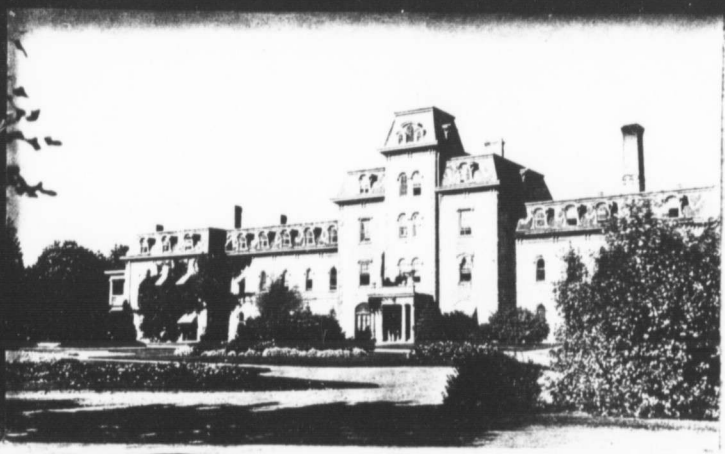

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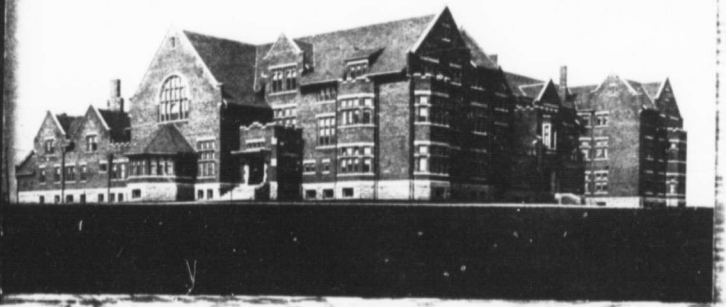
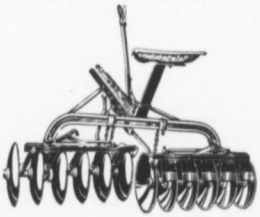


COCKSHUTT
DISC HARROWS

No. 4 In Throw Disc Harrow

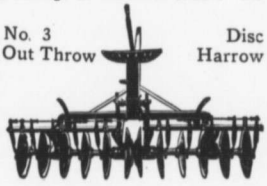


The No. 4 Cockshutt In Throw Disc Harrow combines simplicity and ease of operation. Forty hard STEEL balls (not Iron) run in hard chilled steel bearings and receive the end thrust of the sections. This gives a much longer life to the machine. All bearings are oiled by tubes from the scraper holders, instead of by cups, and no dust or grit can possibly enter the bearings. It is the lightest draft harrow on the market and at the same time will work in any soil with equal freedom. The frame is substantially built and the arch is of the finest channel steel specially braced. "Cockshutt" discs are of special shape which thoroughly stir and pulverize the soil.

Draw Light---Work Right

The "Cockshutt" No. 3 Out-throw Disc has the same special features of the In Throw, being a model of strength, simplicity and efficiency. Note the easily adjusted spring pressure which is applied to the boxings at the inner ends of the sections. This keeps the discs cutting level always. The boxings are long wearing, hard maple, and are kept well supplied with oil by tubes leading from the scraper holders. All Cockshutt harrows can when ordered be fitted with tongue truck. With this attachment the driver is enabled to get the most effective work out of his machine with least exertion on the part of the horses.

No. 3 Out Throw Disc Harrow



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COCKSHUTT PLOW COMPANY LIMITED BRANTFORD

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DUNCAN STREET, - - - - TORONTO.

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VOL. XIII. APRIL, 1911. No. 7.

The O. A. C. Review is published by "The O. A. College Students' Publishing Association," O. A. College, Guelph, Canada, monthly, during the college year.

Annual subscription—Students, $1.00; ex-students, in Canada, 50c; others, $1.00; single copies, 15c. Advertising rates on application.

THE O. A. C. REVIEW

THE DIGNITY OF A CALLING IS ITS UTILITY

VOL. XXIII. APRIL, 1911. No. 7.

Neuroses in the Lower Animals

Extracts of a Lecture Delivered Before the Veterinary Association of Cornell University by Edward A. A. Grange, V.S., M. Sc. Principal Ontario Veterinary College.

IN approaching a discussion of the various forms of Neuroses in the lower animals, it might be well, in the first place, to arrive at some conclusion as to that which may be regard as disease, habit or idiosyncrasy, and, while it may be a somewhat difficult task to draw sharp lines between these conditions in a manner that one will not overlap another at some place or time, in such a manner that each becomes a mere synonym of the other, yet it may be possible to come to an understanding which will serve our purpose at this time.

Regarding the definition for disease, I am forced to admit a difficulty in finding one which will cover all cases, and to which exception may not be taken. If we refer to the derivation of the word, which, when somewhat liberally translated means "asunder from ease" we cover a great deal of ground, and which perhaps defines it in a large majority of instances. At the same time it must be admitted that disease occurs when "asunder from ease" does not apply because there may not be real pain associated with the disorder. In trying to arrive at a definition I have consoled myself with the idea that disease may be defined to be "an abnormal condition of a vital principal," that is to say, whenever a tissue is thrown off the line of that which may be regarded as normal, then, according to this definition, it would come within the pale of disease. This definition, however, would exclude, in some instances at all events, neuroses, because these conditions often exist without there really being a recognizable abnormal condition of the aforesaid vital tissue, and we meet with conditions of idiosyncrasy, on the other hand, where actual pain may be produced without recognizable patheological change in tissues.

Without wishing to split hairs to too great an extent, it may be said that neuroses in the lower animals may be defined to be "a disease or condition supposed to have its seat in the nervous system without any recognizable lesion in the structure of the parts, and without any material agent producing them." These diseases have not been recognized in Veterinary Literature to any extent, as far as I am aware, which is one of my reasons for bringing the subject before you to-day, and, as I understand it, the condition

may be regarded as temporary or chronic. The temporary variety may only last for a few minutes, and it may be the result of an objectionable noise, objectionable odor or gruesome-looking object, which will in their turn produce a variety of symptoms. These symptoms may occur in one animal in a most pronounced manner, while its stable mate will hear, see or smell the same things without its having the slightest effect upon it. This is where

plaint, and become an organic disease. Later, I will call your attention to some of those cases in which the organic complaint seems to have been induced by a functional disorder, and cases which are vividly before me were brought to my notice in Canada a month or two ago; and, while I have some hesitancy in regarding them as pure cases of neuroses, yet in as much as the cause of the disorder is still wrapped in the greatest obscurity, we

FIRST YEAR STUDENTS IN CHEMICAL LABORATORY, ONTARIO VETERINARY COLLEGE.

idiosyncrasy seems to over-lap neuroses, and, idiosyncrasy, as you are all aware, may be defined to be "a condition peculiar to an individual through which it may have peculiar antipathy through its senses to certain things, and may or may not be accompanied with pain." While the chronic variety will last for a considerable length of time, and, in all probability, become permanent, especially in older animals, and finally depart from the functional disorder which existed in the preliminary or primary stage of the com-

have a reason for so considering them. The condition to which I refer is commonly spoken of over there as "Horse-tail sickness," and, for many years remained a mystery among the average laymen. Indeed, it was not until the Botanist, prompted by the havoc this disease was creating, was led to investigate the nature of the food upon which affected animals were living or dying as the case might be, and it was soon demonstrated that a plant technically called the "Equisetum Arvense," or in layman's parlance "Horse-Tail."

This disorder is known as "Equisetosis," and is accompanied with a variety of symptoms, such as unthriftiness, general debility, falling off in condition, amounting in later stages to emaciation, depraved appetite, in which the animal exhibits a desire for the plant which caused the disease. Later on the animal loses control to a greater or less extent of its voluntary muscles, and its movements are incoordinate; the pulse becomes affected (depressed), the extremities get cold and the visible mucous membranes pale; consciousness remains unimpaired until near the end. Towards the close of the disease if appropriate remedies have not been given and the cause of the disease is kept up, the animal will exhibit convulsive paroxysms, which may be so violent as to exhaust the animal, although in a good many instances, when the muscles become partially paralyzed, the animal will lie down or fall and hypostantic congestion becomes a fresh complication of the disorder, and, in some instances, seems to be the immediate cause of the animal's death. Although this disease is a serious one if permitted to run its course, yet appropriate remedies have, in a large percentage of cases, been administered with beneficial results. The class of medicines which have gained most favor are eliminatives and tonics, such as pergatives and diuretics followed by tonics, especially nerve and heart tonics.

In the very earliest stage of this disease there does not appear to be any lesion which may be regarded as diagnostic, yet, in a short time, various ones present themselves, which might almost be regarded as specific for the disorder. In this and similar cases I am inclined to regard the disease as dietetic neuroses, and, were I not afraid of exhausing your patience, I might follow the disorder occasioned by dietetic influence for a considerable length, but I will leave it for the present, except I would like to add a peculiar case of neurosis in a horse that once belonged to myself, in which the animal exhibited the most exaggerated form of "String halt," (and here let me say that I regard "String halt" as a form of neurosis) when first brought from the stable, and not only did she exhibit peculiar neurotic symptoms as far as her hind legs were concerned, but her head would be shaken in a manner that one might easily imagine she had an irritating insect in her ear. After being driven for a quarter of an hour or so, during which time defectation would occur, the symptoms would subside entirely, and the animal would continue its journey as smoothly as any horse I ever drove. It always seemed to me that the dietetic system was to blame for the peculiar symptoms in this animal.

While speaking of imperfect gait in an animal I can call to mind a number of cases where lameness was evident and yet no cause could be attributed to the disease, nor could it be located with anything like certainty. Then in the course of a few days, the symptoms would pass away and the animal become all right with or without treatment. These cases, I am aware, are often attributed to neuralgia or rheumatism, but I prefer to call them "neu rosis," and the lameness, which is the result of neurosis, is sometimes most severe. I will have to repeat a description of some cases which were brought under my notice a few years ago in one of the most important cities of this country. A year or two ago, while in the City of Washington, I had the pleasure of enquiring into a peculiar

disease there, commonly called gong lameness, but is more scientifically called "Sonus Neurosis," which when freely translated means a disturbed condition of the nervous system by sound; such as the ringing of a bell, the rattling of metal upon wood, or the striking of a fire alarm gong or other sudden noise. The first of these cases which I will describe seem to have been demonstrated as resulting from the fire alarm gong, while others were caused by noises of different kinds which came under my notice in every-day practice. The fire alarm cases were described to me by the official Veterinarian for the District of Columbia, who stated that he received a call one day from the Fire Department, saying that a certain horse was very lame. Whereupon he immediately visited the animal, but was somewhat surprised to find on his arrival that the horse to all intents and purposes was perfectly sound, and did not exhibit organic disease of any description, so dismissed the case feeling that a false alarm had been given. In a day or two he was again called but with like results. However, he was soon called a third time, and, upon finding things about the same as on previous occasions, it was decided to get to the bottom of the mystery if possible. On interrogation of the driver it was learned that the symptoms manifested themselves when the electric fire gong was sounded; this, together with the suddenness of the attack and the peculiar symptoms which were manifested, suggested that some kind of an electric shock was the cause of the trouble, but the most careful research failed to discover a conductor, and rather dissipated the theory of electricity. The failure finally suggested the idea that possibly the sudden noise of the fire-gong might in some mysterious manner disturb the nervous equilibrium of susceptible horses; and, to test the accuracy of the thought he had a susceptible animal sent to his infirmary, where a suitable gong was erected and the test applied, and singularly enough the peculiar symptoms were immediately developed; not only this, but it was shown that by repeatedly ringing the gong, a degree of clonic spasm of the voluntary muscles could be produced which would eventually cause the animal to fall to the ground.

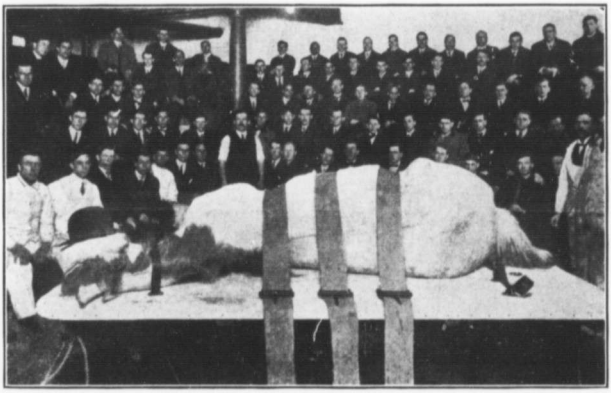
There were a great many of these cases in the early days of the trouble, but after the discovery of the cause and modification of the alarm system the number was reduced to the minimum, and now they are few and far between.

After describing these cases to students at the Ontario Veterinary College, before leaving for their summer's practice under a preceptor last spring, I have been interested by a number of similar cases which were related by them on their return to college in the autumn, and was gratified to learn that the disease made a more or less rapid recovery when the cause was removed in the early stage, and it now appears to me beyond any reasonable doubt that the cause of lameness in the foregoing cases was the result of clonic spasm produced by the gong through the auditory nerve.

I have had a number of cases similar to the foregoing brought under my notice, in isolated instances of my own practice; one horse belonging to a foundry company was reported to me by the driver, who stated that when the noon-day whistles blew, the horse would jerk one fore-leg in the air and hold it there until the whistle ceased to blow, a few moments after which he would put it down again, and pro-

ceed as if nothing had happened. Still another case, which was even more peculiar than this, was brought to my notice by a gypsy horse-trader, who invited me one day to get into his wagon and see his horse perform. I accepted the invitation, and when I had seated myself, the gypsy began to pound the wooden dash board of his wagon with the buckle on the end of his reins; no sooner had the clatter commenced than the horse exhibited the most peculiar marked cases of clonic spasm produced by sound. The wave of sound not only causes horses to go lame but it sometimes causes people to weep, dogs to howl, and other animals to perform in a variety of ways.

Passing on to other forms of Neurosis: And now let me call your attention to that interesting disease Milk-fever, or Parturient Apoplexy, but here I will put the cart before the horse and discuss the cure of the disease first, or rather give my views as to how the



THIRD YEAR STUDENTS ATTENDING A CLASS IN SURGERY, ONTARIO VETERINARY COLLEGE.

lot of stunts I ever saw; he seemed to fire his front legs off first, but a few more raps of the buckle brought the hind legs into action, and soon he was going in a manner that would cause the proverbial cat on hot bricks to turn green with envy; he jerked all his legs in rapid succession up to his body, and produced a spectacle in horseflesh that is easier to imagine than describe; he certainly had a very bad attack of "Sonus Neurosis," but finally recovered when the clatter of the buckle was suspended. These I also regard as well modern cure is effected, and in doing so will just review the more recent methods of treatment in a most summary manner. First we have the injection of the udder with a solution of iodide of potassium, which is said to have reduced the mortality of the complaint from 75 per cent. to less than 20; recent developments have caused me to believe that this per centage would have been still further reduced, if the iodide had been left out, and the udder injected to repletion with sterile tepid wa er. Next came the injections of

solutions of creolin, bysol, carbolic acid normal salt solution, oxygen gas, injected under pressure.

