand Trunk and sought our berths.

Night, on the Santa Fe railroad was a memorable experience. In the darkness, we rocked around curves and dashed through sleeping towns, all the while slumbering fitfully. Before we seemed properly berthed, they were shouting "Kansas City," and a hasty scramble for clothes and baggage followed. In a somewhat dazed way, the delegates descended from the cars, to find themselves in the cold, grey, cheerless atmosphere of a strange city and a strange land. Towering up behind the railway depot was a great mountain; to the sides of which houses seemed to be clinging. It proved later to be the old bank of the Missouri, but in this misty morn-

ing atmosphere, the Scotch among us felt certain that we had arrived in Edinburgh and that we were surely standing beneath the Castle Rock.

Then the machinery of organization began to chug again, with its rhythmical precision. We were hurried in street cars, and rushed by overhead and underground railways to an uptown office, driven like sheep into wooden pens where we registered by numbers, checked our baggage, got it again on the other side, and emerged breathless but triumphant, with a Boy Scout literally pulling each one of us along to some destination which was near or far. We were thrust into the homes of the most kind-hearted people in all Kansas City, and got there in time for breakfast. Some of us are wondering yet how it all happened.

Kansas City (how we wish it were possible to render adequately the lazy drawl of the "Americans") is a city of 400,000 souls, just on the border between the States of Kansas and Missouri, with the great Missouri river, which is really the upper valley of the Mississippi, flowing through it: to think of it now, is to think of a city of hills and hollows, of beautiful boulevards and narrow, congested streets; of beautiful, palatial homes and miserable hovels. Truly it is a city of contrasts. They have a Union depot which is so inadequate that the Toronto Union seems a veritable heaven by comparison, and yet they have under construction a new depot, which is to cost the city millions of dollars. In Kansas City, the newest and oldest stand side by side; the worst and the best are next-door neighbors. The city is justly famous for its parks and boulevards. "The Paseo" which goes the entire length of the city is a cre-

dit to the municipal authorities, while the Terrace Park, which is a bold outlook over the old Missouri Valley, gives a picturesque effect wholly lacking in the everyday, flat American city.

It took the delegates some time "to know the city," with its avenues going north and south, and its numbered streets east and west, but after looking over a map, they could find themselves on Main, or Walnut, or Grand, or Broadway or Wyandotte. These, by the way, are all names of avenues—remember them when you go to Kansas City.

You will ask what we noticed there and what impressed us. To that we reply with obvious flippancy that we noticed the national nature, the niggers, the nasal drwl, the mules, and the nature of the Kansas City people. More seriously, however, we realized that some sixteen different trunk lines of railroad which contribute to the enormous traffic, passed through or are centred in this great metropolis of the Middle West. We knew that its park system is perhaps unsurpassed by any other American city of its size, Swope Park being known far and wide over the United States. We admired its Cliff Drive, which gave a distinctive character to the entire city and we admired also its people.

The progressive spirit of the people is embodied in these verses, taken from the Baltimore Sun:

There's a Kansas City way,
And it's in the words they say—
"Get her up, get her down, get her
out";

It's a shibboleth that rings
Where the voice of progress sings—
There's unconquerable magic in the
shout.

It's her challenge to the times,
 It's her messenger of rhymes,
 The battle cry that stifles every doubt
 And wherever duty lies,
 With her heart and soul she cries:
 "Get her up, get her down, get her
 out."

To the people of Kansas City, the delegates owe a debt of gratitude for hospitality and unflinching courtesy which they can never hope to repay.

We left Kansas City at 1 a.m. Monday, January 4th, after an exciting crush in the truly wonderful Union Station. Even yet we seem to hear in our dreams the raucous voice of that train despatcher who stood on a crazy balcony and announced the outgoing trains through a huge megaphone.

Everyone was weary but no one would admit it. Everyone was really out of patience with the shouting, elbowing, jostling crowd, but showed it not. Some had sat down in despair, when suddenly the man with the megaphone began again with his monotonous monosyllabic message—"Special, Sante-Fe to Chi-ca-go, for Tor-on-to del-e-ga-tion, also for del-e-gations from King-ston and Mon-tre-al will leave—;" but with shouts of joy we sprang to our feet, waiting to hear no more; with happy hearts the delegates streamed across the many tracks to their waiting sleeping cars. The organization did its work and within half-an-hour we had left the city of hills and hollows behind and had steamed off into the darkness en route for Chicago.

Of the journey homeward the one outstanding feature was the brief stay in Chicago—that enormous city with 2½ millions of people. After a night of travel we reached it and

halted for some five hours simply "to look it over." The delegation walked its streets like a band of "hikers;" tried to get a meal in a cafeteria lunch room, and succeeded in getting gloriously mixed up; saw the business section of the city and its park system from the comfortably cushioned seats of large touring cars, and returned to the depot to re-board the special for Toronto. There was much to talk over, and many things to discuss. Friendships had been formed during the entire journey, which had their inevitable influence on the lives of all parties concerned. But there was another night of fitful slumber during which our "Special" recrossed the State of Michigan and again brought us back to Canadian soil. In the morning the inhabitants of the train woke to find themselves at Hamilton, with Toronto 20 miles away, so there was the usual hurried scramble, the conclusion of which found us back in Toronto Union.

It was exactly a week since we had left it for the metropolis of the Middle West, but every one of us was in some subtle way changed. It was true that our experience of men and manners had been enriched. It was true that we had seen two of the greatest cities of the North American continent. It was true that we had made many friendships which were well worth while. But the most fundamental change of all, was as regards the outlook which we had gained on the wilderness of human need. Almost every one had in some way heard the call to service, and many responded loyally.—Anon.

ECONOMY, AND WOMAN'S INFLUENCE ON IT.

It would almost seem fashionable

now-a-days to have an opinion regarding the cause of the high cost of living. What set us thinking on this question was a talk which was given by our president at a recent Dairyman's literary society. He spoke to this effect: "That while talking to C. C. James of the Commission appointed to investigate the causes of the recent high cost of living. Dr James had said that one great cause they had found was that the women of the cities were not making their own bread." It would almost seem ridiculous to make the lack of bread making in the home a fundamental cause of the high cost of living, but on this question of bread hinges the whole question, for the woman who makes her own bread is the woman who makes her own buns; the woman who makes her own buns is the woman who makes her own cookies, cakes and pastry. To make a single loaf of bread costs one and a half cents, and to deliver it from the bake shop to the consumer costs another cent and a half. Here we have three cents suddenly added to the cost of one loaf of bread. This may seem a mere trifle at first, but when you stop to consider the enormous amount of bread consumed in one city in a week, you will realize the force of C. C. James's statement, that our bread bill is unnecessarily high.

Then the question at once occurs to us, why do not more people make their own bread? There can be no doubt of the fact that good home-made bread is more genuinely appreciated by the hungry boy than even cake or pies. It has that satisfying quality and flavor of its own that no baker's bread ever has. What is more, home-made bread is sure to be pure and clean, and not all baker's bread can justly make that claim.

Yet, notwithstanding that it is cheaper and more wholesome, home-made bread is a luxury in many homes today. Bread-making is not so difficult a task, for very few ingredients are used, the process is simple and with a little knowledge of the fundamental rules, success is sure. So why is it such a luxury? Probably the lack of time is the chief reason, but this could be easily overcome. There are many devices to help lessen the work, but the bread-mixer is one of the best. It is an actual labor-saver and deserves a trial. I know a home where one of the boys always turns the mixer, and the mother has practically no extra work until the dough is ready to be shaped and then baked. This can easily be done along with the other morning work without encroaching on the mother's spare time. Even if it does take a little extra time it is well worth the sacrifice. There is a genuine satisfaction in making a batch of good home-made bread. You feel you've accomplished something worth while and the pleasure derived more than pays for the extra work.

At present there seems to be a tendency for the women to forget their home duties and leave them in the hands of paid domestics. This takes away from the spirit of the home. A home does not consist in its furniture or the number of times its name is mentioned in the society column. The real home is where peace and unity abides, and where the mother is the leading spirit. If the women would remember that they can be a big factor in reducing the high cost of living by household economy, there would be happier homes throughout the Dominion.

"He is happiest, be he king or peasant, who finds peace in his home."

UNDESIRABLE ALIENS

Two of our housekeeper graduates of 1913, Miss Edna Schwalm and Miss Elizabeth Wilson, have unintentionally created quite a little stir, and drawn the attention and interest of both United States and Canada to our Institute and its work. Last September, Miss Schwalm accepted the position of matron of the University of Michigan Hospital at Ann Arbor, and Miss Wilson went as her assistant. Recently both were served notices of deportation, on account of violating the Contract Labor Law of the States. We quote the following from one of the daily papers. "There is no institution in the United States which trains housekeepers scientifically, and Miss Pindell, of New York, the present superintendent of nurses at the university found it obligatory

to turn to Canada in order to procure the skilled young women whose services are necessary in the hospital."

SOCIAL SERVICE TRAINING.

Next fall, the University of Toronto will open a new department for the training of social workers. The studies included in this course will be under three main heads—Problems of Poverty and Philanthropy; Problems of Crime and its Prevention, and Problems of Government and its administration. Many will welcome this recognition by our leading university that social science is worthy to be classed with the time-honored departments of classics or philosophy. This new course will likely become one of the popular branches of the university training and will fill a long felt need on the part of those interested in reform work.

Much Ado About Nothing

A little city child was enjoying his first glimpse of country life. The setting sun was gilding the grass and roses of the old-fashioned garden, as he sat on a little stool beside the farmer's wife, who was plucking a chicken. He watched the operation gravely for some time, then he spoke: "Do yer take off their clothes every night, lady?"

In the Kandy Kitchen

Miss C.—"No thanks, I don't care for pepper. It isn't good for the temper."

Mr. Lattimer—"Oh, I see you are beginning to diet for yours."

First Housekeeper — "Here I've spent all week on this house plan, and I'm not through yet."

Second Housekeeper—"Yes, such a waste of time! If we were only sure we'd make use of it."

Birthdays reigned during the first week of March. We wonder if the voting list has increased.

We don't think much of the "2 in 1" who had the audacity to call Mr. Galbraith a liar.

It was a lesson on fish, and one of the normals becoming slightly confused asked "Miss Haddock how to bone the Roddick."

Some Good Rules for Anyone.

Drink less—breathe more.

Eat less—chew more.

Ride less—walk more.

Clothe less—bathe more.

Worry less—Sleep more.

Talk less—think more.

Waste less—give more.

Scold less—read more.

Preach less—practice more.