The object of these remedies was based on that which I now believe to be an erroneous theory, in connection with the etiology of the malady, viz.: that it is a bacterial disease of the udder and that the agents destroyed the germs, or acted as antidotes for the poison which the supposed germs produced.

As the oxygen treatment seems to have gained most favor, and reduced the mortality of the complaint to the minimum, I will confine my remarks for the present to that line of treatment, and the question at once arises how does the oxygen produce the marvelous cures we hear so much about? I could answer the question in a very few words in giving my own opinion but I prefer to preface them by statements of Veterinarians with whom I have talked on the subject, and which lead up to the theory with which I am much impressed. First. I was asked to believe that the free oxygen destroyed anaerobic germs, and that with the removal of the cause the effect soon followed, but this explanation has not appealed to me with any force, as the bacterial nature of the disorder has not been demonstrated, and I am far from being convinced that micro-organisms are responsible for its presence. The late Professor Smith of Toronto, informed me, some time ago, that an old country acquaintance of his, and a close student of such diseases, was of the opinion that the oxygen treatment produced an altered condition in the circulation of the brain; that statement seemed to me to strike the nail on the head; but he did not say just how this altered condition was produced; and it is now left for me to venture the opinion that this altered condition of the circulation is produced by nervous impression from the udder to the nerve centre; and in this case the impression is introduced into the economy, not by "sound," but by "touch," or contact from the air of the force pump on the walls of the milk duct, from which points it is conducted through an intricate and sympathetic nervous system to the circulation of the brain, where it produces its salutary effect. Neuro-Therapy.

This theory is not based on mere fancy, for we have too much evidence demonstrating that nervous impression Neurosis does alter the diameter of the blood vessels to admit of any doubt; take the blushing cheek for instance, where certain forms of embarrassment cause an increased flow of blood to the face; or, on the other hand, take the pallid face of fear, where the blood is forced out of the part by the contraction of the blood vessels.

Regarding the cause of milk-fever, let me call your attention to some theories which have become rather deep rooted in certain quarters, but which appear, on closer investigation, to be erroneous if not impossible. First we have an old theory which attributed the cause of the trouble to the absorption of the colostrum of the first milk; but this idea seems to receive a knock-out blow by a custom which is reported to prevail amongst the Jersey breeders on the island, which is to leave the newly calved cow for 24 hours without milking, by which method the dread disease is said to be practically removed. I do not take kindly to this plan, as I am fearful lest the overstocking would do more harm than good; and it is well to remember that the oxygen treatment cures all or nearly all, cases in a few hours. Fol-

lowing on the heels of this theory, comes the opinion from all sides, that deep milkers and plethoric animals are prone to the disease; well, I am hardly bold enough at this time to oppose this idea flat-footed, but I think it is over-estimated, and when I add to this that during eight years when I had veterinary supervision over the cattle at the Ontario Agricultural College, not a single case of milk-fever came under my notice in the herd, and I think they were in as good condition as a liberal supply of public funds could make them, and many of them were deep milkers. Again, I held a similar position at the Michigan Agricultural College for over 12 years. Here we had a larger herd and probably deeper milkers, for we had several record breakers in it. This herd was also fed from a liberal supply of public funds, yet I had only one case of milk-fever in all that time. True, it was in a pure bred Jersey, but she was not considered especially valuable as a milk producer, either in quality or quantity; and I only considered her in fair order as far as condition was concerned. Now, in cases like these and many others that I could quote vividly before me, is it any wonder that I accept the deep milking and plethoric idea with a good deal of reserve as a sole factor in the production of this disease?

Regarding the bacterial and ptomain theory, I must say that, from my view point, it does not seem to have a leg to stand on, for neither post-mortem appearances or anything else have produced evidence which will withstand the dictates of true science in support of the theory, and, until I am better informed, I can only look upon it as mere supposition.

In reviewing some of the literature of the causes of milk-fever, I was much impressed with the views of that distinguished Veterinarian, the late George Fleming, whose quotation and writings favored the theory that the symptoms are caused by an altered condition of the circulation of the brain but the cause of this altered condition is not accounted for and is still wrapped in obscurity, so Neurosis may yet have to be reckoned with before the problem is solved, but nervous influence and environment, if I may be permitted to link the two together, have such an extraordinary influence over both man and beast that it scarcely seems a wild fancy to give them a place as factors in both the cause and cure of the disease in question. Circumstances which stimulate this line of thought are to be found in one's every-day life.

I have seen race-horses so affected by the odour of wild animals that symptoms were produced resembling a brain storm and I have seen cattle affected in a similar manner.

In concluding this discussion I feel that I have hardly approached the threshold of what might be said regarding Neurosis in the lower animals, but one excuse which I have for bringing the question before you at all is that so little seems to have been written, especially by Veterinarians, on the subject that I have a lingering hope the question of Neurosis may receive from some of you further and deeper consideration, and thanking you for the kind consideration you have given to my somewhat rambling dissertation, I will leave the question in your hands.

The Better Farming Special

S. E. TODD, B.S.A., PETROLIA, ONTARIO.

THIS is an age of novelty in advertising. It is also an age in which corporations are seriously endeavoring to reckon on the possible profits that may accrue to a concern through the generally increased wealth of its customers. The railroads in the United States have learned that after all, the best means of increasing their profits is to increase the production of the farms lying along their route. It is notable that it is one of the railroads which has learned these facts by experience in the States that has made the "Better Farming Special," possible in Ontario.

The idea of novelty is gaining favor even in education. The minds of the mass of men are quite inert. It requires a shock of some kind to arouse the interest of men in their own business and welfare. That interest once aroused may slumber again but answers more quickly to a future idea. As district representative I am learning that the actual knowledge disseminated is not of nearly so much value as the increased respect that the recipient has for knowledge in relation to his business. To learn the life history of the codling moth is of much more value to the farmer than to learn the detail of the mechanical acts of spraying, because the former shows him the value of exact knowledge in his business. Moreover, the labor of becom-

ing proficient in spraying for the larvae of the moth is greatly reduced, because of his knowledge of its life. The length of time required to absorb an idea is comparatively small provided the mind has been quickened to receive it For these reasons the Department of Agriculture has been much more than justified in co-operating with the Michigan Central Railroad in making use of this novel method of advertising and educating known as the "Better Farming Special." The value of the advertising has accrued not only to the railroad but equally so to education, the value of which still needs emphasizing amongst farmers in every possible manner. The amount of educational work done has been very considerable indeed and must continue to exert a marked influence.

The detail of the arrangement was after this manner: The Michigan Central Railroad, one of the amalgamated lines known as the New York Central, placed at the disposal of the Department of Agriculture a train of seven cars of which three were coaches for lecture work and three were baggage cars which the Department fitted with exhibits relating to the arts and sciences of fruit growing, dairying, drainage, seed and corn improvement and all important departments of agriculture. Officials of the road accompanied the train and their marked courtesy and attention made the work very pleasant to the staff in charge of the lecture work and exhibits. The whole affair was in charge of George Putnam, Superintendent of Farmers' Institutes. About twenty instructors drawn from Institute lecturers, the O. A. College staff, the Department at Toronto, and the Disrict Representatives constituted the workers. In the Counties of Essex, Kent, Elgin, Middlesex and Lambton, sixteen stops were made and as many more in the remaining Erie and Niagara Counties. The two weeks run from February 28th to March 10th stopped for one and a half to two hours at the following points:

February 28.—Essex, Comber, Leamington, and Fletcher.

March 1st—Charing Cross, Ridgetown, Rodney, and Dutton.

March 2nd — Munsey, Melbourne, Walkers and Alvinston.

March 3rd—Inwood, Oil Springs, Petrolia, and Brigden.

March 7th—Kingsmill, Springfield, Brownsville and Tillsonburg.

March 8th — Hawtrey, Wingham, Waterford and Townsend.

March 9th — Hagersville, Cayuga, Canfield, and Altercliffe.

March 10th—Perry, Welland, St. Davis and Niagara-on-the-Lake.

Five stops were made in Lambton County and as the attendance and meetings were typical of the whole the incidents of each stop are equally illustrative. When the train steamed into Alvinston about four hundred people were waiting at the station. A goodly proportion of women were present. These were accommodated in one of the lecture coaches where they were addressed by Mr. Heam, on Home Dairy work, and by Mr. Clark on Poultry. The other two cars were filled with men where four lectures of fifteen minutes each were delivered in each car. As the cars would not hold the crowd an overflow meeting was held in the station where addresses were delivered. The speakers were, Professor G. Day, and Mr. Henry Glendinning, on General Farm Topics; Mr. W. Reek, on Drainage; Mr. Carson, on Fruit; Messrs. Anson Groh and Mowbray, on Sugar Beets, and Mr. McKenney, on

Corn. After the lectures the crowds flocked into the cars containing the exhibits and the interest evidenced and the questions asked as well as the general attitude of the visitors showed how keenly they appreciated the opportunity given them to add to their fund of knowledge, and gain interest in life.

The following morning at eight-thirty, at Inwood, an eager crowd of three hundred were in waiting and about the same number at Oil Springs, which was the next stop. At Petrolia four hundred were present while at Brigden fully five hundred people were waiting to listen to the lectures, and study the exhibits. At the several places literature was distributed to supplement the lectures and there are evidences that such literature will be read when received in this way, whereas if it had come through the mails it might never be opened. As there were four places visited in one day about fifteen hundred people were reached and more or less interested.

The remarks of the visitors to the train showed how deeply they were impressed. A common remark was that, "every branch of farming is now becoming a specialty." Farmers in passing through the train made the above remark quite frequently and to the mind of the writer it indicated a healthy condition in that it showed that recognition of the need of certain exact knowledge concerning each branch. As the visitors viewed the splendid fruit exhibits they continually asked how shall I produce fruit like that and the demonstrator in charge illustrated by means of the exhibits the cause of the troubles and the remedy to be applied. Many a man in the corn belt learned for the first time the great value of Alfalfa as a balance to his corn ration and the exhibits of hay "taken from the mow," by Mr. Glendinning, emphasized how temptingly appetising properly cured clover can be made. Everywhere one heard the remark, "this is splendid but the time is too short." The time was all too short but the ideas absorbed by the visitors were perhaps as many as they could contain in one day and the fulfilment of which will require many days of thought, study and action to work out upon their own farms.

A Three-Day Impression of the O. A. C. Through Macdonald College Eyes

A stranger arriving at Guelph by the same train as the Macdonald College teams, would have been under a firm impression for the rest of his life that the O. A. College colors were green and gold, though we ourselves realized and appreciated to the full the thoughtful compliment we were being paid. Our hearty reception at the station was typical of the spirit of real comradeship which our hosts displayed towards us during the whole of our stay.

We at Macdonald have heard much of the O. A. College. Many of our customs and many of our courses, originated at Guelph. The O. A. College Review furnished an incentive for the starting of the Macdonald College Magazine, and chief of all the Macdonald Agricultural students are being trained to a large extent by men who have either studied or taught—or perhaps both—at the O. A. College. You may well be proud of the men you have given us, for they have imbedded in us a very high opinion of the College at Guelph, and that opinion was intensified in the minds of all those whose good fortune it was to visit Guelph this year. Although you have sent us many good sportsmen in various capacities we soon learnt that many were still left.

Perhaps the most striking difference we noticed as we threw ourselves into somebody else's chair and washed for dinner in somebody else's basin, was the difference, not only between those chairs and basins and our own, but also between the whole of the residence and our own. The one has grown up, changed and been improved through the years and the other has been planted suddenly and solidly with the benefit of all the experience which those years have taught the older colleges. Naturally we have many more conveniences and comforts than you. All our furniture is of such solidity that one simply cannot break it. I know that you men at the O. A. College will appreciate that advantage for though we are denied the undoubted pleasure of smashing something, our pockets are saved. In two things, however, you have the advantage of us; our buildings lack that homelike feeling which only long traditions, handed down from one generation of students to another, can give—also we can't stick nails in the wall! As a rule our rooms are bigger than your's, though with that same strict regard for economy found in all colleges, our furniture is limited to the simple necessaries of life, in fact we don't even have washing basins, all ablutions being performed in the lavatories with which each corridor is supplied, and this in my opinion is a more convenient way. Comparisons as to diet are more difficult to make. We were certainly fed like princes—or members of the faculty—and we all appreciated to the full (in both senses) the hospitality and care of Mrs. Cunningham. My experience of College life is, however, large and when I mentioned what awfully good meals we were getting to one of the sophomores I could not help understanding the knowing wink he gave me, and judged

from it, that like our's your diet is good, plain and wholesome, and that like us you would infinitely prefer a luxurious diet to a wholesome one!

The basket-ball match gave us our first acquaintance with your gymnasium. It is a good deal bigger than our's but we have a gallery all round where the spectators sit and which does away with the necessity for touch lines. Personally I enjoyed the game itself immensely though we undoubtedly met a better team. I was introduced to five good sportsmen, one of whom made my nose bleed in the friendly way I like to have it done, and all of whom played the game in the sporting way I like to have it played.

The action of Mr. Heurtley and the members of the Cosmopolitan Club in making us Honorary members of their club during our stay was very thoughtful indeed, and I think that in no other way could we have got such an unaffected insight into the social life of the College as we did at that friendly little entertainment they gave us; and not the least service they did us was in introducing us to President Creelman, who soon became as popular amongst us as he evidently is among his own students.

The promenade and dance over at Macdonald Hall was another of the experiences which will stick in our minds for a long time. We all had a splendid time and the whole affair was extremely well managed, but this is a case where I simply dare not enter into any comparisons between the two Colleges; which ever way the scales went my life and reputation would be in danger.

Saturday was a strenuous time. The hockey game in the morning was one of the most stirring I have seen, and if I had had any voice left at the end I would doubtless have cheered loudly, especially in view of our recent defeat at basketball. The baseball game in the afternoon was also very exciting, and in spite of some difference in the interpretation of certain rules, it was an enjoyable one for the players. I think that the result of two games to one was the most satisfactory result that could have come about and the only difference of opinion there can be is who should have got the two. Better luck next time.

Though most of our men went home on Saturday night, I stayed over Sunday in order to get the best insight into your college life I could, in order that I might do my best to get some of your good ideas transferred to our own life. My chats with Mr. Dempsey on literary affairs, the Mock Parliament held by his society, the Y. M. C. A. meeting I attended on Sunday morning, and the large stock of information I got from the Review authorities will all, I hope, be the means of suggesting improvements to us.

Before I close I must take the opportunity of thanking the students of the O. A. C. and especially Mr. McAleer for the hospitality and good sportsmanship with which our party were received. May this trip inaugurate a series of such contests—athletic and literary—held in the same sporting spirit and promoting a friendship between the two colleges which will enable them both to work with greater efficiency to attain their common end.

R. S. K.

Western Reminiscences

FREDERICK DAVY, EDITOR CENTRAL CANADA CITIZEN, OTTAWA.

WHILE at the Ontario Agricultural College, a short time ago, in connection with the recently established course in Journalism, the writer was asked by the editor of the O. A. C. Review to contribute an article.

"Give us something good," he said, and then with mischief twinkling in those blue eyes of his, added, "and we'll make you famous."

"Fame's but an evanescent and intangible joy," I answered, pretending to be dignified.