College Life

GOOD MEN ALL

THE spring elections are not far off now but before the present officers of the societies are turned out of office, allow us to show our appreciation of the work done by those holding offices last fall. The presidents of the societies were all seniors who will be leaving in a short time, but wherever they go the best wishes of their fellow students are with them.

willingness to help wherever he could has not only been a benefit to the students but has won for him the admiration of them all.

G. Clarke Duff, president of the Literary Society, had another side of the social life at college to direct. The Literary Society is one of interest to all and much of its success last fall was due to its president. Clarke has always taken an interest in literary



C. F. Neelands.



G. Clarke Duff.

C. F. Neelands, president of the Athletic Association, held what is probably the most difficult position in the societies. The work was heavy and took a great deal of time but Neelands was always present where athletics were in progress and did his best to make them a success. His

work and since he is a good platform man, as was shown by his standing in the public speaking contest, he was just the man for the position which he so ably filled.

W. G. Nixon, president of the Y. M. C. A., has not the most encouraging



W. G. Nixon.



Justus Miller.

position to hold, because the Y. M. C. A. is not patronized to the extent it should be. Thinking about the welfare of those who were interested and with the hope of interesting others, Nixon and his executive handled the Y. M. C. A. well last fall. Although of a quiet disposition he was untiring in his work which was not only interesting, but beneficial to all.

Justus Miller, who was editor-in-chief of *The Review* last fall, also held that position a year or so before that. This position involves much time and work, but Justus, with his wide experience in journalistic work, brought this paper up to a higher standard than ever before. Not only *The Review*, but many of the associations too have felt the influence of Justus' work on their executives. On the track Justus was almost a sure winner in the middle distance events, and his ability as a trainer is not unknown.

THE INTER-COLLEGIATE DEBATE

The fourth annual inter-collegiate debate was held in the Assembly Hall of Macdonald College, on Friday, February 20th. There was standing room only in the hall, as the Macdonald students turned out in full force to hear the debate, which fulfilled everyone's expectations of being very closely contested.

Dr. Harrison, president of Macdonald College, occupied the chair, and in his opening address extended an official and hearty welcome to the visitors from the O. A. C., and then introduced the speakers, Messrs. Sadler and Schafheitlin, for Macdonald, and Messrs. Knapp and Sackville for O. A. C. The subject was "Resolved that it is in the best interests of Canadian agriculture that more graduates should engage in practical farming as a private enterprise," and Macdonald College had the affirmative.

The leader of the affirmative, Mr. Sadler, held his audience every min-

ute he was on his feet, and set forth his arguments in an interesting and forceful manner. He emphasized the force of example in farming, stating that graduates could do more towards advancing agriculture by showing the farmers that the teaching of the colleges was eminently practical, than by any other means; and quoted several leading authorities on American agriculture in support of his assertions. Mr. Knapp, leader of the negative, dealt with the splendid work being done by district representatives, the need of more of these, and as a consequence the need of more college graduates engaging in this and other lines of professional work. Mr. Schafheitlin, the seconder of the affirmative was mainly occupied in a comparison of the effects of practical example versus district representative work, especially with regard to co-operation. His arguments were sound and logical, but he lacked the fire of his colleague. In support of the negative, Mr. Sackville spent some time in refuting the arguments of the affirmative, especially those of the first speaker; in a quiet, but convincing way, he disproved several of his opponents' statements, and proceeded to show how the district representatives in Ontario had benefitted the counties in which they were located, quoting specific cases in support of each of his statements. In the five

minutes allowed for rebuttal, Mr. Sadler questioned whether Ontario conditions were applicable to the rest of Canada, since the negative had dealt with Ontario alone, and denied that his opponents had disproved a single one of his arguments; the judges, however, seemed to think otherwise, for they gave their decision in favor of O. A. C. by a score 90-75.

Programme Was of High Order, and Included Many Pleasing Numbers.

A lengthy and classical programme was rendered at the O. A. C. Philharmonic concert last evening when the College Choral Club and orchestra, with other musical artists, furnished excellent entertainment. The College orchestra, under the direction of Mr. Hugh Black, and accompanied by Mr. Fuller, gave the opening selection and favored with several others during the evening. The choral club, consisting of eighty voices, trained and led by Prof. Shildrick, and accompanied by Miss Jessie Hill, rendered a number of charming choruses, in several of which Miss Helen Oldham successfully took the part of soloist. Mrs. Springer-Mason, soprano, was highly appreciated, as were also Miss Smith, piano soloist, and Mr. Hugh Black, who gave a number of violin solos.

Refreshments were served by the Macdonald Hall girls during intermission.

KNEW WHERE TO FIND THEM

"I shall go up to town to-morrow, Alexander, to see the new spring hats."

"You forget, my love, to-morrow is Sunday; the shops will be closed."

"Shops! Who wants shops? I'm going to church!"

ATHLETICS

HOCKEY

O. A. C. won the game from Macdonald by a score of 3 to 2.

Shortly after 3 o'clock on Friday afternoon with the mercury not far from zero, between four and five hundred spectators lined the sides of the open-air rink to view the first of the games to be played between the Ontario Agricultural College and the Macdonald Agricultural College.

The whistle blew at 3:30, with W. J. Squirrell of O. A. C. and F. M. Clement of Macdonald as referees. The game opened fast, the first half being played according to N. H. A. rules, and so evenly were the teams matched that when half time signal was given neither side had scored.

The second half was played according to O. H. A. rules, and shortly after the start Hyndman made a spectacular rush and scored a goal for Macdonald. This was soon followed by Herder scoring a goal for O. A. C. Then Hyndman scored again, and a few minutes before the whistle blew Agar found the net, which evened the score.

After a short intermission the game was continued, the teams playing five minutes each way, using N. H. A. rules and O. H. A. rules alternately.

During the third five-minute period Oswald succeeded in landing the puck within the net, and no score being made during the next five minutes the game ended. This is the first time O. A. C. have won in the hockey games.

Line-up as follows:

O. A. C.—Dustan, goal; Herder, point; Kedey, C. point, Agar, rover; Oswald, centre; Donaldson, R. wing; Vair, L. wing.

Macdonald—Fraser, goal; Maskery, point; Hyndman, C. point; Huestes, rover; Hand, centre; Skinner, R. wing; Roy, L. wing.

SWIMMING MEET

Giving Them Fits.

Fitzpatrick, '17, by winning four firsts at the annual swimming meet held on the afternoon of February 28, won the grand championship.

The meet was a great success from beginning to end. All the events were keenly contested by the representatives of first and second years. Two records were broken: the first by Beaumont, '16, who did the 35 yards (beginners) in 25 3-5 sec, thus lowering the old record by 3 2-5 sec.; the second by Fitzpatrick, who did the 203 yards in 2:16, which is 4 1-5 sec. faster than the old record.

Following are events and winners: 52 yd. swim (open)—1, Fitzpatrick, '17; 2, Puleston, '16; 3, Cotsworth, '16. Time 30 sec. (equaled record).

52 yds (novice)—1, Clemens, '16; 2, Munro, '17; 3, Beaumont, '16. Time, 34½ secs.

104 yds (open) — 1, Fitzpatrick, '17; 2, Puleston, '16; 3, Foot, '16.

35 yds (beginners)—1, Beaumont, '16; 2, Agar, '17. Time 25 3-5 (record).

Long Plunge—1, Fitzpatrick, '17;

2, Beaumont, '16; 3, Agar. Distance, 40 feet 10 inches.

208 yd swim—1, Fitzpatrick, '17; 2, Foote, '16; 3, Puleston, '16. Time 2:16 (record).

Fancy Diving—1, Thompson, '16; 2, Puleston, '16; 3, Foote, '16.

52 yds Back Swim—1, Schewmann, '17; 2, Thompson, '16; 3, Clemens, '16.

Relay (novice) — 1, first year (Schewmann, Munro, Wierne, Gautby); 2, second year.

Relay (senior)—1, first year; 2, second year.

It is regretable that neither the third nor fourth years were represented in a single event. Both these years have some good men and ought to have been able to enter good teams. The tendency for a fellow not to enter an event, unless he feels sure of winning, seems to be gaining ground year by year.

The sooner, fellows, that we discard this idea, the better it will be for athletics at this college. A fellow never knows what he can do till he tries, so that he is neither doing justice to himself nor to the fellow who does take part. "Competition is the spice of life," so let us all get out and do what we can. In doing this we will not only help ourselves but encourage our champions to even greater things.

INTER-YEAR BASEBALL

The Dairy team lined up against the third year in the first inter-year game of the season. It resulted in a win for the latter by a score of 5 There are good players on the Dairy team but the poor playing of two or three brought about their downfall.

In the second game of the series

the Dairy team again met defeat, this time at the hands of the fourth year. Considering their lack of practice they did well in their batting against Forsyth.

A good game was played by both teams when first and third years met for the first time. During the first seven innings both teams were so evenly matched that there was nothing to choose between them. But at this point owing to some unforeseen cause the third year team went up in the air and the first year won out by 15 to 8.

At the Target

On the evening of March 3rd, the annual Inter-Year Faculty shooting competitions took place, and resulted in a win for the first year. Five teams of five men each were entered representing the Faculty and the four "years."

A "shield" was awarded to the team making the highest total score. The other prizes were: bronze medals to the members of the winning team, a gold medal for the highest individual score, a silver medal for the second highest and a bronze medal for the third highest.

Following is the standing of the teams:

- 1 First year, with a total of 139 pts.
- 2 Third year with a total of 134 pts.
- 3 Fourth year with a total of 128 pts.
- 4 Second year with a total of 120 pts.
- 5 Faculty with a total 96 pts. (only 4 men.)

Bond of the first year won the gold medal with the score of 32. Archibald and Laird, both of the third year tied for the silver medal with a score of 30.

ALUMNI

F. C. Clement

The resignation of A. D. Harkness from the directorship of the Provincial Government Experiment Station, at Jordan Harbor, has again brought F. C. Clement to the fore.

Fred. graduated in 1911, going as district representative to Elgin County, where he was deservedly popular, and did much for the fruit industry of that county. He then became professor of horticulture at Macdonald College, St. Anne de Bellevue, and only recently accepted the position vacated by A. D. Harkness.

Besides being an expert horticulturist he is an all-round sport. He was freshman champion and an enthusiastic hockey, baseball and rugby player.

A. D. Harkness

A D. Harkness, after obtaining his associate diploma in 1887, went into the fruit and dairy business at Irena and had one of the best fruit and dairy farms in Eastern Ontario. He became director of the experiment station on the death of Mr. Peart in 1910, and has ably filled the position until his recent resignation.

We are informed that he is embarking again into the fruit industry and are confident he will meet if possible even with greater success.

The Late L. W. Hutchinson

For the benefits of many of the old boys who have been inquiring concerning the untimely death of an esteemed classmate we relate that, Leonard W. Hutchinson, an associate of 1898 was killed suddenly last

spring. Death was due to an accident while truing a pulley on a shaft. The pulley block broke suddenly, striking him causing almost instant death.

At college he was famous as a coach and as a rugby player, being captain of the championship team. He was a good stockman, and on leaving college, built up a fine herd of Holstein cattle. His home was at Aurora, Ont., where he had a fine 300-acre farm. He leaves a widow and two young sons, to whom we extend our sympathy in their bereavement.

H. R. Ross.

H. R. Ross was born near Belleville, Ont., September 3, 1878, and went to public school there graduating into High School in 1898. In 1895 he came to O. A. C. and graduated in 1898. In his final year he was editor of The O. A. C. Review. After graduating he spent three years on the homestead, spending his winter months as an institute speaker. After a western trip he became editor of the Maritime Farmer, Sussex, N. B., in December, 1901.

In September, 1903, he had to give up journalism on account of eye trouble, and has since been in the cold storage business, and has been manager of the N. B. Cold Storage Co., at St. John for the last seven years. This plant is a subsidiary of the Canadian Pacific Railway, and one of the largest and best equipped in Canada. The trade has grown from nothing to a business larger than most people know anything of. He was married

in 1909 to Miss Ella Faulkner of Stirling, Ont. The family now includes a two-year-old candidate for Mac., 1928, Mr. Ross is a modest man with few interests besides his own home and business, is an officer in the 3rd Regiment of Garrison Artillery. He ab-

hors public speaking, writes but little and is not ilable to stray far from his chosen furrow, believing that contentment counts for more than most folks allow, always provided they guard against going to seed.



A Lesson Worth While

A lesson in itself sublime,
A lesson worth enshrining,
Is this: "I take no note of time
Save when the sun is shining."
These motto words a dial bore,
And wisdom never preaches
To human hearts a better lore
Than this short sentence teaches:

As life is sometimes bright and fair,
And sometimes dark and lonely,
Let us forget its toil and care,
And note its bright hours only.

There is no grove on earth's broad
chart
But has some bird to cheer it,
So hope sings on in every heart,
Although we may not hear it.
And if to-day the heavy wing
Of sorrow is oppressing,

Perchance to-morrow's sun will bring
The weary heart a blessing.

We bid the joyous moments haste,
And then forget their glitter;
We take the cup of life and taste
No portion but the bitter;
But we should teach our hearts to deem

Its sweetest drops the strongest;
And pleasant hours should ever seem
To linger round us longest.

The darkest shadows of the night
Are just before the morning;
Then let us wait the coming light,
All bodeless phantoms scorning;
And while we're passing on the tide
Of time's fast-ebbing river,
Let's pluck the blossoms by its side,
And bless the gracious Giver.

—T. B.



Allan—"What do you think of the new phone service between O. A. C. and Mac. Hall?"

Hirst—"Grand idea, old man, but regret that it was not inaugurated last term."

Prof. H. H. Day (lecturing to 2nd-year students in electricity) — We now come to the ohm.

Hunter (his romantic reverie being stimulated, murmurs with feeling)—
'Ome, sweet 'ome.

THE O. A. C. REVIEW

REVIEW STAFF

Andrew Cory, Managing Editor.

P. Stewart, Agriculture.

R. A. Finn, Alumni.

J. N. Allen, Experimental.

D. M. Smith, College Life.

C. A. Good, Horticulture.

D. G. Laird, Athletics.

J. E. Bergy, Poultry

E. Hearle, Artist

J. A. Neilson, Query.

M. Jones, Locals.

Florence Irwin, Macdonald.

W. Kerr, Circulation Manager

H. S. Fry, Business Manager.

Various Viewpoints

NO VOTES FOR SENIORS.

To the Editor of The Review:

Your answer to my letter seems to have proved beyond a doubt that the freshmen should refrain from voting, at least in the senior year's opinion. There are, however, a few points not just clear and it is these points that we want explained.

As an immigrant to this country has no vote for a certain time, a freshman, in your opinion, should place himself in the same position and "courteously refrain" from voting.

Now, why has an immigrant no vote on entering the country? Simply because he does not know that country or its ways. Is the O. A. C. so isolated and so different from anything common that a young man on entering, knows as little about it as an Italian knows of Canada? If so, perhaps, that explains the college's unpopularity amongst the farmers of Ontario. Another point you forgot to mention, was just how long that immigrant had to wait for his vote. Surely it was not till he had remained in the country one-quarter of the total length of the time he intended

to stay, or in the case of the two-year diploma man, one-half of the time. This, to quote your own words, "really is ludicrous."

If the seniors had an equal vote with the freshmen they could easily pass some rules which while not hurting them much that year would trouble the lower years till they graduated. Do you think it fair for a man who has to remain here two or four years, to submit to a man who will leave in a year. Perhaps this explains why the freshmen should rule the college.

When I referred to the freshmen electing a third-year man to The Review staff it was to the office of Circulation Manager. If that is open to third-year students only, then there was some mistake for there were two first-year men nominated, and these names were read out as candidates by a man from the upper years.

So much for the argument but there is one more point to be aired.

Do you think it is going to unite the years by speaking of the freshmen's homes as places of "chores and slavery," even as a joke. There are

boys here from all kinds of homes but you seem to refer more to those from the country. No boy should be allowed here that takes no interest in the country life, yet everybody hates slavery. Therefore in your opinion this college is a means of escape from the drudgery of home and from Dad.

There may be some farm homes like those you speak of but they are of the lowest class and as our President has said we are above the average. No doubt your opinions are from personal knowledge, but it is a well-known fact that very few up-to-date farmers prefer the help of the learned undergraduate to the plain country boy.

Now in conclusion, I agree with your last word, though of the rest of your argument I think differently, therefore we will "shake."

—G. L. S., '17.

Dear Mr. Smith:—

Your proposition that seniors shall not vote is delightful in its originality and opens up a new political vista. Some day if you are an M. P., we may expect to hear of a bill introducing infant suffrage with superannuation on the attainment of first reader standard.

I cannot see any necessity to discuss who shall rule and who shall submit, as neither position should be taken by any year in the college. I hold no brief for the supremacy of any class, but stand as an advocate for year equality, hence my suggestion that each year and not each man, should have an equal right in student legislation, whereby all might work together in friendship and in the harmony of mutual interests. Granted such a state of affairs and we would no longer hear of over-bearing seniors or dictatory budding associates.

As for the "chores and slavery" question: do you really believe, Mr. Smith, that my simile was intended to cause offence to 78 per cent. of my readers, the farmers' sons? Unfortunately for western agriculture I am a farmer myself, and therefore, of course, one of the noblest creatures that treads this earth. Give me a manure pile and the latest bulletin on wireworms, and I ask no further gift from Providence. My son is a farmer's son, and although tender years forbid greater labors on his part, I am sure that he finds the chore of getting his little nose blown at frequent intervals a species of slavery and rank injustice. His ululations are my sufficient testament.

In my own case I find chores, whether in city or country, a glorious bondage, as according to you they are only performed by those drawn from the lowest class, but to me they seem ennobling influences, for what is more elevating to character than the successful accomplishment of a galling duty, heroically performed, what summit of ambition can be higher, to what loftier peak—hang that furnace!

To resume: You ask me a pertinent question, do I consider that a young man on entering college knows as little about it as an Italian knows of Canada? I will leave you to judge for yourself from the following data: It has been estimated by able statisticians that each Italian entering the country has benefited our pulp-wood industry by consuming 48.83 lbs. of pamphlets issued by the Emigration Department. As these sources of official information are of necessity strictly reliable and tell him something about every Canadian resource from the comforting dry cold of the

Athabasca basin to the lucrative all-year-round employment enjoyed by every citizen, he should of necessity know more of the true inwardness of Canadian life than a farmer's son who has read the few ounces of romance called the Col. "Another pail of water? certainly dear!"—Editor.

Tough On Yours Truly.

Editor Review:—

With no desire for a "bout of literary fisticuffs," but in response to your request in a recent number for opinions on the subject, I beg to offer a few suggestions on the matter of Freshman's suffrage.

The business of the student body, whether carried on by the students' Council or in mass meetings should be conducted with the view of obviating as far as possible, distinctions between the years. We should in fact, as in name, be a student body. The possibility of falling into an assemblage of four frats, with conflicting interests should be guarded against with the utmost diligence. Our object should be to work together with the feeling that a man is a man whether he is the veriest freshman in the college, or a senior with the gold medal in his grasp.

The quickest and surest way to defeat that object is to introduce a system of percentage voting. If from the voting standpoint one sophomore equals two freshmen and a junior or a senior equals all three together we have simply introduced a slightly modified caste system. A clean distinction is made between the years. Inter-year chasms which everyone wants to avoid have been deliberately created and constitutionalized. Instead of a student body we have four officially constituted frats, and frats

mean friction. The possibilities of trouble ensuing at mass meetings are multiplied. How is the vote to be taken? Not by roll-call. In some cases it is now almost impossible to call the roll at a regular lecture of a class of sixty. How is it to be accomplished with 450 men packed to suffocation in the assembly hall with class or party feeling at fever heat. If the yeas and nays are called from each year in succession how are we to prevent third-rate voters standing up with second-rate and fourth-rate with first-rate? Instead of an orderly business meeting there would be confusion worse confounded, and there would be a greater tendency than ever for meetings to end with something attempted—nothing done. The whole scheme of percentage voting is preposterous and unworkable.

But there is a contingency to be provided against and that is the possibility of the freshmen triumphing by weight of numbers, over the more seasoned judgment of the men of the higher years. The danger, however, of first year men initiating and carrying through pernicious legislation is so remote as to be negligible. The only time they will stand together in a solid phalanx, is when they are smarting under what they believe to be an injustice. Such was the case in the recent embroglio. The possibility of their carrying their point unless they have a real grievance is the easiest thing in the world to provide against. Require that a decision of the Students' Council cannot be vetoed by the student body except by a two-thirds majority. If a decision of theirs cannot command the support of 33 per cent. of the students it should be abrogated. And in this connection it should not be forgotten

that nine-tenths of the business of the student body is done by the Council on which the freshmen are outnumbered three to one. The students' Council will always be dominated by men of the higher years and the interests of these years are thus safeguarded. The interests of the first year would be safeguarded because if a real injustice was being inflicted upon them they would always be able to secure enough support from other years to muster the necessary two-thirds majority.

R. D. COLQUETTE, '15.
March 9th, 1914.

Thanks Mac.

March 9th, 1914.