"Well, if that's the way it catches you we'll cut out the fame," he replied, and added, "But anyway, do it because I want you to."

That was an appeal reason could not cast aside and I began to feel quite halter broken.

"Well, look here Dawson," was the answer. "It isn't necessary that it be something theoretical or scientific, is it?"

He saw I was leading well, and answered:

"Anything you like."

That practically gave me the freedom of the pasture so I picked out a little Western experience that happened shortly after I, a verdant youth from Old London, of all places, arrived in Eastern Oregon to "learn farming." It was on a great farm of level prairie land, thirty-five hundred acres fenced and twelve hundred of that amount in one vast wheat field. That field was two and a half miles long, broken length wise the previous season and harrowed and sowed crosswise that year, the drill crossing the furrows. At the end where sowing was commenced the wheat was a few inches high before the other end was finished. It grew well and gave a great harvest, a veritable sea of wheat.

You know it takes some time for even the boy raised on the farm to learn how to drive and I think it was that excellent article on Driving, by F. C Grenside, V.S., in a former issue that recalled this incident to my mind.

Shortly after the harvest I had been sent with a hay rack to the far end of the field on an errand, the purpose of which has passed my recollection, but that doesn't matter. My team was quite original and unique. On the off side was a lively young horse of about fourteen hundred pounds and on the near side a slab-sided mule some seventeen hands high. The latter was past middle-age, and had most decided opinions on many subjects. Whoever placed the two together had no conception of either horse or mule nature. The animals differed in race and were continually quarreling about it. They differed in gait also and religious matters formed another serious cause for misunderstandings. At least, that was the way one of the cowboys explained it. Quite frequently the Missourian (that's what they called the mule) would become so worked up and so displeased at the horse that he would kick viciously over at his fellow toiler and would generally end by landing astraddle the wagon pole. One's first idea was to tickle him to see if he would not kick himself back again, but results soon proved that the theory was not based on scientific principles, so I was forced

to the time-honored method of dropping one trace, lowering the tongue and making the seventeen-hander step back again. But nothing could surpass the cunning of his complex nature. He soon found out that to kick over the pole meant a rest, and frequent practise made him very agile at the feat. He would pretend to kick at a fly and flop! there he was astraddle the pole again, and rolling the whites of his eyes to see if the driver was coming. However, we were bowling along towards the end of the field when I had occasion to make a sharp turn to avoid a low spot. But in making it the mule imagined it was a manoeuver for home and came about like a yacht on a tack. I felt the rack lift up on the wheels, heard a cracking sound, felt a bumping sensation and upon jumping down found the reach splintered into matchwood. So we were at a standstill.

The farm superintendent was working at the other end of the field. He was a big, capable man. He appeared to be very rough and uncouth, and one had to know him a very long time to realize that deep down in his heart he had a sense of humor, dramatic instinct and a pent-up spring of humanity. Seeing us stopped he scented trouble and came galloping down the great field. He first rode all round the wagon and team, looking very angry. Then he stopped and looked at the front of the rack resting on one front wheel.

"—— — — —— ——" (That was a Western expression seldom used east of the mountains.)

It was loud, strong and emphatic and his face showed the keenest displeasure.

Then he turned and faced me and I saw his features soften the least bit. What did it I do not know. Perhaps is was my schoolboy look; perhaps the incongruity of the team. Perhaps it was the thought that prompted what he said next. He looked steadily at me and adopting a very dramatic tone of voice, said:

"Boy! Remember this: The devil never forgives a man for breaking a reach in a twelve-hundred acre field."

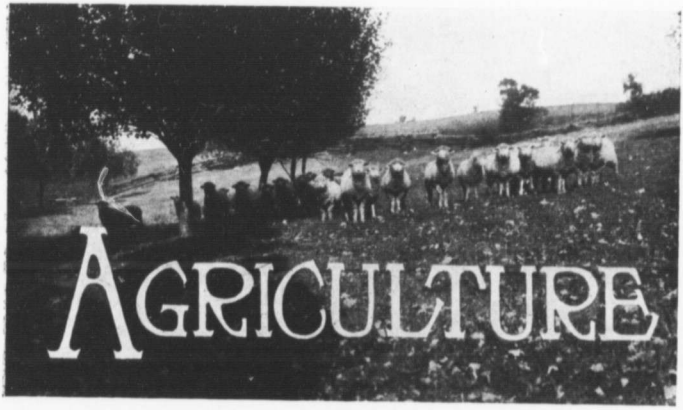
That was a point of doctrine all my previous teachers had overlooked. But before he had finished speaking, I felt that his momentary anger had vanished so I answered:

"I'm not so particular about his forgiveness just now. I'd rather have yours."

Had any of the forty or so men working on the place been about I do not think he would have done what he did then. He actually laughed, something I had never before seen him do in working hours.

"Well," he said, pronouncing it "Wal," "Slip the harness off the bay and ride over to the south shop and you'll find a new reach lying beside the anvil. I'll watch the mule."

It was a mile over to the shop and on the way I couldn't help laughing as I thought, "Twelve hundred acres to turn in and broke a reach. The ridiculousness of it." Then I realized, as Dr. Grenside so well pointed out in his article, that good drivers have to be made whether the ability be born in them or not. The incident was a great incentive to practise especially as there were four, six and eight horse teams used about the place, at all of which the superintendent gave us our turns. For the six and eight-horse teams they had a peculiar style of driving by means of a "jerk line." But it's worth another five hundred words to describe it and as Dawson has a lot of other articles he wants to get in we'll have to let it go this time.



Some of the Newer Phases of Dairying

PROFESSOR H. H. DEAN.

SINCE 1863, when the late Harvey Farrington came to Canada from Herkimer County, New York State, at which time, Canadian co-operative dairying may be said to have had its birth, our dairy farmers have been content to jog along one or other of three roads—farm dairying and selling butter to country merchants, commission houses, or direct to the consumer on a market which is now established in nearly every town of any size where buyer and seller may conveniently meet on a certain day or days of the week, usually Saturday; The cheese factory, of which a great many have been established—too many in some localities for the good of the business; and the summer creamery, which ran for three to five months, then closed up.

The scarcity of labor on farms and the increasing demand for milk and cream in our urban centres, and the increasing mileage of steam and electric railways, facilitating transportation, led to a change from buttermaking on the farm to the shipping of milk and cream to the towns and cities. By adopting this method for disposing of dairy products, the labor on the farm was decreased and the cash returns were increased, thus making more profit to the dairy farmer. Two disadvantages resulted from this change—there were less by-products on the farm, which means less and a poorer class of live-stock, and the women folk of the farm did not have an opportunity of going to town so frequently and thus a weekly bright spot in the lives of lonely women on the farm was more or less dulled; and this plan has a further disadvantage in

the fact that the men pocket the cash, which formerly passed through the hands of the farmer's wife, to economic advantage.

The low price of milk delivered to cheese factories during recent years has caused most thinking patrons of cheeseries to consider whether there was not some more profitable market for their milk. We have no hesitation in saying that on land worth $75 to $100 per acre or over, milk cannot be produced and sold at a profit, for 85 to 90 cents per 100 lbs. net, to the farmer.

The hot-weather creamery is a different proposition. This form of creamery has either to be operated as a "side-line," or the charge for manufacturing must be so high as to leave little or nothing for the patrons supplying milk or cream.

These old corduroy, dirt and gravel roads are either being abandoned entirely and new ones built for the dairy farmer to travel on, or else the old ones are being repaired—the logs on the farm dairy road which caused severe jolting have, to some extent, been removed. The inequalities and injustices of the gravel roads leading to and from cheeseries, have been smoothed and levelled to some extent by the use of testers applied to the milk delivered by individual patrons, and the dirt roads to the creameries have been crowned with an extended season grader.

Beginning at the foundation of the newer lines of dairy production and manufacture, "Cow-Testing Associations," and "Records of Merit," may be mentioned as having done a great deal to open the eyes of dairy farmers as to the differences in, and possibilities of, dairy cows. Records of 100 pounds milk and over 3 pounds milk-fat in one day; of 600 to 800 pounds milk and 25 to 28 pounds milk-fat in seven days; or of 2,500 to 3,000 pounds milk and 100 pounds, or over of fat in 30 days; and of 15,000 to 25,000 pounds milk and nearly 1,000 pounds milk-fat in one year, no longer astonish us. Some one has said, "Records and Pie-crusts are made to be broken."

The manufacture of dried casein from skim-milk which is used for "coating" paper, enabling the "O. A. C. Review," and other publications to reproduce photographs in such a realistic and artistic manner, is but one phase of the newer branches of dairying. Whey butter in connection with our cheeseries has enabled quite a number of these factories to continue to do business "at the old stand," otherwise, they might have been crowded to the wall by the keenness of competition from milk condenseries or the American market for Canadian cream. Under certain conditions and regulations the "whey butter" business is a legitimate feature of dairying.

The milk condenseries and powder milk factories have proved a great boon to those dairy sections where they have been established. The creamery and cheesery have found it difficult to compete with these modern milk manufacturing establishments. By utilizing all of the milk solids, they are able to pay a much higher price for milk than can those manufacturers who are able to turn to profitable account but one-third or one-half the valuable food constituents in milk.

Back of all this lies the steady advancement in dairy science which has been going on during the past twenty-five years. We are safe in saying that the dairy industry is a quarter of a century in advance of any other branch of farming in Canada, and this

is due in a large measure to the investigational work which has been done with reference to the underlying principles of dairying. "A principle is more important than a thousand facts, because it includes them all." Until the other branches of agriculture give more attention to principles and less to microscopic facts, they will continue to lag behind, and suffer from spasmodic attacks of "revivalism."

The nineteenth century was characterized by "individualism." The twentieth century will go a step farther in the uplift of the human race and be characterized by individualistic effort combined with co-operative effort. Masses are improved by improving the individuals of the mass, but the improved individual can do little, except he unite his efforts with those of a fellow-improved unit. This involves co-operation. In this respect, though in but a feeble form, the dairymen have a long lead on the other agriculturists of Canada. Profiting by past experience, learning from the newer organizations, we expect to see dairying taking a big step forward during the next twenty-five years, under the stimulus of a new market for their manufactured goods.

Have We Reached a Standard in Wheat

R. G. THOMPSON, '11.

OF the seven species of wheat that are known, only one, Triticum vulgare, is really of economic importance. Of the hundreds of varieties of this species, only a score produce flour of a commercial grade, and of this score there is one variety, Red Fife, that for at least a decade has stood as a world's standard for milling wheats.

Red Fife is probably better known than any other variety of common wheat, although it is grown with success in certain parts of the world only, being grown nearer to perfection in Western Canada than in any other portion of the world. It was used by the Federal Government in systematizing the grading of the wheat of the prairie provinces and practically the same system with the same standard is retained after a test of over twenty years. Now very little wheat other than Red Fife is grown in these Provinces, and the highest grade No. 1 Northern, which contains at least 80 per cent. Red Fife wheat, receives a premium upon the world's markets because of the strength of its flour and because it blends readily with other varieties, raising their quality.

While Red Fife is most satisfactory to the miller and the consumer, it is not prized so highly by the grower, having for him the following disadvantages:

First. Red Fife possesses its strong breadmaking qualities only when grown in certain sections of the country. In Canada these areas lie within the prairie Provinces, where the growing season is comparatively short.

Second. Red Fife is a late maturing variety, being from five to eight days later than Preston or Stanley. (Average of Dominion Experimental Farms for five years). It is frequently frosted, resulting in severe losses to the grower.

Third. Red Fife gives only a fair yield. At the Dominion Experimental Farms it stands seventh in yield per acre, and gives six bushels less per acre than the largest yielding varieties at the respective farms. (Average for five years).

Ever since experimental stations for field crops were organized, it has been the special work of all the stations lying within the wheat-producing area to secure by selection or cross-fertilization of varieties a strain or new variety of wheat superior to Red Fife. Has it been done? Is there a variety ripening earlier or giving a larger yield, that contains the strong baking qualities of Red Fife flour?

No variety is grown commercially that embraces these features, and to determine in a measure whether the experiment stations specializing in wheat breeding and selection have succeeded in producing such a wheat is the object of this work. To this end the following stations which represent the foremost cereal stations of North America were kind enough to send for trial their leading varieties, which were tested with Red Fife in regard to length of time in maturing, yield and bread-making qualities:

Ontario Agricultural College—Hungarian Red.

Dominion Experimental Farm, Ottawa—Marquis.

Dominion Experimental Farm, Ottawa—Stanley A.

Minnesota Experiment Station, St. Paul—Minnesota No. 163.

Minnesota Experiment Station, St. Paul—Minnesota No. 169.

Dominion Experimental Farm, Indian Head—Preston.

Dominion Experimental Farm, Indian Head—Red Fife.

The field experiment was carried out at Moosejaw, Sask. The varieties were treated for smut with standard formaldehyde solution; sown in the field and treated in every way as a field crop grown on a commercial basis. At harvest time all varieties, except for earliness of maturity, appeared to equal advantage. No varieties had lodged or were in any way blighted by disease, each appearing perfectly normal. Their growth, yield, and time of maturity are shown in the following tables:

TABLE NO. I.
Description of Varieties

Variety	Color of Chaff.	Bearded or Bald.	Length of Straw.	Average length of heads.
Red Fife	White	Bald	32 inches	2.5 inches
Stanley A	Red	Bald	30 inches	3.25 inches
Hungarian Red	Red	Bearded	29 inches	2.75 inches
Marquis	White	Bald	31 inches	3.0 inches
Minn. No. 163	White	Bald	36 inches	3.3 inches
Preston	White	Bearded	31 inches	2.9 inches
Minn. No. 169	White	Bald	37 inches	3.3 inches

TABLE NO. II.

Variety	Date Sown.	Date Cut.	Days Maturing.	Day earlier or later than Red Fife.
Red Fife	April 27	Aug. 27	122	0
Stanley A	April 27	Aug. 22	117	5 earlier
Hungarian Red	April 27	Aug. 20	115	7 earlier
Marquis	April 27	Aug. 19	114	8 earlier
Minn. No. 163	April 27	Aug. 29	124	2 later
Preston	April 27	Aug. 20	115	7 earlier
Minn. No. 169	April 27	Sept. 5	130	8 later

TABLE NO. III.
Yield of Crop.

Variety	Total Wgt. of Crop per acre.	Weight of Straw per acre.	Bushels per acre.	Weight per measured bushel.
Red Fife	3420	2246	28.58	62.8
Stanley A	3890	1585	30.51	60.4
Hungarian Red	3982	2068	30.37	62.6
Marquis	3621	1981	27.33	63.0
Minn. No. 163	3934	2302	27 20	57.0
Preston	3482	2152	25.50	61.0
*Minn. No. 169	....	....	.....	....

*The variety Minnesota No. 169 was frosted and shrunken to such an extent that it was impossible to give it a fair comparison with the other varieties. It is much too late a variety for the prairie Provinces, and will not be considered further in this thesis.