The Editor O. A. C. Review:

Dear Sir,—There seems to be a tendency in Mr. Colquette's letter to consider the student body as it should be rather than as it is. If the student body consisted of a number of unbiased individuals, no scheme of percentage voting would be necessary; but the fact remains that years will stick together. This year spirit is fostered by inter-year debates, inter-year games, and the track event, and year spirit is bound to be evident when it comes to voting.

Mr. Cory's proposal was to give each year an equal number of votes, the standard to be set by the number of men in the fourth year; hence Mr. Colquette's statement that a junior would be equal to any two freshmen and a sophomore combined is hardly correct.

Mr. Colquette states that a scheme as suggested would lead us to fall into an assemblage of four frats, but at present there is one frat, the first year, while the rest of us make up an outvoted minority. The presence of

year spirit—which, mind you, I am not arguing against—divides us into four bodies, call them frats if you will, all working more or less for the same end, namely the good of the college. At present two of these frats, the third and fourth years, are outnumbered 3 to 1 by the other two, and consequently have no say in college affairs at all. Mr. Colquette refers to chasms being created between the years; but what is more likely to create a chasm than for the two upper years to be absolutely sat on by the freshman year, simply because the latter have sheer weight of numbers at their command?

Possibly there would be more inconvenience at mass meetings, but if each year felt that it had an equal voice in the matter under discussion there would not be nearly so much soreness, and after all that is what we want to avoid. With regard to the counting of votes; the votes of each year would be counted by one of its members, who could discriminate between his own and other years. Speaking of "something attempted—nothing done,"—does that not apply with considerable force to the meetings we have had in the past few weeks?

There is one question of Mr. Colquette's which I should like to question: Is the danger of first year men carrying through any pernicious legislation so remote as to be negligible? "Pernicious legislation" is a comparative term, since what is pernicious to the upper years may be in the best interests of the freshmen, as in the question of the down town parade. There is nothing whatever to prevent the first year legislating entirely in their own interests, and it is precisely to prevent such a situation

that the percentage voting scheme has been suggested.

Now as to the question of the decisions of the Students' Council; the idea in forming a Student Council was to create a body which would legislate in the best interests of the students as a whole; such a body, however, has no real power as long as it must submit its decisions to the student body, where they are again at the mercy of the freshmen. I might remind Mr. Colquette that the council is an example of percentage voting, for which the whole college voted no longer ago than last term.

As long as there is any class spirit in the college, there will be class voting; and just so long will some such scheme as percentage voting be necessary to give a square deal to all the years.

Yours truly,
 QUENTIN McLAREN, '15.

All Hope Abandon.

To the Editor:—

I am in receipt of your request to tell something of the inwardness of *The Review*. I shall attempt to do so as briefly as possible.

Your correspondent, Mr. Croskery has written a very clear statement, and a very sensible one, of his views. But there is one feature he has overlooked.

When asked the three essentials with which to wage a successful war a French king once answered: "First, money; second, money; third, money." And this is the secret of newspaper success, too. It is true that the paper must be so readable as to attract and to hold subscribers—but the best writers can always be secured by the greatest offer granting, of course, that the policy is fair and just.

Comes the question now of our financial position. I have made enquiries and have been assured that our net profits, after running and management expenses have been paid, will not exceed \$3,000 annually. I may under-estimate our gains and shall be very glad if someone will correct me, if I have. At this rate it will take some three years to pay for rink, supposing no money is refunded to the students from any branch of the Co-operative, and that it is all invested in the rink. This is our position as I understand it.

Consider now the position of *The Review* itself. Mr. Croskery remarks that it is a failure both as a College magazine and as an agricultural journal. I am not prepared to admit this as I shall explain more fully at a later date, perhaps, but there is no doubt that his fundamental argument is true in part. I am willing to admit that many ex-students and many students subscribe more for old sake's sake and for present associations respectively, than with the idea of getting one hundred cents on the dollar value, either in news or in agricultural information. I think it only just, too, that if anyone actually believes he doesn't get his money's worth that he need not be compelled through loyalty to subscribe. Now don't think from the foregoing that I wish to argue that anyone does not get value; I wish only to show the view-point of many of our subscribers, as I have observed it.

But these facts—perhaps you will wish to treat them as theories—show that if we established a college magazine and an agricultural magazine or journal as separate publications we should have little loyalty displayed for the agricultural sheet. Why should we? It would live or die sim-

ply on its merits. And this would be a noble stand to take—only I'm afraid it would die.

For this publication would not only have the struggle common to all to get a footing, but it would have the active competition of all established periodicals now in circulation. To make the venture successful, therefore, we should require the best men—editors and business men—available, for the newspaper field is not one from which a fortune may be easily taken. I have been assured recently by a Toronto publisher that one agricultural publishing company lost several thousands of dollars during 1913, and personally know of another that is losing ground.

Comes again before us our possible \$3,000. This sum would secure a managing editor with ability to make the scheme successful, perhaps. For the competition would start before the editor was secured. A man who could do this work would be worth a sum as great as \$3,000, I venture, to other companies. We have disposed of our available money! What then? Now we require a business manager, skilled in salesmanship, and a manager who knows everything about methods of increasing circulation.

But we need a great deal more than this. We have only established a beginning. These men are the heads. Next we require an office staff. Then a fund with which to pay writers must be secured. We would probably feel large enough for a press, but I shall refrain from adding it to the list.

The magazine is in a fair way to be published now. We require only a sum to develop a systematized circulation campaign. This will not be small for the magazine will be sold at cost or, perhaps, will be given away.

A magazine, declaring a policy, similar to what I believe our policy would be, was established somewhere in Canada during the last five years. To expand the circulation to 25,000—a paying basis—the company sunk \$70,000. It will make money too in the end. But it had to have a large capital to get a start, as does every business in these days of centralization of capital, that goes upon the open market and competes with the largest companies upon it.

I shall leave the argument at this point. I have not attempted to tell where we really stand or what our future prospects may reasonably be considered to be. I shall treat that some other time if the opportunity presents itself. I have just explained why I consider the idea of the publication of a separate agricultural paper at the college not feasible, although certainly very attractive. If I am wrong in my conclusions I shall consider it a kindness for someone to explain in these columns wherein the weakness of my argument lies.

JUSTUS MILLER

Votes for Women

To the Editor of the O. A. C. Review:

Dear Sir,—After graduation when one is able to keep in touch with college affairs without the overwhelming rush of work of the undergraduate, one sees in better perspective the rights and wrongs of college administration. It is to what I consider one of the injustices of the present state of affairs that I would like to draw the attention of your readers, namely the method of representation on the Student Council.

The Ontario Agricultural College has four departments, agriculture, manual training, home economics and

nature study. The Student Council, as it now exists, consists of representatives from one department only, that of agriculture, yet it is called the Student Council of the O. A. C., instead of the Student Council of the Department of Agriculture of the O. A. C. To have a separate council for each department would be a cumbersome arrangement indeed, when all would be working with the same interests and purpose, but would it not be a fair and just plan to include in the present council representatives from the other departments?

At Victoria University in Toronto a Student Council was organized last year. It consisted at first of men only, but as a consequence of a debate in their Union Literary Society was reorganized to represent the women students as well. Surely what is a feasible plan in one college could be just as feasible in another, and what is fair to the ladies of Victoria is equally fair to the ladies of Macdonald Institute.

The results of the work of the council are shared alike on both sides of the campus. If one end of the private phone is busy, it follows that the other end is just as busy, while the book club is beneficial to all. But can it strengthen the sense of responsibility of the Macites to have all these favors bestowed so freely when they have not shared the labor of obtaining them? The present method may be pleasant and easy for the ladies, but it is hardly a square deal.

Surely among the hundred or more students of the institute who are advanced enough in thought to seek the most scientific and practical education open to Women to-day, there may be found one or two who can afford the time and wit to agitate this

matter when once they see the justice of it.

Thanking you for the use of your valuable space, I am

Yours sincerely,
GRETA M. CROWE.

Nothing in Common.

To the Editor O. A. C. Review:

Dear Sir,—In reference to the matter of representation on the Students' Council, I would like to reply to one or two points brought up by Miss Greta Crowe, in her letter.

In the first place I am unaware as to whether the official designation of the council in question is "The Students' Council of the O. A. C." or "The Students' Council of the Department of Agriculture of the O. A. C." but the fact remains that its jurisdiction extends only to the agricultural section. If we, as students, in thoughtless moments refer to it as "of the O. A. C." we must be pardoned. Maybe at times we are apt to forget that we boys are not the "whole cheese."

Miss Crowe says that to have a separate council for each department would be a cumbersome arrangement. Maybe it would but personally I fail to see the possible need of more than two councils. Surely, if the ladies of Macdonald Institute feel the need of a council there would be no difficulty in forming one amongst themselves, and such a council would be capable of looking after their interests in a far more efficient manner than would a council containing "mere men." There are so very few points of common interest, and those few points could be so easily considered by an occasional joint meeting of the two councils.

What possible concern could it be

to the ladies whether the freshmen should pay for a certain bit of damage or not, or, shall we say, whether the third year should go back to entomology. The bulk of the work of the council seems to be to settle matters such as these.

As for the Book Club, its primary object was to assist the boys. Certain it is that the boys were the only original shareholders.

Conditions at a co-educational institution such as Victoria University are vastly different to our own. The fact of it being co-educational produces many coincident interests. We, on the other hand, comprise two

distinct institutions, and from the point of view of student government have practically nothing in common.

I do not for a moment disparage the capabilities of the ladies in the capacity of councillors; on the contrary a ladies' council of Macdonald Institute, working in conjunction with our own, might, on matters of common interest, achieve excellent results. I fail absolutely, however, to see the benefits to be derived from such a joint council as Miss Crowe suggests.

Yours truly,
LESLIE GOODMAN, '15.



Back To The Land

I would flee from the city's rule and law,
 From its form and fashion cut loose,
 And go where the strawberry stands on its straw,
 And the gooseberry grows on its goose.
 Oh, let me drink from a moss-grown pump
 That was hewn from a pumpkin tree:
 Eat mush and milk from a rural stump,
 (From form and fashion free);
 New gathered mush from the mushroom vine,
 And milk from a milkweed sweet,
 With luscious pineapple from the pine
 (Such food as the gods might eat).
 And then to the whitewashed dairy I'd turn,
 Where the dairymaid hastening hies,
 Her ruddy and golden butter to churn
 From the milk of her butterflies;
 And I'll rise at morn with the early bird,
 To the fragrant farmyard pass,
 As the farmer turns his beautiful herd
 Of grasshoppers out to grass.

His Deputy and Her Warden

WHEN Lee Volker's angry father read that examination report he was aroused to action. The report was enough to irritate an ambitious father. It was not responsible for Mr. Volker's state of mind, however, but it was responsible for creating a climax in his career. He had weathered many a crisis in fifty years of life, but as usual this one was far from anything he ever expected to happen.

Meddling gossip had already informed Lee's father that he was a fusser and an ardent football fan, which information, was responsible for Mr. Volker's anger.

The gossip was: "Lee has taken Libbie Danes to every football game this fall. It's a pity too for she is old enough to be his mother. She keeps all the fellows dangling to her string. She looks to be twenty-three, acts eighteen, but in reality she is forty-three."

Lee's father thought football a relic of barbarism that any civilized person would shun. Of course a boy would fuss more or less, but the gossip made him indignant. He had his own opinion of Tibbie Danes.

The advent of the report at this juncture made it clear to father Volker that his son would probably leave college a wiseacre instead of the shining light he would have him. Therefore it was his duty to circumvent what seemed to be inevitable, so he asked the college president for a remedy.

"Send him from home a while—give him experience, Mr. Volker."

"Yes, of course, experience!" Why had it not occurred to him.

The parent was grateful for this timely advice. Gratitude like everything else reacts upon the force that sets it going, so Volker must recognize the advice by some service. For he was not the sort to let favors pass unheeded.

Accordingly he conceived the brilliant plan of sending Lee to the tropics to make a collection of the rarest insects to be presented to the president for the college entomology department. Father Volker had a hobby which he had laid upon the shelf, as being useless in business life, in spite of the fact that he was very fond of it. So now he rejoiced that his hobby would be the means of saving Lee from becoming an educated fool adrift among the "body politic." Yes, the boy should start at once, as delay might mean the loss of many precious varieties.

When Lee came home father took him to task. He was sorry about the report but would cram harder next time. He hotly resented what was being said about Tibbie.

"Old enough to be my mother? Indeed, she is just a girl. Her being a little older doesn't matter. She is the sweetest thing that ever shouted; 'Rad-agazette, gazette, gazette, Cara-kilix, kilix, kilix, Kick-a-baloo, kick-a-baloo,

O. A. College! !

Wah-hoo, Wah-hoo, Wah-hoo!"

"With Libbie beside you the deadeast game takes new life and always ends up the 'fastest ever.' She beats us all in seeing the science in the plays. Father! You should—" father's frowning face checked him.

Mr. Volker proceeded to lecture on

the folly of football, then told his plan not forgetting to add that the experience would be a fine change from college environments.

Surprise made Lee dizzy-headed for a moment. Then as the meaning of it penetrated the surprise he raised objections. When he saw their worthlessness he coaxed, then tried to bulldoze. (Lee had been spoiled by his mother and indulged by his father. As a result disrespect followed by his attempt to discipline him). The talk was vain. His words struck the father's hardened sensibilities only to retreat into space to seek a softer atmosphere to rest in. If Lee had been a girl he would have cried, but being a spoiled boy, he sulked.

As the gossips said, Lee had been dancing to the tune of Libbie's sparkling laugh for some weeks past. She allowed Lee to escort her to the football series to the annoyance of his classmates who like himself were her constant satellites. To miss the finale with her was to forego a very great pleasure as well as a ten dollar bill. He bet five of the fellows two dollars each that he would keep Libbie for the finale against their combined efforts to prevent him. On one condition, however, that if the unexpected happened he would be allowed to appoint Father Volker his deputy and Libbie's warden. If father refused to act as deputy and Warden Lee would stay at home.

Lee recovered from the sulks and made the motion that father escort Libbie to the finale. Father snorted refusal in terms so rapid that after a space of time Lee construed them into meaning no. The boy grew a little excited and forced his father to compromise. Mr. Volker would see Lib-

bie and try to persuade her to forego the game.

Lee consented to that arrangement and was off to bring Libbie. If father had been obstinate Libbie was a stickler. She refused to go with him. She was afraid to side with Lee against his father on such a question. The thought of it made her panicky. Football was the cause of a quarrel that had spoiled her life and left her lonely for years.

You can do almost anything if you try long enough. So Lee persisted. He gave explanation after explanation of the situation. It was useless. Not until he pleaded "come for my sake, Libbie!" did she yield woman-like to his cry of need, even though it meant facing her old sweet-heart and enduring the sting of disappointed love.

Mr. Volker felt rather than realized that something was about to happen. He could not explain why he had sent for Libbie. No doubt the cause was that deep-seated impulse in men to strive for the mastery. He had not mastered Libbie for the issue of their quarrel still hung in the balance. He wondered if he had not been over zealous in taking the president's advice. But there must be no back-sliding in discipline now.

The street door opened. Volker felt no emotion although he knew Libbie was entering and that the silence of years was about to be broken. He was calm, very calm as she came into the room.

"Father this is Libbie Danes," said Lee, leading her toward him.

Now that he faced her, passion swept him like a whirlwind. The truth of his love for her forced itself to the front and made clear to him the cause of the vague longings that

had disturbed him during the lapse of years. He had been contented but not wholly satisfied with Lee's deceased mother. Now he knew why.

His deep emotion communicated itself to Libbie and she stood trembling like a panic-stricken deer. The loaded atmosphere impressed Lee in the form of a lump in the throat that made his collar tight, so he loosened it.

"Don't you hear father," he managed to say.

Libbie answered in her panic, "Yes, he hears. You knew me when I was a little girl, didn't you Mr. Volker," and held out a friendly hand.

He took it and held it.

The mail man dropped the letters

through the door. Mr. Volker cleared his throat. "Get the mail sonny," he ordered. Lee left the room.

Moved by an impulse beyond his control the father held open his arms and whispered "Libbie!" She understood and went to him.

Lee returned with the mail but stopped on the threshold as he saw them.

"Libbie," he complained, "you never made a date with me like that."

"Don't call her Libbie any more. Call her mother," retorted his father smiling.

Lee gasped and they bridged the years with a kiss. In that kiss she yielded enthusiasm and he antipathy for football.—Ebenezer's Spouse.



COLLEGE FEVER

'Tis a malady, infectious, 'tis a prevalent disease.

You will find that every college has the same.

The specific germ is one that no one knows or ever sees,

And no one knows the organism's name.

The symptoms may be varied, but you can't mistake them quite,

It affects the body of the sluggish liver.

In bad attacks the patient eats and drinks and sleeps all right,

But when work is mentioned starts to quake and shiver.

It starts by cutting roll call, then you let a lecture slide

And you lie a little longer in your bed.

You get in with the loafers and spend your time outside,

instead.

You loose all interest in work, you like the lazy way;

You laugh and think the course is just a cinch;

You scoff at other fellows who are working every day;

With spring exams—the shoe begins to pinch

You who scoffed at fellows working; 'Tis their turn to have a laugh.

They are through without the shrieking,

While you just did things by half.

The cure for College Fever has been found by Doctor C.

With skill the mighty problem has been faced.

Through long investigations the cure was found to be

Just a swift kick and a push correctly placed.—Thistle (O.A.C.)

Courtship Under Difficulties

AT the opening of the New Year in '07, I found myself in charge of a small, two-roomed village school in the northern backwoods. It was my first school. My assistant was a sprightly little lady of winning ways, of whom, in my youth and inexperience, I became enamored, and when some six weeks after the opening of school she asked me to accompany her to her home for an evening, I heartily accepted the invitation.

The acceptance of the invitation involved that I should secure a horse and cutter since the objective point of our journey lay some ten miles distant reached by a road entirely new to me. So I secured old Jack, the only horse in the "burg," and as common property as the proverbial "village pump." Of "Jack's" ability, or habits I was ignorant, but as I learned they were not commendable, to say the least.

We waited till evening to start, because our work was not finished till late afternoon, and because we had already become acquainted with the village gossip and feared it. We took good care to disclose the object or direction of our going. We should be back the same night, so it really did not matter. As the sun went down the wind rose and snow fell, but nothing daunted we set out. We had gone only a short distance, however, when we discovered that we had not escaped without one of the few friends I had made in the village—the grocer's dog. Incidentally, may it be said this pup was the champion pugilist among all comers for miles around.

The first three or four miles of our

journey was over a bush road. This distance we covered without incident, but when we emerged into open country our troubles rose and multiplied. The track—not too well beaten—became almost obliterated in the increasing storm. Jack seemed not inclined to obey with ready alacrity either tightened rein or whip, and adopted a swinging stride not likely to set a new record for Dan Patch.

The faint track meandered from side to side of the road or was lost in the fleecy drifts as they piled higher. Slowly and more slowly we pressed on till we came to a standstill over against the fence. Here, "Jack" enlightened us as to his above mentioned shortcomings, for no amount of driving, coaxing or persuasion availed to move him, and under the circumstances we bid fair to become buried alive.

Having exhausted our tactics applicable under such conditions, I decided to enlist aid at a neighboring farm house. Accompanied by our "borrowed pup"—(my fair friend was confident she could "hold" the horse). Encircling the house to find an entrance I charged on the back door and by so doing "fired the shot" for the opening of combat between our canine companion and hundreds of dogs—so it seemed—ambushed in the dark shed. The uneven battle, however, lasted not long and the sudden uproar announced by arrival much more effectively than wrap upon panel could have done.

To the figure standing in the open door, I stated my plight and mission, but found after repetition of my story that I had aroused no signs of sympathy.

thy, in fact had not as yet made myself heard—he was stone deaf. However, he must have guessed that I wanted something and gave place to his better half who interpreted my errand to him. Two or three men responded to my emergency call armed with shovels and we proceeded to the scene of difficulty. Old Jack agreed now to proceed only on condition that we should first shovel the way.

The storm raged and whistled. Advance was well nigh impossible, to go back as difficult. My heart went out in volumes of gratitude as we accepted preferred hospitality for the night.

I never was so glad to sit by a fireside—even found it easy to answer evasively conjectures as to the probable motive for our escapade, questions as to where we hailed from, our nationality, politics and whether we could talk the “gaelic.” Of course, we quite understood that we were a “stormstayed young couple” among a company of curious people and accepted existing conditions. We were treated to a cup of tea of acid strength and over it listened to the diagnosis of a disease the domesticated canary bird had lately developed which was undoubtedly, as the symptoms showed, “asma.”

My experiences that night were such that I determined to sometime write a volume on the evils of the “spare bed.” Not only did I suffer from intense cold, but the air seemed full of stale fumes of fried potatoes, “liver and onions,” sauerkraut, plug tobacco in stale pipes which had floated in from somewhere, sometime.

The dawn of morning calmed not the warring elements, and at the precise time when my fair Margaret and I should have been moulding plastic young minds back at the little village of J— we were respectively washing dishes and chopping wood.