From the field results, we find that Marquis, Hungarian Red, Preston, and Stanley A, ripen from 5 to 8 days earlier than Red Fife. Stanley A, Marquis, and Hungarian Red of these early varieties have about the same yield, while in weight per measured bushel only Marquis and Hungarian Red equalled the old standard. From growth, yield, early maturity and appearance, these last two varieties appeared to be the nearest competitors of Red Fife, and to make the thesis more conclusive, requests were made to the directors of the Dominion Experimental Farms at Indian Head, Lethbridge and Lacombe for these varieties. Unfortunately, they were only able to supply Red Fife and Marquis, samples of which were kindly given for analysis and baking tests. The yields and time of maturing of these two varieties at their respective stations were as follows:

Variety	Place.	Days Maturing	Yield per acre, bushels
Red Fife	Lacombe	160	64
Marquis	Lacombe	156	59.28
Red Fife	Lethbridge	129	29
Marquis	Lethbridge	129	23.5
Red Fife	Indian Head	127	43.40
Marquis	Indian Head	125	54.00

These samples, together with samples of the former six varieties, were analyzed to give their general physical and chemical composition. This analysis is shown in Table No. IV.

TABLE NO. IV.

Variety	Hardness breaking pressure in lbs.	Weight of 100 kernels.	Per cent. water.	Per cent. protein.	Per cent. starch.	Appearance.
Red Fife, Moosejaw	19.10	3.234	12.8	13.68	69.73	Plump.
Stanley A, Moosejaw	18.02	3.321	12.76	14.07	68.24	Plump to lean.
Hungarian Red, Moosejaw	16.81	3.644	10.00	15.61	70.03	Frosted and lean.
Marquis, Moosejaw	20.49	3.233	11.00	14.56	70.24	Plump.
Minn. No. 163, Moosejaw	18.62	2.995	12.6	12.93	60.05	Frosted & shrunken.

TABLE NO. IV.—(Continued)

Varity	Hardness breaking pressure in lbs.	Weight of 100 kernels.	Per cent. water.	Per cent. protein.	Per cent. starch.	Appearance.
Preston, Moosejaw	17.24	3.074	11.72	13.91	68.67	Plump.
Red Fife, Lethbridge ..	19.70	3.112	11.23	13.52	69.14	Plump.
Marquis, Lethbridge ..	19.80	3.012	10.24	15.56	70.01	Plump.
Red Fife, Lacombe....	20.85	3.210	13.71	12.54	64.43	Frosted & shrunken.
Marquis, Lacombe	21.23	2.992	13.82	13.39	65.24	Frosted & shrunken.
Red Fife, Indian Head.	19.45	3.320	11.12	12.88	69.12	Lean.
Marquis, Indian Head..	21.00	3.200	11.00	15.2	70.63	Plump.

This Table shows that only one variety, Marquis, is as hard as Red Fife. There is considerable difference in the size of single grains, Red Fife being about intermediate between the largest and smallest. In percentage of water none are higher than Red Fife. There is, however, little difference between the samples, with the exception of those from Lacombe, which contain the highest percentage of water. All the varieties are equal to or higher than Red Fife in percentage of protein. This is noticeable as the protein is supposed to give to the flour its strength, and it would be remarkable if all these new varieties should equal the old standard in quality or strength of flour. Another noticeable feature is that the protein contents of Red Fife and Marquis are almost in the same proportion to each other in the different districts, although the percentages vary slightly. Any difference in the percentage of starch can be accounted for in the plumpness or ripeness of the grain, as is shown by the appearance of the kernel.

This analysis would go to show that all the varieties were equal to or superior in quality to Red Fife. That this, however, is not the case is clearly shown by the baking tests.

The milling and baking tests were conducted by Miss M. A. Purdy, of the Chemical Department O. A. C., and the results in Table No. V. show the comparative merits of the respective samples for breadmaking.

TABLE NO. V.

Variety	Wet Gluten %	Water Absorption. %	Weight of loaf. grams.	Volume of loaf. c. c.	Quality of Bread			Percentage flour.
					Color. %	Texture. %	Appearance. %	
Minn. No. 163, Moosejaw.....	36.06	68.2	490	2660	100	100	100	35.0
Red Fife, Lethbridge.....	34.23	61.41	515	2700	100	105	103	52.1
Red Fife, Lacombe.....	34.33	80.00	530	2460	90	96	92	54.0
Red Fife, Indian Head.....	41.83	71.17	520	2660	101	104	100	54.7
Red Fife, Moosejaw	33.86	63.53	484	2630	100	99	100	48.0
Marquis, Moosejaw	37.73	68.20	517	2640	100	100	100	42.0
Marquis, Lethbridge	43.40	69.41	515	2900	100	104	104	50.3
Marquis, Lacombe	37.06	78.23	521	2820	95	103	102	54.0
Marquis, Indian Head	34.30	69.41	523	2640	98	100	100	45.3
Preston, Moosejaw	34.13	71.85	521	2790	95	99	100	44.8
Hungarian Red, Moosejaw....	41.03	67.65	515	2600	100	97	*..	48.0
Stanley A, Moosejaw	37.20	67.65	517	2320	100	*..	*..	45.0

*Unable to judge the last two samples because of heat being turned off oven.

Although in most cases a table is the best and fairest method of making comparisons, it cannot in all cases show the fine differences that are sometimes apparent. In the case of Stanley A and Hungarian Red, where the baking tests were not concluded, the table would probably have shown them very favorable had these tests been concluded, while in reality the loaves of these varieties were rather inferior, not having the evenness, or appearance of fine quality that the loaves of the best Red Fife samples contained, before being put in the oven. In all other respects, the table, while not showing the fine differences spoken of, is comparative. Some of the differences, as form of loaf, size and texture are seen fairly well in photos Nos. 1 and 2. A glance over the plates will confirm results of these tables.

From this milling and baking test we see that a physical or chemical analysis of wheats is very impracticable in determining the quality of flour that will be produced. Moreover, the percentage of protein in wheat does not entirely indicate the strength of the flour. The strength of the flour must rather lie in the form or quality of the protein than in the amount. Appearance, plumpness or hardness are all misleading in judging wheat for flower purposes, the only fair method being the milling and baking tests. Therefore, in comparing the merits of the different varieties only the field and baking results will be used.

From the results, we see that Red Fife and Marquis stand in the same relation to each other in every respect, except the yield, at the different stations. Therefore, we will need only to compare these varieties from one locality.

In making a comparison of the varieties we notice that Minnesota, No. 163, the one variety that ripened later than Red Fife, made an excellent loaf. This variety, however, is much later, gives no larger yield, and is therefore not a strong competitor of the present standard.

Of the four varieties that ripened earlier than Red Fife, only one, Marquis, produced a loaf equal to it. The other three varieties would rank, Hungarian Red, Stanley A and Preston; none of them, however, comparing with Red Fife in the quality of loaf produced.

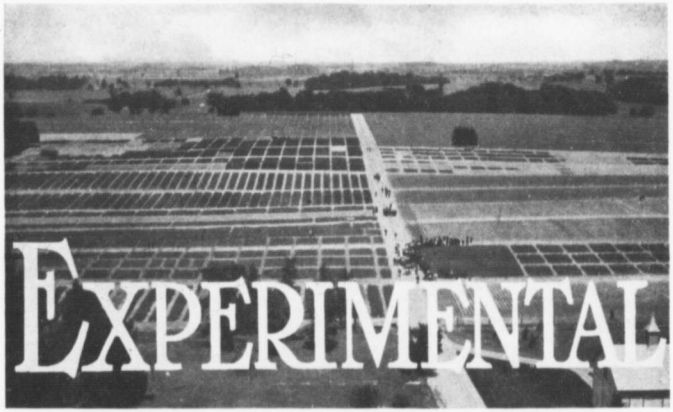
Marquis is the one variety that promises to equal or surpass the old standard. It ripens from two to eight days earlier, gives an equal yield, and from only one station does the sample make an inferior loaf to that of Red Fife; from one station they are equal in quality, and from the other two stations Marquis surpasses Red Fife. The samples from Lethbridge gave the finest quality of bread. This point is noticeably brought out in the plates, if loaves 2 and 7 are compared with the rest.

In stating conclusions, it must be borne in mind that these comparisons are for one year only. However, in the case of Marquis and Red Fife the comparisons cover a large area and are very uniform from the different points. If we can draw from this that the other varieties would have the same comparative uniformity, we can safely conclude that there is but one variety Marquis, that is a competitor of Red Fife for first place among our wheats. To state difinitely that it is superior to Red Fife would require comparisons running over a number of years.

The fact, though, that Red Fife, which for twenty years has stood as

the milling and baking tests by a new variety having superior field qualities is of greatest importance, although the comparisons are for one season only. If from future experiments these results are confirmed Marquis will undoubtedly become one of the important commercial varieties of wheat because of its early maturing and strong baking qualities. And now that we have a wheat that rivals Red Fife in quality and surpasses it in the field, is it not reasonable to expect that we may soon raise a higher standard in wheat for both the field and the mill?

No. 1 Minn., No. 163, Moose Jaw.
No. 2 Red Fife, Lethbridge.
No. 3 Red Fife, Lacombe.
No. 4 Red Fife, Indian Head.
No. 5 Red Fife, Moose Jaw.
No. 6 Marquis, Moose Jaw.
No. 7 Marquis, Lethbridge.
No. 8 Marquis, Lacombe.
No. 9 Marquis, Indian Head
No. 10 Preston, Moose Jaw.



Clover and Corn in Manitoba

JAMES MURRAY, B.S.A.

THE interest that Manitoba farmers have in clovers and corn is, as might be expected, secondary to that in cereal growing, as cereals are the mainstay in Manitoba agriculture and likely to remain so for many years. Our farmers are credited usually with having their whole interests settled in wheat growing and this is because their wheat is the main farm product that reaches the markets of the world. The climate is particularly adapted to cereal growing and the phenomenal richness of the soil has made the continuation of grain farming easy and profitable. On the other hand the rainfall is too light during the growing season to enable the best results to be got from the production of fodder crops such as clovers and grasses. The tendency has therefore been to grow cereals almost exclusively, the many crops in the southern part of the province being wheat and in the north oats, and a limited amount of wheat. Barley is also grown for sale to a limited extent in all parts of the province.

Instead of growing tame hay many farmers grow oats and cut them before fully ripe to feed from the sheaf during the winter. This practise is followed largely on account of its simplicity and reliability, and the ease with which the land can be put into condition for another crop. It has, however, the serious objection that it adds little fibre to the land compared to such crops as clover, timothy or rye grass. Another objection more or less serious, to putting land down to grass is the comparative difficulty of rotting the sod when the time comes to break it up. The lack of moisture after haying time is largely accountable for this, and possibly also the barrenness of our soil in bacterial life is a contributing factor.

Mixed farming in Manitoba is the exception rather than the rule, but there is a very general interest in the spread of mixed farming. To promote its more general adoption an appreciation of the value of manure will probably do more than any other one thing. The interest at present in corn and clover is greater than any previous time in Manitoba's agricultural history and is but an index of the growing interest in mixed husbandry. The

CUTTING CORN ON THE BRANDON EXPERIMENTAL FARM.

most farseeing farmers feel that such crops as these must come into general use if the productivity of the soil is to be maintained, and that the sooner they learn to grow and handle them the better it may be for their income.

Corn is not a new crop to Manitoba as it was grown by the Indians long before the white man came with his horses and plows. But the squaw corn as grown then, and as still grown quite commonly for table use is of little value as a fodder crop. The earlier trials with fodder corn were with varieties that reach perfection 500 to 800 miles south of here. They produced immense yields of fodder but since we have a growing season for corn of only about 100 days they were far from maturity when frost cut them off. For most of the varieties of corn grown in Central and Northern Ontario, such as Compton's Early, Longfellow, White Cap, Yellow Dent and Leaming our season is too short. Seeding time is the same as Northern Ontario, May 15th to 25th, but the fall frosts come earlier, usually before the 10th of September, cutting our season short at the close. Our summer season is favorable for growth as far as the temperature through the day is concerned but for best results our nights are too cool. From sunset until a few hours after sunrise the air is decidedly cool and fresh even during our warmest summer weather.

We do not complain of this condition but it does not promote best results with corn. The greater the alti-

tude the cooler are the nights, and so we find that in Saskatchewan the conditions are less favorable for corn than in Manitoba, and in Alberta they are worse again.

Our best results are with the early medium sized kinds that approach maturity in three months and a half. Northwestern Dent has proven to be a very desirable variety. It grows from 7 to 9 feet high and when sown May 20th, is fit for the silo by the first week of September. Golden Dent and Mercer are also good varieties but rather later. A crop 9 feet high would not be considered much of a crop in Ontario, but here we regard it as one well worth while. Many farmers are coming to think the same way and it is becoming commoner every year to find corn patches of a few acres scattered through the country. Occasionally a field of 15 to 20 acres will be seen and there are farmers in Manitoba—and grain farmers at that, who grow as much as 60 acres of corn.

As might be expected most of the corn is cured in the field, the silo practically not being used. Silos have been in use on the Experimental Farm for fifteen years and have given splendid satisfaction. They will undoubtedly come into use as corn is more generally grown.

Red clover has been on trial with more or less success for at least thirty years. The early settlers from Ontario brought seed with them and sowed it as they had been accustomed to in their old homes, but seldom with success. Its failure to grow was not regarded as very serious as there was then abundance of wild hay for feed, and crops of grain were sufficiently heavy without any further soil enrichment. They were serious, however, in this respect that they discouraged further trials under more favorable circumstances in later years when the need of the crop was more evident. The early failures were due largely to lack of bacteria in the soil, close pasturing in the fall and to seeding with a nurse crop of grain. There is frequently very little hail after harvest and the clover could not make a sufficiently strong

CUTTING ALFALFA ON THE BRANDON EXPERIMENTAL FARM.

growth to withstand the severe winter. When it was pastured in the fall the conditions were worse.

Now that the soil has been cultivated for a number of years, and manure incorporated, the soil conditions have been improved. Fences make it possible to protect the young plants the first season and occasional fields through the country render artificial inoculation easy and cheap. In an unfavorable season it is still not uncommon to have a failure when a nurse crop is used, but this may be said of many other places besides Manitoba. The general success of the crop throughout the province, is, I believe, assured, provided it is given a fair chance. Where it has not been grown before it is advisable to sow without a nurse crop and to inoculate the soil, and in all cases it should never be pastured in the fall.

For several years it has been sown on the Experimental Farm with a nurse crop with as good a percentage of success as is usual in Ontario. In the Winnipeg district it practically never fails when given a fair chance; near Portage la Prairie one farmer has been cutting large fields of clover for several yearrs, and all through the province successful growers are found.

Probably the most satisfactory way to sow Red Clover is with either Western Rye grass or Timothy. A stand of hay is more certain than when clover is sown alone, the hay is easier cured and the crop is likely to be good for one or two years longer. Compared with a stand of grass alone, a heavier crop is produced, the hay is of better quality, the soil left in better condition. The following table will illustrate the increased yield from mixtures as compared with the grasses sown alone. The plots were of one-fifth acre, sown in 1907, on the Brandon farm.

PLOT	YIELD PER ACRE					
	1908		1909		Total of 3 Yrs.	
	Tons	Lbs.	Tons	Lbs.	Tons	Lbs.
Timothy	1	1,700	0	1,870	2	1,570
Timothy and Red Clover	1	1,850	1	1,000	4	1,450
Western Rye Grass	2	1,050	1	1,575	3	1,625
Western Rye Grass and Red Clover	2	875	2	575	4	1,450

Alfalfa.