We had now given up hope of reaching our journey's end and determined to return when opportunity should present itself. This opportunity came late in the afternoon of our third day as uninvited guests. The morning had brought with it the cessation of the storm. The mail which came only twice a week must get through and we might follow.

So in the proverbial calm following the storm we made our way back and as we entered the village, passing the corner grocery we beheld in large and conspicuous letters the words “Two teachers wanted. Married couple preferred.”

“The Rolling Stone.”



From Life.

Professor — What are the three kinds of agriculture?

Freshman — Extensive, intensive and pretensive.

◇ ◇
First Homemaker—I do like a nice full stocking at Christmas.

Second Homemaker—I would rather have my next Christmas present in a pair of socks.

Here is some good advice from an agricultural expert: “Don't go behind a horse or cow without speaking, as neglect to do this may cause fright.” True, brother. It will probably also result in a punctured wishbone on the part of the rubber-tired owner. Many a man has been removed to a decided change of climate because he edged up to a family driving horse without passing the time of day.

LOCALS

Things We Would Like Explained

Why the editor has not had his hair cut?

Why someone is a conscientious objector to settling year and banquet fees?

Why year '15 dislikes entomology?

Why McLarty is not President of '17?

Why Kansas University hired Roy Fraser as a janitor?

Why Hogarth is not an artist's model?

Could You Imagine

Garlick fussing?

Hamilton catching a train that's on time?

Booker dying a bachelor?

Jones in a rush?

Kroop with an Irish accent?

"Rusty" shining?

Weston 'here'?

Beaumont leading a college parade?

"Bunny" hugging?

Hearle "early"?

Miss Brown discussing spinsterhood?

Steele "ironic"?

"Windy" Morse speechless?

"Sandy" loamy?

Skeleon dusty?

The Dean at roll-call without a prayer-book?

A dinner at home?

Abraham finding "corn in Egypt"?

—William H. Hill, '16.

A New Fact in Science

Prof. R. Graham—Water is inflammable.

To a Clock

Tick on, thou flat-faced monarch
cursed and blessed,

Who with thy slender hands dost rule
us all;

And not a beat comes from thy hollow
chest

But marks somebody's rise or some-
one's fall.

Methinks sometimes I've heard it
said of thee

That thou too slowly turn thy hands
of fate,

It seemeth so, to those who restless
be

And do some coming incident await;
And others cry out, "Stop! have pity
do;

My life has passed, I'm nearing now
its end."

But thy wheeled stomach can no mer-
cy shew,

And to their grave these sages do you
send.

Yes, you are merciless and go your
way;

Yet love alone shall never know thy
sway!

—Archie M. Campbell.

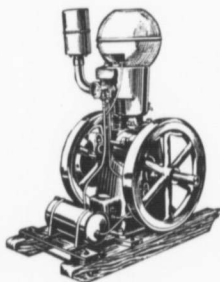
McDermott (getting home some-
what late on Sunday night last)—I'll
write "eleven" on one side of the door,
and "twelve" on the other and tell
Stevey in the morning that I came in
between eleven and twelve.

Stratford—Where do the bugs go
to in winter, George?

Spencer (scratching his head) —
Search me.

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LOCALS

WANT THE EDITOR'S GOAT

(With Apologies to Edgar Allen Poe)
As in front of the keyboard sitting,
why do angry thoughts come flitting,

And the brow begin a-knitting; what
has caused him to feel sore?

If you glanced at what he's setting,
you'll soon see why he is fretting,
And the sort of "take" he's getting;
Only look, then look some more.

Coopy's bad from start to ending. Oh,
the stuff they keep a-sending,
Gets your goat, which goes a-wending
past you and out through the
door,

And—but then it's no use talking,—
got to keep your fingers trotting,

And you can't sit still, a-gawking;
Got to pound those keys some more.

The blamed copy keeps you thinking,
and it sets your eyes a-blinking;
Enough to start a fellow drinking who
had never drank before.

Punctuation marks are missing, writing
makes you do some guessing.

It's no wonder you start hissing,
As you glance the copy o'er.

For you've got to get your lines up,
till the eight hours end and time's
up.

On one thing we've made our minds
up, as we've often raved and swore;
If our stuff they do not edit, we'll set
simply as we get it;

For good work we get no credit,—
And that is no fairy lore.

There is a great fad just now to make hogs immune from cholera by vaccinating them in the left spare rib. This has been tried on several hogs with so much success that none of them lived to die a natural death. We have no doubt that vaccination is a good thing, but we do not care to be around the hog when it begins to work. A man takes his life in his hands when he goes up to a hog that is full of high-priced vaccine and melancholy thoughts and strokes him on his sore arm.

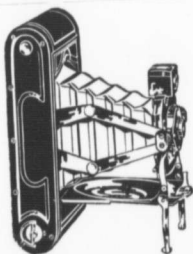
Some day, perhaps, somebody will discover a cure for hog cholera, but up to the present time all efforts in that direction look like the attempt of an armless man to do the bear dance. Most of the discoverers of so-called cholera cures never got closer to a cure than old Doc Cook did to the North pole, and Doc never got near enough to raise chilblains on his person. The best remedy for hog-cholera is the Saturday night bath and the use of a brand of drinking water that doesn't have to be strained through a cheesecloth sieve. When your swine are allowed to inhale wigglers, angeworms, chiggers and other invertebrate mammals with their meals, you need not be surprised to find them some morning laid out beside the windmill, past all human help.

Group of 2nd-year students exchanging stories.

Jensen—Now, here's a joke I brought from South Africa.

One of the Brotherhood—Hold on, there! That won't do; that's carrying a joke too far.

MADE IN CANADA



No. 1-A Folding Pocket Kodak

Snap open the front and it's ready—no focusing.

Pictures $2\frac{1}{2} \times 4\frac{1}{4}$.

Loads in daylight with Kodak Film Cartridges. Kodak quality in every detail.

PRICE \$12.00

Catalogue at your dealers, or write us.

Canadian Kodak Co., Ltd.
TORONTO CANADA

WATERHOUSE Tailors to Men Who Know

Come here for your new Spring Suit or Overcoat because the Clothes we tailor to your individual measure are the product of Brains, Skilled Workmanship and up-to-date Ideas—their style and quality is unexcelled.

We are not high-priced tailors.

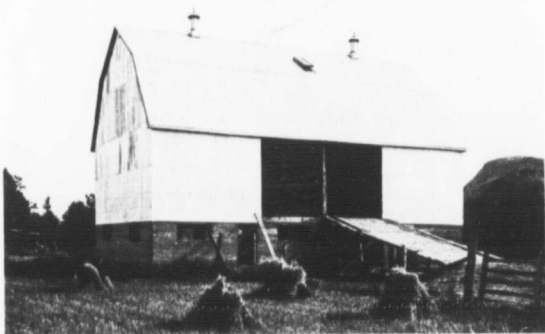
WATERHOUSE

Tailors to Men who Know.

36 Quebec St. West, - GUELPH

STEEL TRUSS BARN

(PATENTED)



Barn of Wm. Reid, Preston, Ontario, which is entirely covered with metal. Note the barn is fitted with Acorn lit roof lights and Acorn Swing side lights. The eaves are covered with Acorn cornices and the doors are covered with Acorn Quality corrugated Iron and flashing. There is not a square inch of wood exposed on the entire outside of the building, which makes it fire and lightning proof. This man has a barn which will give him longer service than any other type, and at the same time cost no more than the old wooden structure.

The interior of this barn is our patented Steel Truss type—which does away with all interior across timbre and upright center posts. We cannot tell you about the construction in this small space, so we want you to send for our booklet, "The Steel Truss Barn." It's Free.

WE RECOMMEND

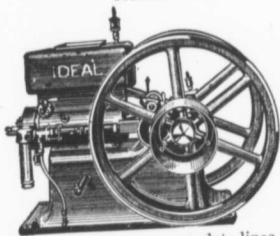
as the proper covering for a barn Safe Lock Shingles for the roof and Acorn Quality Corrugated Iron for the sides. Let us tell you how you can make your building fireproof and Save Insurance. Our little booklet, mentioned above, will give you full information. A card to us will bring a copy.

The Metal Shingle & Siding Co. Ltd.

Preston Toronto Winnipeg Montreal Saskatoon Calgary

Brantford Gasoline Engines

We manufacture the most complete
and up-to-date line 1½ to 50 H.P.
Stationary, Portable and
Traction



We also manufacture complete lines of

WINDMILLS

Grain Grinders
Saw Frames, Pumps
Tanks, Water Boxes
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GOOLD, SHAPLEY & MUIR CO.,
Limited
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**ASPINWALL
Potato Machinery**

Cutters Planters
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*Accuracy, Simplicity and
Durability characterize
the Aspinwall Line*

ASPINWALL MFG. CO.

GUELPH .. ONTARIO

*World's Oldest and Largest
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A HIGH GRADE ESTABLISHMENT
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OF CATALOGS, BOOKS and
COMMERCIAL JOB WORK

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Work a Specialty

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**BROWN'S NURSERIES,
WELLAND COUNTY, ONT.**

Are YOU Going Abroad?

If so, you are necessarily interested in knowing how to carry your funds.

There are different ways—but they are not all safe—nor are they all convenient.

You want both safety and convenience.

It will be in your interest therefore to fill in and mail the coupon furnished below, on receipt of which we will be pleased to send you full particulars regarding

Dominion Express Travellers Cheques

the best medium for carrying funds when travelling in any part of the world.

Money Order Department
DOMINION EXPRESS CO.,
32 Front St., West, Toronto.

Please send particulars of your Travellers' Cheques.

Name

Address

O.A.C.



UNDERWOOD

The Underwood is used more extensively in Canada than all other makes of typewriters combined.

550 Underwoods are sold every day. The Underwood is the "aristocrat" of the typewriter world.

United Typewriter Co., Limited

EVERYWHERE IN CANADA.
Head Office, Toronto.



THE PREMIER

Tens of Thousands in Daily Use.

The Efficiency, Durability, and Simplicity of the PREMIER



Winnipeg

make it the best investment on the market for the Farmer who is Dairying for Profit. The many advantages of the Premier over its competitors, including the self-balancing bowl, machine-cut square gearing, aluminium discs, etc., are fully explained in our Catalogue "B" which will be sent free on receipt of a postal card addressed to

The Premier Cream Separator Co.

TORONTO

St. John, N.B.

Keep Hammering Away

At your trade, but make every blow count. Well-directed pieces of well-executed printing are regular sledge hammers for shaping successful business. Our equipment includes a generous supply of **Dollar-Getting Ideas** as well as modern type and up-to-date presses.