Alfalfa or Lucerne was not tried so extensively years ago as Red Clover, but during the past few years it has been finding great favor wherever tried. Its success when given a proper chance has equalled if not surpassed any of the other clovers. It is not grown under irrigation in this province so that as a rule two crops only in a season are secured, but in favorable seasons three crops are cut.

Many failures in growing this crop have been recorded. These have been due mainly to sowing with nurse crops, lack of inoculation and to pasturing in the fall. All of the Manitoba soils do not require to be inoculated but many do require it, so that it is advisable to always inoculate and so run no unnecessary risks. It is courting almost certain failure to sow with a crop of grain as the young plants do not become strong enough to survive the first winter. A limited amount of pasturing

is not necessarily fatal but close pasturing is almost certainly so.

Many strains if alfalfa have been on trial on this Experimental Farm, but the results so far have been negative as there has been practically no difference in hardiness and only slight differences in yield. About thirty-five additional strains were sown this year and some interesting results may be secured.

Why Seed Grain Should Be Fanned and Graded

THE negative results obtained by some of our experiment stations in grading seed grain for planting are not in accord with the general experience of the best farmers who persistently clean and grade their seed grain from year to year, and who have apparently improved the yield and quality of their grain, or at least have maintained the quality and yield, while the average farmer who sowed ungraded seed was obliged to change seed every few years, because his wheat or oats "run out."

It has been shown in a large series of experiments at the Ontario Experiment Station that the larger, heavier kernels of wheat, oats and other grain have, with hardly an exception, produced stronger plants and larger yields than the smaller, lighter grain, when an equal number of kernels of each grade were planted on an equal area of ground.

It is the usual practice to sow a peck or so of seed-grain more per acre than is really necessary to secure a good stand, thus when inferior grain is sown with the good seed it may do no particular harm, since, if the weaker kernels sprout at all, the weaker plants are almost sure to be crowded out and destroyed by the stronger, more vigorous plants produced from the sound, well developed seeds.

Four pecks of graded wheat taken out of five pecks of common seed such as ordinarily comes from the separator, if sown on an acre may produce as large a yield and perhaps a better quality of grain than may be secured by sowing the five pecks of ungraded seed per acre. The peck of inferior seed may be worth nearly as much for feed as the sounder, plumper grain, and a saving of one peck in five, or twenty per cent. will much more than pay for all labor and expense of grading the seed-wheat. A farmer sowing a quarter section without grading his seed wheat will ordinarily use 200 bushels of grain, seeding at the rate of five pecks per acre, while 160 bushels of the graded grain should give as good results; or by grading his seed-wheat he may save forty bushels of screenings, which with market wheat at 80c per bushel, would be worth at least 60c per bushel, or $24.00. With a good fanning mill, costing $20, two men will readily grade the 200 bushels in a day, which would give results as follows:

Value of grain saved....		$24.00
Interest on $20 at 7%...	$1 40	
Depreciation on mill at 10%....	2 00	
Labor, 2 men one day at $1.50	3 00	
Total cost of grading..	$6 40	
Net saving		$17 60

In other words a farmer who sows 160 acres of grain a year will save nearly enough to pay for a good fanning mill the first year, with the screenings which he would remove in grading the seed-grain.

It is true, also, that such a saving may not only be made by fanning and grading seed-grain, but an equal saving may sometimes be made on much of the commercial wheat or other grain of inferior grade, if such grain were cleaned and graded, in that the advance in price of the better grade of grain may equal the loss in weight occasioned by removing the screenings, and the screenings removed would in such case be pure gain, less the labor required for fanning and grading.

Other advantages from grading seed grains may be given as follows:

A great variety of weeds occur in the grain fields which may often seriously reduce the yield and injure the quality of the grain. Seed-grain should be fanned and graded if for no other reason than to remove the weed seeds and seed of other grains which have become mixed with such seed-grain. There is without question, an advantage in growing pure grain of any variety.

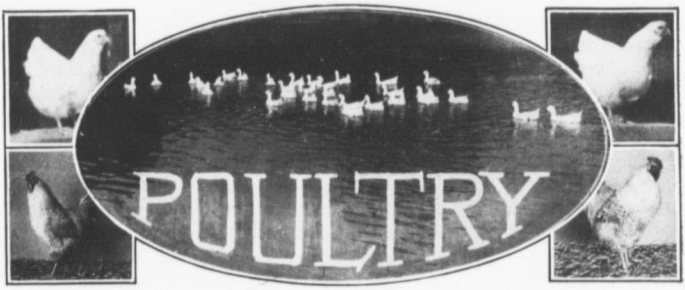
Again it is usually necessary to fan the grain taken as it comes from the thresher simply to remove the dirt, chaff, straw and pieces of weed-stems which would greatly interfere with a uniform distribution of the seed in planting.

Again, the inferior plants produced from poor seed may act as weeds, especially in dry years or on land poor in fertility, and actually take the moisture and plant food away from the larger, better developed plants, actually reducing the yield and injuring the quality of the grain produced.

The greatest improvement may be made in crops by breeding, taking the individual as the unit when by planting the seed from a single plant or head in separate plots or rows the great individuals which may become the founders of an improved strain or race may be discovered, and this is the work of the Experiment Stations and specialists in plant breeding, but the average farmer may maintain, and perhaps improve his grain by keeping the seed pure and using only the best grade for planting from year to year.

A. M. T.

IN THE CANADIAN WOODS



Poultry Raising in British Columbia

M. A. JULL, B.S.A., LIVE STOCK COMMISSIONER FOR BRITISH COLUMBIA, FORMERLY POULTRY EXPERT FOR THE PROVINCE.

THE poultry industry of the province is in a fairly satisfactory condition. It is being developed rapidly, and while a few large plants are being established it is interesting to note the increase in the number of fowls being kept on the smaller ranches as well as on large farms where fruit-growing or dairying is the principal business of the farmer. The quality of our poultry is good and the average conditions under which the flocks are being kept are probably as good as in other parts. At the same time certain conditions prevail which are undesirable. As in other branches of agriculture, so in poultry-raising, there is considerable speculative development; many parties are going into the business largely from a speculative standpoint, which enterprises often result in financial failure, thereby injuring the industry in general. Rather than the establishing of extensive and exclusive poultry plants, it is essential, for the building up of a permanent and progressive industry, that increased production shall result from improved care and management of the flocks on the fruit, dairy, and other farms where mixed farming is practised.

In 1910 the value of poultry products produced within the province was $156,247.00 for eggs, and $335,375.00 for poultry, making a total for home production of $491,622.00. Whereas imports for the year amounted to $1,399,082.00, being $1,113,400.00 for poultry and $285,682.00 for eggs. Then it is seen that we are almost within $1,000,000.00 in supplying our home demand for poultry products. Because of the very rapid growth of the cities and towns and the comparatively slow development of the agricultural sections of the country it is doubtful if the supply is keeping pace with the constant and increasing demand. Before much increase can result in home production there must be better conditions for profit-making.

A comparison of current prices for feeding materials and poultry and eggs in Ontario and British Columbia may be interesting since Ontario is annually supplying the Coast Province with large quantities of dressed poultry and eggs. Can the finished product be pro-

duced as cheaply here as in Ontario, or is our cost of production greater than Ontario's cost of production, plus the cost of transportation from Ontario to British Columbia?

Current wholesale prices of feed in British Columbia are, per ton—bran, $30; middlings, $31; oats, $33; corn, $32, and wheat, $36 to $42; whereas Ontario prices per ton are—bran, $19; middlings, $21; oats, $23; corn, $30, and wheat, $30. If the price of feed bears a direct relation to profit in egg production these quotations show that eggs are produced cheaper in Ontario than in British Columbia. Moreover, the retail prices of feeding materials are higher in proportion to the wholesale prices in the West than in the East.

The current prices for eggs in Ontario are — wholesale, 33c-35c for "strictly new laid," and 40c-45c for "farmers"; while turkeys command 22c-25c, and chickens 16c-17c. Case eggs in British Columbia are retailing at 35c while local fresh eggs are selling for 45c, and dressed poultry runs from 18c-25c.

Then it is seen that under existing conditions one of the greatest needs of the poultrymen of British Cloumbia is economy in the production of the finished product. Considering the cost of feed, the cost of labor, the cost of materials necessary in the operation of a poultry plant and prices obtained for eggs and dressed poultry, it becomes quite evident that to make good profits our poultrymen must adopt the most economical methods in the management of their poultry plants. It is true a few are making a success of poultry-keeping, and that as a specialized business. It remains to be seen how long these plants will continue to be profitable for the history of the poultry industry in other parts is that after four or five years from its first noticeable development, there are but few profitable poultry plants. In breeding, soil contamination and other factors have their influence and unless the poultrymen of British Columbia take every precaution it is certain that within a few years the industry will experience the same difficulties that

POULTRY AND FRUIT FARMING COMBINED IN BRITISH COLUMBIA.

are trying to be overcome in the more highly-developed industries in the East and South.

Two of the most undesirable features of our poultry industry are the methods of feeding adopted by many of our poultrymen and the methods of marketing poultry products, which result in a great deal of loss to the producers. It is to be hoped that better methods of feeding will be adopted and that the eggs and dressed poultry will be placed on the market in a more

Of late there has been considerable interest in co-operative methods of collecting eggs and more recently agitation has been started for the establishing of fattening stations. This is a move in the right direction as it will eliminate considerable of the present waste in getting the products from the producer to the consumer. However, before co-operation can be expected to be really successful in British Columbia it seems that there must be among our producers a more public spirited

BRITISH COLUMBIA POULTRY AND FRUIT FARM.

marketable condition. Cockerels are often sold by the dozen and are shipped with but little, if any, flesh on them, which naturally brings very little cash returns to the poultrymen, whereas, if proper methods were adopted in fattening cockerels it would mean better prices and greater returns for the producer. Many of our poultrymen at the present time market their eggs in such a way that they can hardly be expected to be sold as strictly fresh.

feeling. The interests of the public should be greater than the interests of the individual, and until this is fully realized by all who may be engaged in the business of marketing poultry products, co-operation can hardly be expected to accomplish much.

It is very interesting to note the slight change in the policy of the Poultry Producers' Association of Eastern Canada, it now being the Poultry Producers' Association of Canada. This association is in a position to do much

for the individual poultryman in every part of Canada, as well as for the Canadian poultry industry in general. May it be in the making of this association to establish throughout Canada a progressive and permanent poultry industry.

A live factor in the advancement of the poultry industry of British Columbia has been the Provincial Poultry Association, which was organized last year. This association, with a membership of some four hundred poultrymen, is engaged largely in educational work and gives considerable attention to the improvement of poultry shows. It endeavors to protect the interests of the individual poulrymen and to remedy undesirable conditions pertaining to the welfare of the industry as a whole. This year, the sum of $5,000 has been placed at its disposal and it is making preparations for the holding of a Provincial Poultry Show in Vancouver, January 15th and 20th, 1912.

While the association gives every consideration within the province its attention is also drawn to other parts. In the past there has been considerable dissatisfaction in buying stock in the East and in a great majority of cases this dissatisfaction has been justified. It is difficult to conceive of any just reason why Eastern poultrymen send out such inferior stock into British Columbia, which promises to be the breeding ground of some of the highest classes of poultry to be found.

Turkeys for the Ontario Farmers

W. J. BELL, SECRETARY OF TURKEY AND WATERFOWL CLUB, ANGUS, ONT.

THE fact that turkey meat has averaged 21c per pound to the producers for the past four years, and that 7c per pound will cover the entire cost of food supplied, leaves very little room for argument as to the profitableness of turkey raising. These figures, of course, apply to the average farm conditions which are absolutely necessary for the health of the birds as well as for their profitable production, because they must have a fair range of about one acre per bird, and the food which they pick up on the range—while of no value—makes about three fourths of their weight. There are large areas owned by Ontario farmers which are lying practically idle at the present owing to the scarcity of labor and which could be made to return a handsome profit by growing turkeys thereon, but it is upon the average 100 acre farm devoted largely to grain that the largest profit per bird is secured; provided the raising of other varieties of poultry are limited, and not over 75 young turkeys reared each season. Turkeys will not thrive in filthy quarters whether caused by too many other fowl or too many of their own kind.

Turkeys are produced with the least trouble and expense of any kind of poultry, there being practically no outlay for buildings and the trouble of rearing them—if from good, healthy parent stock—is confined to the first four weeks. This being the case I will give the details of how I manage my birds during this critical time, and might say that the close attention necessary for these four weeks are probably what deters a great many

from raising turkeys and further the want of this attention kills a good many poults with those who do keep turkeys. However, it is only for one month and for the balance of the year they require no more work than with a flock of sheep. I prefer to hatch the eggs and brood the poults with the mother turkey and am satisfied with one clutch from the hen each season. Those hatching about June 1st strike the ideal time for rapid growth and robust constitutions, it being a common occurence to have them heavier at the first of December than ones hatched around the 15th of May. A growth delayed from any cause is never recovered, and a wet, cold rain in May will often give a "set-back" to poults the constitution afterwards being also more susceptible to disease germs. To give these young birds a start free from the pest of lice I dust the setting hen on the nest upon the 25th day of incubation, the neglecting of which, in my estimation, would court failure right at the start. I use Persian Insect Powder throwing it freely over the back and around the sides of the hen disturbing her as little as possible while doing so.

Twenty-four hours after hatching takes place I remove the hen and her brood to an A shaped coop without bottom, and slatted four inches apart on front end, the back and sides being boarded solid. The size of this coop is three feet in depth from front to back, and sides are three feet six inches long. The hen is confined therein and the poults have freedom through the slatted front. This coop is placed upon a grassy plot near the dwelling house, which is kept grazed off pretty

PRIZE-WINNING BRONZE TURKEY—MALE

close by the cows each morning and evening while being milked. Near the coop a round hole about one foot in diameter is cut out of the sod and some fine road dust with a sprinkling of ashes are placed therein for the young birds to dust in, and grit or fine gravel must also be provided. This coop is faced toward the south and the front is covered with a broad board each night. Now this coop must be moved the breadth of itself each day or the filthy condition mentioned before in this article will get in its fine work and cause the death of many birds. Driving the hen and brood into some small building night after night will have the same effect. The hen is let out of the coop when the poults are about four weeks of age, and they generally start roosting upon the fences or trees near the farm buildings, which is the proper place for them right through until winter, when they have the privilege of using a large cattle shed, single boarded upon three sides, and entirely open on the east.

Now as to food for the young, I give stale bread soaked in skim milk the first day in the coop, gradually add shorts to the bread upon the second day, and make it all shorts mixed with skim milk upon the evening of the third day, which is their sole food for the first four weeks, except that one-fifth of the bulk of shorts is made of onion tops, cut fine and mixed with one of their forenoon feeds, and the same bulk of dandelion leaves similarly treated are mixed in one of the afternoon feeds. The shorts or middlings used are a medium grade, not being so "floury" that they get sticky in mixing, nor so coarse as to resemble bran, which has not enough nourishment.