ATTRACTIVE PRINTING

EFFECTIVE PRINTING

ON-TIME PRINTING

That's Us

Advertiser Job Printing Co., Ltd.

PHONE 3670

LONDON, ONTARIO.

LOOK AT THIS OFFER

THE "1900" GASOLINE MOTOR WASHER is now at work in thousands of homes. It is doing the work formerly done by women, at a cost of 2 cents a week for gasoline! Saving thousands upon thousands of dollars in wash bills! Saving worlds of wash-day troubles! Leaving the women free to do other work while the machine is doing the washing!

A Self-Working Wringer Free with Motor Washer!

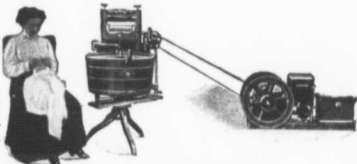
The motor runs Washer and Wringer. We guarantee the perfect working of both. No extra charge for Wringer, which is one of the finest made.

The outfit consists of the famous 1900 Washer ready to connect with an ordinary Gasoline Engine. You simply turn on the power and back and forth goes the tub, washing the clothes for dear life. And it's all so simple and easy that it is mere child's play to run it.

Anybody can have one of these washers on free trial, freight prepaid, just by writing for it. Why not write TODAY? Washes a Tubful in Two to Six Minutes — Hands Everything, from Heavy Blankets to Dainty Laces.



Wringing by Power.



Washing by Power.

Send for **FREE WASHER BOOK** and **30 Days' FREE TRIAL OFFER!**

Don't doubt! Don't say it can't be done! The free book **proves** that it can. But we do not ask you to take our word for it. We offer to send the "1900" Gasoline Motor Washer on absolute Free Trial for an entire month to any responsible person. Not a cent of security—nor a promise to buy. Just your word that you will give it a test. We even agree to pay the freight, and will take it back if it fails to do all we claim for it. The "1900" Washers are in successful operation in thousands of the best homes in every part of the country, giving universal satisfaction.

A post card with your name and address sent to us to-day will bring you the book free by return mail. Address U. P. MORRIS, Mgr., 1900 Washer Co., 357 Yonge St., Toronto, Ont.

ALWAYS RELIABLE

The element of reliability enters into the making of a cleaning material equally as much as into the manufacture of any other article that must be of a dependable quality.

The high standard of purity and cleaning excellence for which

Wyandotte
Dairyman's
Cleaner and Cleanser

is so well known and which is so carefully maintained increases to the maximum the reliability which the butter or cheese maker can give to his dairy-cleaning material.

Since there are no greases, caustic properties or other harmful ingredients in Wyandotte Dairyman's Cleaner and Cleanser to bring about a loss of quality in the finished product, and since it has only the purest of cleaning ingredients that work in perfect harmony with milk, butter or cheese, the reliability of Wyandotte Dairyman's Cleaner and Cleanser is easily established as every pound is equal in all respects to every other pound.

Its original low cost together with its thoroughly reliable qualities make Wyandotte Dairyman's Cleaner and Cleanser the most ideal and serviceable cleaner for any dairy or factory.

In Every Package

Ask your dealer or order from your supply house.
The J. B. Ford Co., Sole Mfrs., Wyandotte, Mich.

This Cleaner has been awarded the highest prize wherever exhibited.



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

DAVIES

Special Mixed

Fertilizers

Best for The Average Farmer

The finer the raw materials for a Fertilizer are crushed or ground the better and more thoroughly can they be mixed.

Unless the raw materials are ground to almost the fineness of meal and then thoroughly mixed. It is impossible to get an even analysis.

Furthermore, unless you have an even analysis you cannot secure an even fertilization of your land.

In the making of Davies Fertilizers the raw materials are thoroughly crushed and ground by machinery to a powder as fine as meal.

They are then mixed by machinery and allowed to "cure" so thoroughly that any **handful you pick up will analyze** according to the guaranteed analysis under which these goods are sold.

We ship our Fertilizers to your station freight paid, we also allow easy terms that enable the increased Crops to pay for the Fertilizer.

Write to-day for further particulars and free booklet "Farm Davies' Way." "There is a Davies' Fertilizer for every crop."

THE **DAVIES** Company
WM. Limited

FERTILIZER WORKS

R. INNES, B. S. A., Mgr.

WEST TORONTO

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Don't forget that when you are preparing to issue advertising literature, the best investment you can make is to let us illustrate and print it.

We will put it up in a snappy, effective way that will bring you more business and help you to more securely control what you already have.

In the production of high-grade, general advertising work we are experts. Our service is prompt, reasonable and reliable.

The Advertiser Job
Phone 3670 :: Long Distance 3673

Ontario Veterinary College

TORONTO, CANADA,

Under the control of the Department of Agriculture of Ontario.

Affiliated with the University of Toronto.

College Reopens
THURSDAY, 1st OCT., 1914.

N.B.—A short course on the Surgical and Medical Treatment of Wild Animals in confinement will be given as a new subject this year.

Calendar sent on application.

E. A. A. GRANGE, V.S., M.Sc.,
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What is Your Best Horse Worth to You?

Yet your best horse is just as liable to develop a Spavin, Ringbone, Splint, Curb or lameness as your poorest!

KENDALL'S SPAVIN CURE

has saved many thousands of dollars in horse flesh by entirely curing these ailments.

Garnet, Ont., Feb. 25th, 1913.

"I have used Kendall's Spavin Cure to kill several jacks, and removed a bunch of long standing, caused by a kick." SID. GRAHAM.

Don't take chances with your horses. Keep a bottle of Kendall's handy, \$1—6 for \$5. Our book "Treatise on the Horse" free at druggists or

Dr. E. J. KENDALL CO., Enosburg Falls, Vt. 82



Live Stock Pavilion on the Toronto Exhibition Grounds Roofed with ASBESTOSLATE

The big Live Stock Pavilion illustrated was the only building erected last year on the Canadian National Exhibition Grounds, so the choice of Asbestoslate for its roof was doubly significant.

Asbestoslate is not an experiment with the Exhibition authorities—they had already used it on the roofs of the Dominion Building, the Women's Building and the Police Station.

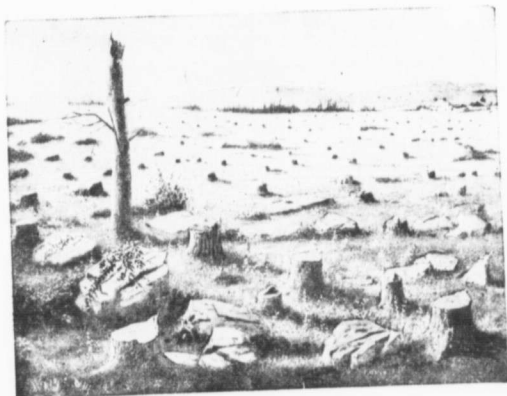
For Booklet G. R., giving prices and full information, write

Asbestos Manufacturing Company, Limited

Address, E. T. Bank Bldg., 263 St. James St., Montreal, Factory at Lachine, P.Q. (near Montreal)

This is but an instance of the way government, municipal and public authorities generally are now specifying Asbestoslate—and it is used by every Railway in Canada.

Asbestoslate is fireproof—weather-proof—needs no paint or dressing—and is practically everlasting. For private residences as well as for public buildings, it is the most satisfactory roofing made.



Farm Robbers

An Effective Method For Their Removal

Stumps in the field rob the farmer of land that would otherwise be productive.

No farmer should tolerate waste land on his farm when it is such a simple matter to remove the obstruction whether it be Stumps, Boulders or the breaking up of Hard Pan, Shale or Slate Sub-Soils.

C. X. L. STUMPING EXPLOSIVES

are the only economical and effective way to make waste land productive.

PERFECTLY SAFE

Our C. X. L. Stumping Powder is actually safer to handle than gun-powder and can be handled by responsible persons just as safely as they can handle gasoline, matches or coal oil.

The energy of C. X. L. Stumping Powder has been used for agricultural work by many Canadians with such undreamed of success that no farmer can afford to overlook the possibilities of this force for making his farm more successful.

**WRITE FOR OUR BOOKLET AND LEARN MORE OF THIS ENERGY.
IT PAYS TO INVESTIGATE.**



Canadian Explosives, Limited
MONTREAL, P.Q. :: VICTORIA, B.C.

MONEY IN POTATOES

Every labor-saving machine that you use in growing your crop means so much more of that money for you. Remember that the machinery you buy is a permanent investment, and should be the kind that will last you for years to come.

O.K. CANADIAN POTATO PLANTERS

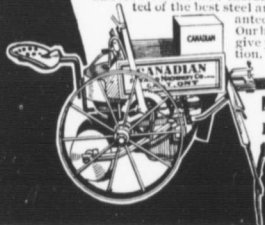
SEED POTATO CUTTERS

are the best that we know how to make—the kind that are built to give years of satisfactory service.

The *O.K. Canadian Seed Cutter* is designed to leave both your hands free, being operated by the foot. With it you can cut from 5 to 7 bushels an hour, as against 1½ bushels by hand.

The *O.K. Canadian Planter* is of the latest design. It is thrown out of operation by moving one lever, its cup-feed device handles the potatoes without damage, it is adjustable to any depth and to plant hills 12 to 18 inches apart, it has an attachment for distributing fertilizer which may be used or not, as desired, and it covers the seed thoroughly. It is strongly constructed of the best steel and malleable iron, and guaranteed in every respect.

Our booklet on potato growing will give you much valuable information. Write for it, FREE. 25



**CANADIAN POTATO
MACHINERY CO., Ltd.**
Dept. A GALT, ONT.



Plant Your Garden with Vegetable and Flower Seeds of Northern Stock that will grow

Nothing adds greater beauty to a house than a tastefully arranged garden—and nothing detracts more from the appearance of a garden than the barren spots where seeds "refused" to grow.

Why not make a good garden a certainty by using the best **Canadian Government Tested Seeds**? Rennie's Seeds have been recognized as strictly reliable for nearly Fifty Years.

Write for our complete catalogue—free.

Wm. RENNIE Co., Limited, Also at Montreal, Winnipeg and Vancouver. 202T
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FLOWERS

We have the largest and best equipped plant in Canada for growing flowers under glass. We fill orders for cut flowers anywhere from Montreal to Winnipeg. Give us a trial for your next banquet.

Prompt Service

Moderate Prices.

Miller & Sons FLORISTS

Lauder Avenue

Toronto

A Botanist's Dilemma

If the lily plant belongs to the Liliacea family and the rose plant to the Rosacea family, to what family does the Hydro-Electric Plant belong?

To the United States Capitalistic family, you chump.

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Latest and Best Dairying Methods

All readers of The Review will be interested in the newest dairying methods. These are given in detail and in a most interesting way in the New Edition of

"CANADIAN DAIRYING"

By Professor H. H. Dean.

The new edition has had Professor Dean's most careful revision and is profusely illustrated with photographs and drawings of the newest apparatus for Farm and Dairy use. It has 299 pages with useful index, and has substantial cloth covers.

PRICE—\$1.00 Net. Postpaid

WILLIAM BRIGGS, Publisher

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The Department is publishing Manuals for Teachers dealing with methodology and containing supplementary material for their use in class. These Manuals are distributed free amongst the school libraries, and teachers may obtain copies at the prices indicated:

For Continuation and High Schools, and Collegiate Institutes:—

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The teacher himself may use any book, pamphlet, or magazine he wishes in preparing the lesson for his class; but he has no authority to use as textbooks in his class-teaching any other publications than those whose use is authorized in this circular or which are listed in the catalogue of the school library with the approval of the Inspector. Nor can Notes on History, Geography, etc., School Helps, School and Home, or similar publications be used by his pupils in their work at school; and neither the teacher nor the board has any authority to require or induce pupils to buy any of such prohibited books, pamphlets, magazines, Notes, School Helps, School and Home, or other similar publications.

Department of Education.

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A Good - Crop Necessity ---

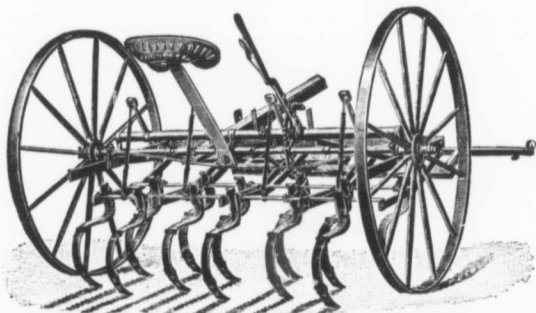
CHAMPION

SPRING-TOOTH

CULTIVATOR

Cultivate your soil frequently and regularly. The increase in quantity and quality of yield makes it well worth while. More than pays the cost

When you cultivate with this CHAMPION Spring-Tooth Cultivator, you not only rid your soil of all weeds and trash, but you also leave it in proper shape to store up soil-moisture for the growing crops.



"CHAMPION" Superiority Shown At Every Point

You have only to examine the CHAMPION'S design and construction to realize that here is a Cultivator that must do good work. Its frame is of heavy steel—securely reinforced. Tooth-section cross-bars are RIVETTED, instead of bolted. They will never come apart.

Either 2-inch or 7-inch points may be used on the teeth. The 2-inch are reversible—good for double-wear. Tooth-sections are independent of each other, with a separate pressure spring to each section. One lever controls all the sections—enabling the teeth to thoroughly cultivate the most uneven soil.

OUR COMPLETE CATALOG

illustrates and fully describes the "Champion" in 10-12-13-16 tooth sizes—with or without grain and grass-seed boxes. See our agent or write for a copy to our nearest branch.

FROST & WOOD CO. LTD.

Smith's Falls, Ont. Montreal, Que.
St. John, N. B.

Sold in Western Ontario and Western
Canada by

COCKSHUTT PLOW CO. LTD.

BRANTFORD, ONTARIO

The Disc Harrow that never "Falls Down"



How often we hear the expression that some one or something has "fallen down" on a job—has failed to make good when difficulties were encountered.

No need to worry on that score if you are using a Massey-Harris Disc Harrow with Spring Pressure for your harrowing.

Being equipped with Pressure Springs, the Gangs are held to their work on rough and uneven ground, on ridges and in furrows, so that the entire surface is cultivated.

Should one Gang strike an obstruction, it may rise and pass over it without disturbing the other Gang, or without danger of injury to the machine.

Angle of Gangs is readily controlled by a single, easily-operated Lever.

Bearings have oil-soaked Maple Bushings and Spring Oil Caps.

The Low Hitch takes all the weight from the horses' necks.

MASSEY-HARRIS CO., Limited.

Head Offices—Toronto Canada.

— Branches at —

Montreal, Moncton, Winnipeg, Regina,
Saskatoon, Swift Current, Calgary,
Yorkton, Edmonton.

— Agencies Everywhere —



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CO-OPERATIVE SUPPLY
STORE**

A Full Line of

Agricultural Text Books

BOTANICAL SUPPLIES

Plant Mounts,
Labels,
Weed Seed Vials, etc.

ENTOMOLOGICAL SUPPLIES

Insect Pins,
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DRAINAGE SUPPLIES

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Instruments, etc.

Transportation Charges paid
on orders of \$5.00 and over.

**STUDENTS'
CO-OPERATIVE SUPPLY
STORE**

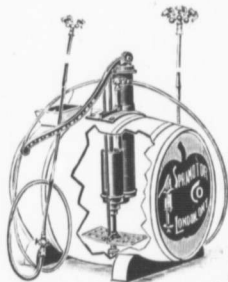
O. A. College, GUELPH, ONT.

**WINDSOR
DAIRY
SALT**

will salt more
Butter, pound
for pound, than
any other salt you
can use. Because
Windsor Dairy Salt
is pure salt and all salt.
Windsor Dairy Salt
not only lends a
delicious flavor to
the butter but
also helps to
keep the
butter.

129





TURN LOSS INTO PROFIT WITH A SPRAMOTOR

You can do it! The **Spramotor** has improved fruit yields in different sections of the country fully 80 per cent. It has increased potato crops from almost nothing to 400 bushels an acre. These are not estimates or guess-work, but actual results.

By direction of the Minister of Agriculture for Ontario, spraying tests were conducted at 90 different places to see what increase of fruit could be effected by spraying. The result showed 2,977 barrels of good fruit from sprayed orchards against 380 barrels from the same number of trees not sprayed. We have more proof. Do you want it?

Write us, giving information as to your spraying needs, and we will send you full particulars of a **Spramotor** that will fill the bill, also a copy of our valuable illustrated treatise on Crop Diseases, FREE.

We make **Spramotors** at prices all the way from \$6 to \$350—A machine for every requirement.

J. H. HEARD, SPRAMOTOR, 1712 King St., LONDON, CAN.

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Homeseekers' Excursions To Manitoba, Alberta, Saskatchewan

Each Tuesday March 3 to October 27, inclusive

| | |
|---------------------|---------|
| Winnipeg and Return | \$35.00 |
| Edmonton and Return | 43.00 |

From Toronto, and Stations West and North of Toronto. Proportionate fares from Stations East of Toronto. (Return Limit two months.)

**REDUCED SETTLERS' FARES (ONE WAY SECOND CLASS)
EACH TUESDAY, MARCH AND APRIL**

Settlers travelling with live stock and effects should take **SETTLERS' SPECIAL TRAIN** which leaves West Toronto each Tuesday during **MARCH** and **APRIL** after arrival regular 10:30 p.m. train from Toronto Union Station.

Settlers and families without live stock should use **REGULAR TRAINS** leaving Toronto 10:20 p.m. **DAILY**. Through Colonist and Tourist Sleeper.

Through trains Toronto to Winnipeg and West. **COLONIST CARS ON ALL TRAINS**. No charge for berths.

Particulars from Canadian Pacific Agents or write M. G. Murphy D. P. A., Toronto. J. Hefferman, C.P. and T.A., 32 Wyndham St., Guelph.

Young Men Stay in Canada

Advise Your Friends to Come to
CANADA

Nowhere in the world are to be found so many and such
good openings for a career in

Agriculture

FRUIT-GROWING, DAIRYING—WHAT YOU WILL!

The cry now-a-days is "BACK TO THE LAND," and
CANADA has got the LAND

The day of CANADA'S PROSPERITY is the day of

Your Opportunity

Do not neglect it. Think this over.
You can never do as well anywhere else.

Tell your friends to apply for further information
To

W. D. SCOTT, Superintendent of Immigration, Ottawa.
Or to

J. OBED SMITH, 11-12 Charing Cross, London, S. W.,
England.



DE LAVAL CREAM SEPARATORS

are the cheapest
as well as the best

LOOK AHEAD!

DON'T TRY TO SAVE \$10.00 TO-DAY if it means a loss of 25 cents a day for all the years a cream separator may last you.

THAT'S JUST WHAT YOU WILL DO if you buy a cheap or inferior cream separator simply because its first price is a little less than that of the De Laval.

WHEN A PRUDENT MAN BUYS A cream separator he knows that what he is really paying for is not just so much iron, steel, brass and tin, whether it is called a separator or not.

WHAT HE WANTS IS A MACHINE to perform a certain service, and he must be sure of the machine doing the work for which it is intended as thoroughly and with as little effort as possible on his part.

THOUSANDS OF BABCOCK AND other tests have proved that the De Laval skims closer than any other cream separator under any conditions, and particularly under the harder conditions always experienced at times.

JUST THINK WHAT A LOSS OF AS little as 10 cents worth of cream at each skimming means to you in a year—twice a day for 365 days—over \$70.00 and with as many as ten cows the cream losses alone from an inferior separator usually amount to more than this.

CREAMERYMEN, WHO ARE DE-

pendent on their separators for business success, have long since found out the difference between De Laval and other separators, with the result that De Laval factory separators are almost universally used the world over to-day.

DE LAVAL SEPARATORS ARE IDENTICAL in all sizes, for one cow or a thousand, and the differences between separators are just the same with the smallest machine and the largest. They mean as much relatively to the little as the big user.

THEN THERE IS THE SAVING IN labor because of the easier running and greater capacity of the De Laval over other machines and the less care required in cleaning and adjustment worth at least 10 cents a day.

AND THERE IS THE INDISPUTABLE fact that a De Laval machine lasts from ten to twenty years as against an average of from two to five years in the case of other separators, or five times the average life of competitive machines.

THESE ARE THE REASONS WHY DE Laval Separators are cheapest as well as best, why thousands of other machines are yearly being replaced with De Laval's and why their use is rapidly becoming as universal on the farm as in the creamery.

IT SHOULD BE REMEMBERED, More- over, that if first cost is a serious consideration a De Laval Separator may be bought on such liberal terms that it will actually save and pay for itself, as many thousands of them have done.

These are all facts every De Laval local agent is glad of the opportunity to prove to any prospective buyer. If you don't know the nearest De Laval agency simply write the nearest main office, as below.

DeLaval Dairy Supply Co. Limited

Largest Manufacturers of Dairy Supplies in Canada.

Exclusive Canadian distributors of the "World Standard" De Laval Cream Separators.

MONTREAL PETERBORO WINNIPEG VANCOUVER

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