They are fed five times per day entirely off my hands which leaves none of the food lying in the hot sun to sour, and any shorts left at each feeding is given the mother turkeys or fed to my Leghorns, fresh food being mixed at each feeding. This prevents them getting sour half-fermented food, a fruitful source of bowel disease. For drink they have skim milk (either sweet or sour) given alternately with water at the different feeding times, the drinking utensil being also carefully washed.

After four weeks they are fed the shorts only in the morning and are offered a small quantity of good plump fall wheat at night. I say offered because they seldom eat any of it until October, if there are any grasshoppers to be had. The great majority of turkeys throughout the country receive no supplied food after the first four weeks until they start fleshing them up with grain in November. I am anxious to get every ounce on my flock that is possible in order to win prizes, hence I never want to take chances on their going to roost hungry. I do think, however, that turkey raisers lose money by not starting to feed lightly in October (when supply on range is falling off) and give a liberal quantity all through November, selling their birds the first week in December, which I consider the most profitable time to dispose of all surplus stock.

The different breeds are the Bronze, White Holland, Narragansett, Buff, Slate and Black, with little difference as to hardiness or other qualities, with the exception that the Bronze are the largest.

THE O. A. C. REVIEW

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Editorial

Short Course in Apiculture

With this Review we would like to call the attention of all our readers to the Short Course in Apiculture, which is to be held at the Ontario Agriculture College from May 1 to May 6. This is the first course of its kind ever held in Ontario, and is intended specially for students and ex-students who have taken the regular Apiculture lectures and wish some more advanced practical and scientific work to put them in the way of becoming trained apiary instructors. However, it is also open to beekeepers who have gained their knowledge in an elementary way. A splendid programme of lectures has been arranged, special attention being given to the diseases of bees and their treatments. The practical apiary work will be conducted in the college apiary and the apiculture laboratory, but neighboring apiaries will also be visited, where different systems of management will be studied and real cases of foul brood examined. Prominent and capable men have been secured for the lectures, among these being Dr. E. F. Phillips, Ph'd., who is in charge of Apiculture, Bureau of Entomology, Department of Agriculture, Washington; Morley Pettit, Provincial Apiarist, and several of the college professors.

Beekeeping has during the past two years received a wonderful impetus throughout Ontario, and is beginning to be recognized as a most valuable adjunct to the Ontario farm. This course has been arranged by the Provincial Apiarist, with one aim in view, namely, to demonstrate practical and economical methods in the care of bees, and should prove of exceptional benefit to anyone interested in beekeeping.

A large number of applications have already been received and indications point towards success for this, the first Short Course in Apiculture held in Ontario.

Programmes and all information regarding the course may be obtained from Morley Pettit, Provincial Apiarist, Ontario Agricultural College.

The Better Farming Special

Elsewhere in this issue appears an article dealing with the "Better Farming Special." The object of this train was to stimulate and increase the interest in better agriculture. The idea, which is a novel one indeed, as far as Ontario is concerned, proved a great success. The carrying on of this work was made possible through the offer of the Michigan Central Railway of a train of three passenger coaches and six baggage cars.

The offer was accepted at once by Mr. Geo. A. Putnam, Superintendent of Farmers' Institutes, who proceeded at once to thoroughly equip the train for demonstration purposes in dairying, fruit raising, poultry and drainage. The train stopped at four stations per day, where lectures were given on all practical subjects.

Large numbers attended these meetings at every station, brought there, perhaps, in many instances by the novelty of the term, "Demonstration Train." However, the fact remains that success met the train everywhere, which but shows that this is a practical age, when men, knowing they can see for themselves, take every opportunity presented for the betterment of their agricultural status. The effort should prove indeed a fruitful one and one well worthy of repetition in future years. The success of this demonstration, we think, must hasten the time when instead of placing one man in a county to look after its welfare, he will be placed upon a farm to which the farmers will come and secure help through the results of local experiments and demonstrations.

A Request

The Review is the property of the students and demands the help of every one. During the coming summer, no matter where you may be located, you will find yourself agreebly surprised by meeting someone, who, perhaps ten, twenty or even thirty years ago, attended the O. A. C. Now, in such cases, remember the Alumni Department and make note of the name, address and occupation of your new acquaintance.

Not very long ago a letter was received from one of our old boys who made the suggestion that the Review publish a year book, so that the whereabouts of all ex-students might be known.

At present the way is not clear for such a step, but the Alumni Department can do a good work in this way. Let us know next September, on your return to college, of every "old boy" you meet during the holidays, and his name, address, occupation and anything of interest in connection with his work will appear in the next Review.

The World's Wheat Crop

According to statistics which the International Institute of Agriculture at Rome published not long since as to the world's production of wheat, the comparative figures for the total production are as follows: United States, 200; Russia, 194; France, 98; British India, 77; Italy, 52; Hungary, 34, etc. As to the yield per acre of territory the order is quite different, this being: Great Britain, 21; Germany, 19; France, 14; Austria, 13.2; Canada, 12.4; etc. The United States occupies the ninth place, with a figure of 9.2.

First Year Oratorical Contest

UNDER the auspices of the Maple Leaf Literary Society an unique and interesting evening's entertainment was given to a large audience in Massey Hall on the evening of February 22nd, when for the first time in the history of the College the freshmen held an oratorical contest, an occurrence which is indicative of the growing interest in public speaking. Credit must be given to the President, Mr. H. B. Jowsey, for his efforts in this inauguration.

The Honorary President of the First Year, Professor R. W. Wade, opened the programme with a concise and much appreciated address on "The Power of Speech."

There were six competitors, their topics being as follows:

Mr. G. S. Hirst—"Theatres as a means of Education."

Mr. E. Lattimer—"What We owe the Pioneers of Ontario."

Mr. W. I. Rogers—"Our Heritage."

Mr. W. H. Robinson—"Life Among the Aliens in the East End of London."

Mr. W. G. Nixon—"The Pioneer Agriculturalist of Algoma."

Mr. C. H. Pickett—"The Telephone and the Farmer."

The judges, Professors Harcourt, Crow and Jones awarded first, second and third places to Messrs. Lattimer, Rogers and Hirst, respectively.

Mr. Lattimer gave a studied and fluent speech. Mr. Rogers' address was well prepared, and was delivered with assurance; while Mr. Hirst treated a wide subject well in the short time allowed.

The addresses were punctuated with good musical items, and to this part of the programme especial thanks are due to Mrs. Fuller for her considerate and enjoyable contributions.

The Cosmopolitan Dance.

The first dance ever held at the Macdonald Hall took place on February 24th, under the auspices of the Cosmopolitan Club, whose able committee carried things through most efficiently. At 7:30 p.m. parts of the Hall presented an animated and congested appearance as programmes were being filled, and shortly before eight the strains of Thain's Orchestra drew the couples into the dining-room, which had been cleared of furniture. To minimize the crush in the dining-room a pianist and the excellent floor

of the gymnasium were offered as a counter attraction.

Dancing continued in full swing till 10:30, when supper was served, in two sittings, at small tables in the drawing-room. After a number of extras, the regular programme was resumed with the Vision of Salome; Silver Bell, the Chocolate Soldier and Every Little Movement followed. The fourteen dances came to an end only too soon with the Merry Widow Waltz, and a number of encores were called for and cheerfully rendered. Sharp at midnight the music ceased, and the men slipped quietly away, to dream, no doubt, of pumpkins and little glass slippers.

The Mock Parliament.

The almost annual Mock Parliament of 1911 was held in Massey Hall, on February 18th. Other attempts have been remarkable but this year's College wit, literary autocrat, for boldness and literary originality, surely has excelled. The speech from the throne, savoring strongly of its antecedents, gave ample opportunity for the re-telling of all College scandals, and the "bill to enforce dress reform among Canadian women" afforded the witty and witless spouters a theme of wonderful possibilities.

However, the Rt. Hon. Harping Always Premier Dorrance required all of his own good G. A. S. and some potassium cyanide fumes from the Hon. Aphis Catching Minister of Lands to silence the hitherto unheard of Fruit Merger Clement. The Hon. Clement was a peach, or rather P-E-A-C-H-E-S.

Kingfisher Stairs, Speaker of the House, was continually called upon to settle points of order and other obstruse questions. Sir Rufus Schuyler revealed all the secrets of his hitherto unknown married life, and the cumbrous thoughted but Willing Missionary Aikenhead exposed himself to the scathing criticisms of Sir Little Basket Henry and the renowned Aphis Catcher. His degree of H. E. L. was no misnomer.

The audience was like most audiences at parliamentary meetings, boisterous, and if the literary powers of 1912 can produce no newborn ideas, the College Benedicts may again submit to an annual ideal even if their fair partners are legislated against.

The Athletic Concert.

The annual Athletic concert held in our gymnasium on Saturday evening, March 10th, was no exception to the rule in being acknowledged as one of the best entertainments of the season, and long before the programme was commenced the seating capacity of the gym. was taxed to its utmost.

The opening orchestra numbers were but a sample of others that followed; for the music rendered was all that could be desired, and the various numbers given were repeatedly encored by the audience.

When the curtain rose, the gym. team arrayed in white trousers and College jerseys presented a very pretty picture, one part with outstretched arms intertwined sat upon the shoulders of the others forming a semi-circle across the entire stage. The opening performance was done on the German horse, being followed at intervals during the evening by work on the horizontal and parallel bars and by mat work.

The team work throughout the evening was carried out without accident or mishap of any kind evidencing good organization and careful training on the part of our Physical Instructor, Mr. Ringland. Some very clever individual

work was done on the various apparatus and the pyramids were well formed and original.

Perhaps, the prettiest part of the programme was rendered by the Macdonald girls in their dumb-bell drill and "Clapp Danzen." The girls did their part well, and looked charming indeed in their gymnasium costumes. The excellence of these numbers was due to the untiring efforts of Miss Magwood, the physical director at Macdonald Hall.

The curtain rises again and the audience finds itself transported to a Zulu village where Chief Cetewayo, in company with his dark-skinned warriors, are seated around a camp fire. The native trees, the native tongue and war songs and finally the war whoop which is given by the tribe as they rush off to meet an approaching enemy gave this number a decided realistic turn.

The clown farmer, Jas. Henry Crawford, from Kent County, who appeared early in the evening in search of his son Henry, gave no small amount of fun from time to time.

The exhibition of boxing and Japanese wrestling (Jiu Jitsu) were also very good. The latter was especially interesting and very amusing when Miss Suffragette made her appearance and proved herself quite an expert in the Japanese art.

The closing "Ghost Scene" was amusing throughout, especially so when the ghost made his appearance and frightens poor Papalellakoors almost into fits. Also the strange dimethyl-tri-ethyl-butyl-propyll lepidodendron insect which proved to be such an interesting discovery. In this scene as in others the skilful manipulation of the lights added greatly to the effect.

The varied nature of the programme may be realized from the foregoing. Combined with this was the splendid appearance of our newly decorated stage and the good work done by every one concerned, helped to make this one of the best concerts of its kind ever given on "College Heights."

Annual Oratorical Contest.

One of the best oratorical contests in the history of the College was the one held this year on the evening of March 10th. The speakers and the subjects of their orations were as follows:

1. "Things Seen" — Mr. Ranald Macdonald, '12.
2. "The Realization of an Ideal"—Mr. E. W. Heurtley, '11.
3. "The Romance of Canadian History"—Mr. R. L. Vining, '13.
4. "The True Aboriginies of South Africa"—Mr. R. Dougal, '13.
5. "Essentials of Greatness"—Mr. W. M. Aikenhead, '12.

Mr. Macdonald, the first speaker, described a few of the memorable scenes which it has been his privilege to witness in Edinburgh, his old home. The mournful crowd that anxiously waited around the bulletin on the eve of Queen Victoria's death, the little room on Queen Street, where chloroform was first discovered, the visit of Lord Kitchener and Col. Lister to Edinburgh, and the breaking of the sad and sudden news at the death of General Wauchope, who was killed in the South African war, to his wife through the columns of a daily paper. These were the things described by Mr. Macdonald, and which so intensely interested the audience for the short time in which he spoke.

Mr. Heurtley in his oration confined his remarks chiefly to the subject of Cosmopolitanism and its aim in the world to-day. It was, he said, a means

to an end, a stepping stone towards the Realization of an Ideal, and to this end cosmopolitan clubs were doing an excellent work. These clubs have not been long in existence, but have proven of inestimable value. May the one lately organized at the College be as those which have preceded it, a power for good whose motto is "Above all things is humanity."

Mr. Vining on "The Romance of Canadian History," narrated the important events and the deeds of those who have become famous in Canadian history from the time America was discovered until Canada became a British possession. The speaker omitted nothing that was worthy of mention from the humblest of the Indian tribes to the royalties of England and France, and concluded his speech with a neat description of the attack and fall of Quebec.

Mr. Dougal selected a subject foreign to many of us, describing the true Aboriginies of South Africa. The very subject of his speech was sufficient to arouse the curiosity of his hearers which was only satisfied when the speaker had finished. In a plain and simple way he described the habits of these people and the role they fill in the busy little world of South Africa.

Mr. Aikenhead, the last speaker, delivered an oration that was indeed well prepared, and one which required a great deal of thought and study. The "Essentials of Greatness" he learned from a study of the lives of men who have become famous in history and these essentials were "Truth, Love and Faith."

The judges, Rev. W. G. Wilson, Mr. R. L. McKinnon and Professor S. B. McCready, awarded the prizes in the following order, first, Mr. Vining; second, Mr. Aikenhead; third, Mr. Dougal; fourth, Mr. Macdonald.

The various orations were interspersed with excellent musical selections givin by the Misses Kelly and Millar, and Mr. Kelly, of the city.

Alumni

Another associate of class '11 has demonstrated to his classmates, who returned for their degree, that there is considerable to be gained by dropping out at the end of the second year. Mr. Alvin Culp, of Vineland, returned to his farm after obtaining his associate diploma in '09. Since then he has devoted his energies to farming and has made a success of it. Apparently, however, his time has not been so much occupied with this phase of life that all the others have been neglected. We learn that on February 21st, the home of Mr. and Mrs. George Werner, of Selkirk, Ont., was the scene of a happy wedding, their daughter Alma being united in bonds of matrimony with our friend "Alvin." The groom was well known among his classmates to whom this information will be of special interest. The Review extends congratulations and best wishes for a happy and prosperous future.

It will doubtless be of interest to the Old Boys as well as to the basket ball champions of this year to learn the whereabouts of the men who composed the championship team two years ago.

W. H. Irvine has been with the Amhurst Dairy, of Montreal, but has lately changed to the State College, Brookings, So. Dakota.

CHAMPION BASKETBALL TEAM OF CLASS '09.

Ralph Moore is at home on his farm near Norwich, Ont.

Paul Angle is District Representative for Simcoe. He was married a year ago to a Miss Jessie McIvor.

N. MacKenzie is assistant to A. D. Campbell, at Alexandria.

"Ding" Hoy is out in British Columbia acting as assistant to Winslow.

Jas. Murray, B.S.A., formerly of the Seed Branch Department of Agriculture, Ottawa, but for the past four years Superintendent of the Experimental Farm at Brandon, Man., has resigned that position to undertake, for an English Company, the management of a sixty-four thousand acre farming proposition, west of Medicine Hat.

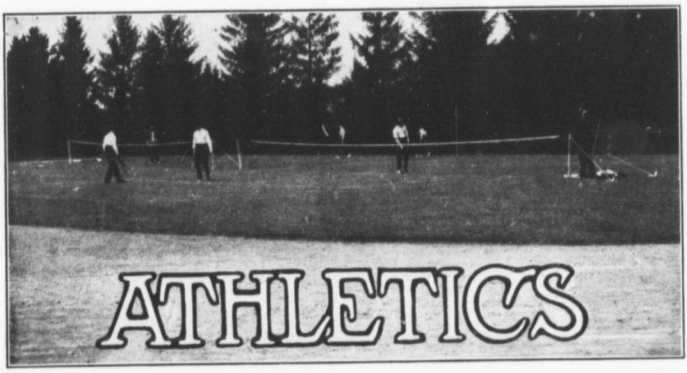
W. C. McKillican, B.S.A., Representative of the Seed Branch at Calgary, has been appointed as his successor. Mr. McKillican, who is a Glengarry County boy, graduated from the Ontario Agricultural College in 1905.—Farmers' Advocate.

Mr. J. Buchanan, B.S.A., formerly on the staff of the Ontario Agricultural College, has left his position as Park Superintendent at Calgary to undertake the management of the Bow Park Farm, near Brantford. This farm is owned by the Dominion Canners' Association, and consists of nine hundred and ninety-nine acres. The object of the association is to grow on the Bow Park Farm the seed necessary for supplying the products for their various factories. They believe that by supplying good seed the quality of the products will be considerably improved.

E. B. McMaster, '96, was recently elected an alderman for the City of Vancouver. He is taking a lively interest in civic affairs. Although McMaster is in mercantile business, he still remembers the days he spent at the College and always trys to be present at the annual B. C. O. A. College students' banquet.

Judson F. Clark, of Clark & Lyford, Forest Engineers, is meeting with phenominal success in the timber business. He controls large holdings of timber that are rapidly increasing in value. He is also looked upon as one of the best authorities in the province on matters pertaining to Forestry. He has been keen, working with other leading timber men, to have the Provincial Government revise the present Forestry regulations.

For some time previous to February 15th, 1911, Mr. Clayton Cassell, who took the first year with the nineteen-twelve class, had been troubled with a severe attack of heart trouble. On that date it terminated in his marriage with Miss Edith Louise Stoltz, of New Dundee, Ont. The wedding took place at 12:30 p.m. on Feb. 15th, at the residence of the bride's father. After the wedding the young couple went for a trip to Niagara Falls, Rochester and other points of interest. "Clayton" has bought one of the best farms in Waterloo County, where he intends residing in future. Mr. and Mrs. Cassell have the best wishes of The Review.



Macdonald College Visits Us.

"THEY came, they saw, and they —enjoyed themselves." The generosity of which the defeated are said to be capable is not whole due from this college, therefore the aforementioned quotation is only to be given in part. We at least made enough points out of the different sports contested to get a pass, i. e., thirty-three and one-third.

The Macdonald men were received with gladness, when on the morning of the 17th of February they entered the residence of the mother Agricultural College of Canada. There were fifteen of them, probably the best that Macdonald boasts, and their standard of excellence is hard to beat. Accompanying them as manager and referee was Mr. Barton, late of the O. A. C. staff, who is to be congratulated on being associated with our daughter college of Quebec.

The Athletic Executive, with "Hamaleer" as the father of them all, took control of the situation. Rooms were found for the visitors on the different flats, and an extra table was prepared in the dining hall. Perhaps the quality of the food provided at Macdonald College is not as rich in protein, carbohyrates and fat as is the provender obtainable in our dining-room. At all events, our visitors ate heartily, without discretion or suspicion, and are still in Quebec.

The afternoon of Friday was spent in a thorough visit of the college halls and grounds. Especially interesting proved the Macdonald Hall and Institute to our cousins from St. Anne's, who are used to "mixed company" at the dining table.

The athletic events commenced at four o'clock the same afternoon. Intense interest prevailed throughout. Even our homeseekers were on the gymn. stage apparelled in extra special raiment for the occasion. The shining of their countenances being as the moonlight shining on the Sea of Galilee in the cool of eventide.

Witnessed by the whole student bodies of Macdonald Hall and the Col-

lege proper, the basketball game proved to be one of the fastest and best of the season. Our boys, however, proved too much for the "Macs" and romped home to the score of 44—28.

For the College of Quebec, no one man excelled another, every unit of the team doing his utmost to win the game. Our men were in excellent shape. Baker at forward, made the basket weary with over-feeding. Culham also was in good mettle. Main played his usual snappy game, holding his man to the floor throughout. Indeed it was hard to say who outstarred the other, as all the men were on the alert from start to finish.

ATHLETIC REPRESENTATIVES FROM MACDONALD COLLEGE.

Saturday Morning.

The College team lined up against Macdonald at the Royal City Rink on sharp skates and excellent ice. We expected to win. We were excellent losers by one point. The writer owes it to the College to state that the red and blue hockey was the best. On the other hand, however, it is to be admitted that Macdonald College were not playing poor hockey. The trouble was that the rules got badly mixed. Our boys suffered accordingly.

Of the game little need be said. We all saw it. It was fast, tricky, clean and a pretty game to watch. There were many fine break-aways on both sides. Individual rushes were carried off amidst great enthusiasm. Perhaps these latter spoiled the game somewhat, combination being noticeably lacking on both sides. The end of the game came in due time, and Macdonald College were in the lead. The final score being 5-4.

Saturday Afternoon.

The last game to be contested was baseball. The playing of both teams was good. Macdonald College were

victorious by a small margin of runs. While it is not our intention to kick at defeat, it must have been very noticeable that we lost our own game, not being beaten by a better, but by a team equal to our own. Our boys forgot the necessity of playing the home plate and thus forfeited the game throughout. We do not grudge Macdonald the game—they won it. The final score was 24—21 in Macdonald's favor.

The meet was in every way a success, and to the Athletic Society this department extends congratulations on the very excellent manner in which they entertained our friends.

We expect to return the visit next fall and it is to be hoped that all college men interested in sport will do their utmost in competing for a place on one of the teams at least.

Swimming Meet at 'Varsity.

Our annual aquatic meet was held in the 'Varsity tank, on Saturday, March 25th. The score in points was 30-24 in 'Varsity's favor, but this is really no indication of the relative ability of the rival teams. To the spectator, it was O. A. College all the way, our team capturing first in the 200, 100 and 50 yard swims, and the back swim, besides winning the water polo game by a score of 7 to 3. 'Varsity made their points chiefly in the fancy diving contest, which was a large part of the meet. They also won the plunge for distance and the relay race.

The swimming of Davis was phenomenal. He not only won three first but also broke two records which is certainly a most creditable performance. Barrett easily won the back-swim and with a little timely coaching would have established another record, being but one-fifth of a second behind the 'Varsity record.

The water polo game could not be called a brilliant exhibition of how the game should be played. At no time was 'Varsity dangerous, and our team had no difficulty in winning the game. Davies and Rogers did particularly good work and were largely responsible for the scoring.

Great credit is due the management of this branch of athletics. Since aquatic sports became recognized by the Athletic Association the swimmers and the water polo team have brought many laurels home to our Alma Mater.

Inter-Year Hockey.

The hockey season which has just closed at the College was without doubt the most successful we have had for some time. Both in the O. H. A. and Inter-Year games enthusiasm has been at a climax, and in the former, although we did not win out, yet we feel that the little success achieved was due to the wise step taken by the Executive in amalgamating with the Guelph Lyons. When we consider that the team who won the district are now intermediate O. H. A. champions we have little to regret.

In the Inter-Year games also great interest has been manifested by players and supporters alike. To the fourth year falls the championship honors, they having gone through the season without a defeat. The Juniors, although defeated in the final game by the Seniors, put up a brand of hockey quite as good as the champions, and it was more by good luck than good management that the championship rests where it does.

Feb 4—First and Second Years played an interesting game, the honors going to the Sophomores by a score of 5 to 2. The ice was in very poor condition, and fast hockey was out of the question, but at no stage of the game, however, was the final result in doubt.

Feb. 11—The Juniors and Seniors battled for victory which did not come to either team for the game ended a tie —6—6. It was a very interesting game to watch as the ice was in excellent condition for fast hockey and the two teams were so evenly matched that there was little or nothing to choose between them.

Feb. 16—The Juniors and Freshmen played a very interesting game, which resulted in a win for the Juniors by a score of 5—4. At one stage in the early part of the game it looked like a sure victory for the Freshies, but later on the Juniors woke up and pulled themselves out of the hole, thus winning by the small margin of one goal.

Feb. 23—A very fast game was played between Second and Third-Year, in which the Third-Year were again victorious by one goal. The result of the game would decide the putting of one team in the running and leave the other practically free to disband for the season. After a very strenuous hour's play the Third-Year were the winners. Score 3—2.

Feb. 25—This game was between the Second and Fourth Years and resulted in an easy win for the Fourth Year. Score, 3—1. The Seniors and Juniors were now tied for the championship.

March 6—The last and most exciting game of the season was played in the Royal City Rink between the Seniors and Juniors. Both teams were represented by a goodly bunch of supporters, who pleaded their causes in a very hilarious and enthusiastic manner. The ice was in perfect condition, indeed it was rather too fast for some of the players, for in many cases the skates got ahead of the skaters' feet with disastrous results.

However, the game was a fairly good exhibition of hockey, the passing and shooting of both teams being always in evidence, but the Fourth Year were a little inclined to rough it and as a result some of their players had many chances to recuperate on the fence.

In the first half the Juniors noticed the first goal after about fifteen minutes play, and just before the whistle blew for half time, Seniors succeeded in pushing in a goal. The second half was much faster and cleaner than the first. It was a continual rush from one end of the rink to the other, neither team being able to find the nets until with just a minute to play, Smith shot and on the rebound of the puck slapped it in for the winning goal and the game ended—Seniors 2, Juniors 1.

Inter-Year Baseball.

Very little interest has been taken in the baseball games so far this term. On January 26, the first game of the series was played between the First and Second Years, in which the First Year were winners—score 17-14. The next game was played between Third and First Years, resulting in a win for the First Year—score 15-12. The next game between Third and Second Years on February 9, resulted in a win for Second Year—score 13-9. On February 14, Fourth Year defeated the Freshmen by a score of 17-7.

Stratford at O. A. College.

On Thursday evening, February 23, College defeated Stratford by a score

of 24-19. It was a fair exhibition of baseball, but was an easy win for O. A. College as the Stratford team were not fast enough nor well enough versed in the finer points of the game to make it very interesting.

City at O. A. College.

On the evening of March 6, a team from the city played a friendly game with College in the gym. The game was very fast and exciting from start to finish, but the men from down town proved too much for College and won out by a score of 17 to 14.

O. A. College at Stratford.

On March 9 O. A. College journeyed over to Stratford to play a return game. This time by their dexterous yielding of the willow the game fell to College by the score of 6 to 4. In this game every man was on the job, especially Coglan, who pitched a great game, having much better control than in former games. This, together with the way the whole team slugged the sphere to all corners of the gym., accounts for the victory.

Inter-Year Basket-Ball.

The concluding games of the basketball series did not bring forth any very close contests or unexpected results. The Seniors won the championship with the Juniors in second place.

February 1st.—The Second and Fourth Years played the first game of the series in which the Fourth Year had it all their own way. At no stage was the final result in doubt, the game ending 44-16.

February 4.—In the game between the First and Third Years. The latter won by 31 to 23. For only a few moments in the first half was there any doubt and after that it was all Third Year, they being able to score almost at will.

February 20.—The most exciting game played was that between the Second and Third Years. The game was very fast and the result was in doubt until the final whistle blew, when Third Year were ahead by one point. Score, 29-28.

March 3.—The Second Year easily defeated the Freshmen by a score of 41 to 19. The Sophomores gained a lead in the first half and held it until the end of the game. They had better combination and shot better than their less experienced opponents and so had an easy time of it.

The last game of the series was played between the Third and Fourth Years and again the honor falls to the Seniors. Fourth Year passed much better and checked their opponents so closely that the Juniors had little or no chance to shoot.

Macdonald Girls Win at Hockey.

The day dawned clear and cold, not a breath of wind stirred the atmosphere, still a feeling of unrest prevailed in every group where a number of the O. A. C. hockey team was present. The game of the season was to be played at 11 o'clock. A challenge had been received from the Macdonald girls and had been accepted. At 10:30 "the boys," attired grotesquely in ladies costume, appeared on the ice and proceeded to acquaint themselves to the customary procedure of the wearers of such paraphernalia.

Then pandemonium reigned as the challenging septette came on to the ice After the preliminary warnings, Referee Clement faced the puck. The pace set by the girls was terrific, and after a few end to end rushes, on a neat combination play by Misses Everson and Davis, the girls scored the first goal. Kedey at this time was extricating himself from a hobble in his hobble skirt.

The play continued fast, the boys vainly trying to get through, but the defence of the girls was impenetrable. Miss Shaw, at point, being a veritable stonewall. Macdonald was ruled off at this stage for tripping—'tis said for tripping over his own skirt. The boys then by combination tied the score. But not for long. Polly P. was too fast for Clark and broke away, scoring another for the girls on an individual rush. Soon the girls scored again, Clark being ruled off for heavy checking. The boys broke away again and scored, but Miss Richardson said that had she seen the puck it would not have gone in. At this time the game was stopped, as the referee caught Robinson and his check over in a corner talking, they were warned not to "lag." The pace had been so fast that the boys looked worried. The girls scoring again just before the whistle blew for half time. Score, 3–2.

The second half was even more exciting than the first, each team scoring twice. At one time trouble was in the air, as the boys claimed a goal, but Umpire Smith said not. The college police protected him from the mob, and a new umpire was found. After resuming play Clark tripped the referee from behind, who after collecting himself banished the offender for 5 minutes.

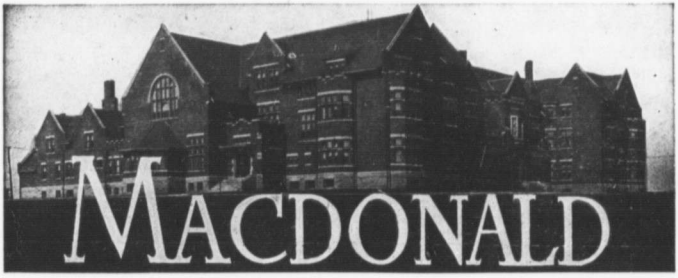
For the winners, all played good hockey, showing the effective training of Coaches Hutchinson and Clement. For the losers Gandier, in goal, and Robertson played star games.

VICTORS AND VANQUISHED.

The opposing teams lined up as follows:

Girls—Miss Richardson, goal; Miss Shaw, point; Miss Rutherford, cover point; Miss Everson, rover; Miss Davis, center; Miss Young, left wing; Miss Staebler, right wing.

Boys—Gandier, goal; Kedey, point; Robertson, cover point; French, rover; Clark, centre; Macdonald, left wing; McElroy, right wing.



The Problems of Western Canada

THE spirit of buoyancy which pervades the West gives to it a charm which is irresistible, due partly no doubt to the long days of brilliant sunshine, but even more to the feeling of the bigness of things and the great possibilities awaiting us.

A few years ago Boston, New York or Chicago attracted the ambitious educated young people of our east, but Western Canada is now the mecca which draws them. Positions of trust in the business, the professional and the educational world, which in the east would be occupied by gray-haired men, are filled here by mere youths, and the responsibility developes the grit and resourcefulness necessary for the big duties.

One of the big problems which confronts every Canadian is how to nationalize the heterogeneous crowd that is pouring into our country from every corner of the globe. Not long since the problem was how to populate our many millions of acres of land, but the question now is how to mould this mass of different nationalities into one strong patriotic people.

The immigrants who have the ambition and grit to take a homestead are as a rule ready to fit into the new surroundings and adapt themselves to the new conditions. The influence of the experienced successful settlers from Eastern Canada and the United States is most beneficial. These men come with capital, and are able to set a progressive standard that is contagious. They work side by side on municipal councils, school boards and other public committees with our residents of foreign birth. Only last month over a hundred delegates representing the rural school trustees of Manitoba met in convention in Winnipeg. Many of these men spoke very broken English and had been only a few years in this country, but they were eager for information regarding educational advancement; the manual training and household science departments of our city schools appealed to them particularly. They discussed consolidated schools as a way of introducing this work into their rural districts.

This is not the class of citizens which makes us consider seriously the future for Western Canada, it is the crowd which continental Europe is pouring into our cities—the class that will pack a large family into two rooms and ac-

commodate several boarders besides. It would take pages to tell where all these people come from—to attempt it would be to give a stiff lesson in Central European geography. Austria, with its kingdoms, duchies and archduchies is responsible for many. The Bohemians are probably the best class from Austria. They are fairly intelligent, engage in manufacturing and readily adapt themselves to Canadian conditions. Not so the Ruthenians from the Province of Galicia. They are illiterate and ignorant, very few of them can even read or write. They are fit for only unskilled labor. They are very fond of drink and when drunk are quarrelsome and dangerous, so figure frequently in our police courts. In Winnipeg there are several thousand Poles from the peasant class, poor, illiterate and much like the Ruthenians. Two Manitoba young men, art graduates from our University, are this year in Austria studying the Polish language and customs, preparing themselves for their chosen life work among the Poles in Winnipeg.

The Hungarians do not congregate in our cities to any extent. Their ambition is to own land; they quickly make a home for themselves and become prosperous settlers.

Servia, Roumania, Montenegro, Bulgaria all send us their share of immigrants, Italy sends us an industrious class, with a high standard of family morality, most of them are illiterate, but their children are quick tnd ambitious. We have a few Greeks keeping restaurants, fruit stalls or boot-blacking establishments, but there is nothing about them to remind us of the aesthetic Greek of history.

The Armenians have shops for the sale of oriental rugs and fancy goods, and are self-supporting.

The Syrians are here in numbers, employed mostly as factory hands. They are taking enough interest in national affairs to form Servian Conservative Clubs and Reform Clubs.

Greater numerically than all other class of immigrants are the Jews, who have come to us from Roumania, Austria, Hungary, Turkey, Germany, England, France and Russia; differing in bent and characteristics as widely as in nationality, yet having many common traits. They all speak Yiddish and many can read Hebrew. They are intellectual and quickly acquire a knowledge of English. After a couple of years in our public schools most of the Jewish children speak English with as good an accent as our Canadian children. They are very ambitious and have their forefathers' gift of making money. From the primary grades up their children deposit money in their school penny savings bank towards their future college education. You are probably wondering what the West is doing to make good citizens of this conglomerate mass. A few instances from Winnipeg will serve to illustrate.

The various religious societies and associated charities have a system of organized work in the form of kindergartens, day nurseries, mothers' clubs, boys' clubs, girls' clubs, and men's clubs, where both instruction and recreation have their places. Regular visiting is carried on by deaconesses, nurses from the Margaret Scott Mission, etc., and suggestions and help are given towards the improvement of the homes. Uncleanliness and prevalence to contagious disease are two of the difficulties that are faced.

But everyone recognizes that the moulding and nationalizing must come through the children. Our citizens spare no trouble or expense to make

the public schools the most modern and best equipped in everyway that the age can produce. The buildings are carefully designed and maintained and many are furnished with both tubs and shower baths, so that the children who have not these advantages at home can learn the gospel of personal cleanliness. A regular system of medical inspection prevails, and any defects of hearing, sight, etc., are reported and looked after. A number of professional nurses give all their time to visiting the schools, and the homes of such children as require home attendance. Manual Training forms an important part in the school work of all the children. The junior grades have clay modelling, raffia weaving and wood carving. For the last four years of their public school work the boys take the carpentry branch, including cabinet making while the girls take three years in sewing and a year in cookery. We make a strong point of impressing system, order and cleanliness on our girls because so many of their homes are lacking in these characteristics.

Important as the work among children is, it is not they alone who have these educational advantages, for several winters the schools have been open three nights a week with free instructions for the grown-ups who wish to attend. Many hundreds avail themselves of the opportunity to learn English and numbers continue from winter to winter for more advanced work. It is really pathetic to see elderly men and mothers, after their day's work coming to school to read from children's primers; but they are ambitious and it is amazing with what rapidity they grasp the language.

This winter classes in mechanical drawing and household science have been opened. One class in household science is composed of non-English speaking women, young housewives, mothers and even one grandmother, who has enough ambition to want to learn Canadian ways of doing things. The children adopt the Canadian dress immediately on starting to school, and it is difficult to persuade a child to speak in his home language. Too often we find them ashamed of their parents who cannot speak English and who cling to their native dress and customs. Parental control is weakened by this, and it probably accounts, to a great extent, for the frequency with which so many of these children appear in the juvenile criminal court.

The fact that their ambition impelled these people to leave the country of their birth and cross the seas to us, shows us that they had a vision and are capable of worthy participation in the blessings of this their promised land, but upon us devolves the task of assisting them to good citizenship and it must take time and money, and hopeful, patient effort to break down the superstitions and errors of long generations.

S. C. Irwin.

Among Ourselves

The Home-Makers' Prom.

EVERY year the Home-makers give a St. Valentine prom. and this year was no exception to the rule. The 14th was on Tuesday, so the following Friday saw Mac Hall en fete.

The decorations were appropriate to the season, and red hearts and dainty cupids appeared at every turn. The guests expressed their appreciation of the same with great volubility. In fact it was rumored that sundry coats had a decidedly bulgy appearance as they passed out the door.

The dainty green and gold programmes (the colors as a compliment to the St. Anne visitors) were enjoyed to the very last number. Six very amusing "stunts" were given by the clever Home-makers, and the rest of the evening was devoted to dancing.

All so thoroughly enjoyed themselves that "Home, Sweet Home," had to played several times before the guests realized that they were not expected to waltz to it but to take it as a signal to go home.

The Cosmopolitan Dance.

A very brilliant social season came to a close with the Cosmopolitan Club dance, on Friday evening, February 24th. Although last, this dance was by no means least, and much praise is due to the members of the club, who did everything possible to make the evening the success it was.

An artistic poster pinned to the bulletin board announced to the girls that rumors were not to be mere rumors any longer, and that a real dance was actually underway.

The fateful evening arrived at last, and at half-past seven, instead of finding a huge crowd jostling and jolting in the lower hall, one could see only a stream of polite, well-dressed people travelling in the direction of the dining-room. I say "dining-room," merely from habit—no one would have recognized it as such that night. It had been cleared of all furniture and the walls decorated with many flags of different nations, and the sight of the floor and the musicians at one end tuning up, made everyone long to start dancing. To prevent crowding here, the committee had arranged to have a pianist play in the gym. also. This division eliminated the usual physical suffering and flow of polite apologies among the dancers.

Supper was served at small tables in the drawing room, which was artistically decorated.

Although the committee was more than generous in allowing extras and the orchestra with encores, the last one came all too soon, and no amount of applause seemed capable of producing anything more than "God Save the King." Good-nights were said as at old-time proms, and gradually but eventually the lower halls were restored to peace and quietness again.

Much Ado About Nothing

Much Ado About Nothing

"Oh, my!" she exclaimed. "We've been waiting a good many minutes, for that mother of mine."

"Hours, you should say," he replied.

"Ours?" she cried joyfully, "O, this is so sudden."

"Sixth lap," said the little darling as his fond mother passed him around the sewing circle.

At the Conversat—

Miss B (to gentleman standing on her gown)—"I beg your pardon, but my train does not carry passengers.

A. (serving the soup)—It looks like rain.

M. (tasting the soup)—Yes, and and tastes like it too.

Miss R.—Why does fat rise to the top of soup?

Brilliant Pupil—So it can be skimmed off.

He—You are the breath of life to me.

She—Well, suppose you hold your breath awhile.

Miss Allen—Order, girls, order.

Miss P.—Fried ham and eggs, please.

J.—Why are you always behind in your studies?

K.—Because if I were not I couldn't pursue them.

Dot—What's the rest of that quotation, "Truth is might—?"

Eve—"Scarce," I suppose.

In Cooking Class—

Miss R.—How do you tell a bad egg?

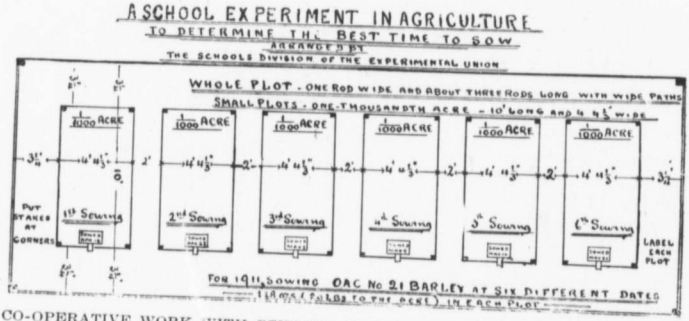
Miss H.—If you have anything really important to tell a bad egg, why break it gently.

"Why is it you call money dough?"
Asked a fair maiden of her beau.
And, grinning wide,
The youth replied:
"I guess, because I need it so."

Schools and Teachers Department

Devoted to those interests of the Ontario Agricultural College which pertain particularly to the training of teachers for giving instruction in the schools of the Province along vocational lines—in Home Economics, Industrial Arts, Elementary Agriculture and Horticulture.

ELEMENTARY AGRICULTURE.



CO-OPERATIVE WORK WITH SCHOOLS IN ELEMENTARY AGRICULTURE, 1911.

The Schools' Division of the Experimental Union, has again made arrangements to distribute materials to the schools of Ontario in order to promote a practical interest in instruction in Agriculture. Besides shrubs, vines and tulip bulbs sent out for the improvement of the school grounds, and seed packets for children's gardening, collections of selected agricultural seeds and forest tree seedlings are being distributed for demonstration and experimental plots in school gardens.

The Schools' Experiment for 1911—For the past two years, the material sent out consisted of seven different species of wheats. For this year it is a selection of O. A. College No. 21 Barley to be used, on the one hand, for making an experiment to find out what is the best time to sow barley, and, on the other hand, to help introduce an improved strain of this cereal throughout the Province.

To schools that take up this work many opportunities will be found for teaching valuable lessons concerning the things that are of practical import in the school district now, and which will be of practical concern to the pupils when they leave school and take up their work on the farm. To aid in making the experiment effective and understood in its right proportions, a chart is being sent to the schools showing the results of a similar line of work on the Experimental Farm at Guelph.

Place of Barley Amongst Ontario Crops—The importance of the barley crop may be seen in a comparative crop table.

According to the latest crop bulletin of the Bureau of Industries, the following areas were devoted to farm crops in Ontario in 1910:

Hay and Clover	3,204,021 acres	Potatoes	168,454 acres
Pasture	3,159,712 "	Spring wheat	120,319 "
Oats	2,757,933 "	Turnips	105,360 "
Fall Wheat	743,473 "	Rye	95,397 "
Corn	647,146 "	Mangels	68,966 "
Barley	626,144 "	Field Beans	49,778 "
Mixed Grains	497,936 "	Sugar Beets	26,879 "
Field Peas	403,414 "	Carrots	3,551 "
Buckwheat	194,913 "		

Origin of O. A. C. No. 21 Barley—This barley is an improved variety of Mandscheuri barley which was first grown on the Experimental Farm twenty-one years ago last spring. From the beginning it proved itself of surpassing quality and through its distribution by the Experimental Union upwards of half a million acres of this barley are now grown annually in Ontario. This from the one pound of grain imported from Russia in 1879.

Good as this Mandscheuri barley might be, there was still room for improvement!

In the spring of 1903, 9,972 selected grains of the Mandscheuri barley were planted by hand at equal distances apart in the Experimental Department at the College. When the plants were ripe they were carefully examined and 33 of the most promising ones were selected, harvested, and threshed separately. In 1904, these 33 lots were sown separately in rows, and these rows were carefully examined and the most important ones were harvested and thrshed separately. From that time forward, only the best of these strains were grown in the tests as follows: 14 in 1905, 8 in 1906, 7 in 1907, and 3 in each of the past three years. During the first year, the different strains went by numbers, and the one which has proven to be the best is what is now known as the O. A. C. Number 21. This variety was distributed throughout Ontario in connection with the Experimental Union beginning in the year 1906, and has made a very excellent record. In each of the past four years it has actually given better results than the Mandscheuri variety in yield of grain, in freedom from rust, and in both length and strength of straw in the co-operative tests throughout Ontario. It is quite an easy matter to distinguish the grain of the O. A. C. Number 21 from that of the Mandscheuri variety.

In the spring of 1909, about 20,000 bushels of the O. A. C. Number 21 barley were traced in Ontario as the result of the pound lots which were distributed for experimental purposes in connection with the Experimental Union. This is the power of one grain! One grain in the spring of 1903 and 20,000 bushels in the spring of 1909!

The sample distributed through the Schools' Division is the progeny of that grain and was grown in Brant County in 1910, winning a prize in the Field Crop competitions. Through small experimental plots in a hundred Ontario school grounds there is hardly a limit to the possibilities of barley improvement in this Province!

Preparation of Ground and Sowing of Seed—For these things the teacher should secure the advice and help of the trustees or some of the parents who are interested in school work. If a piece of ground has not been prepared on the school grounds the previous fall, or can not very well be got ready in time for the first and earliest planting, a plot should be secured in some well-cultivated field adjoining the school grounds.

Previous to the actual planting, measuring tools, stakes, labels and fencing should be arranged for. The greatest precaution should be taken to

have the plot protected from stray cattle. There is no more disheartening experience in school gardening—unless it be acts of vandalism—than to have stray cattle destroy all one's work and hopes in a single night.

Measure the plots exactly, drive the stakes at the corners, stretch a string around them and sow the seed, within this, raking it in to a depth of about one inch. Label the plot showing what has been done. If the grain is sowed in drills, the pupils will be able to keep down the weeds better than if sowed broadcast.

Arrangements re. Holidays—Previous to the breaking up of school, definite arrangements should be made with the trustees or some of the older pupils for the harvesting of the crop. This should be done at the right time and the sheaves securely tied and hung up where they will not come to harm from mice or birds or from the weather. They will be needed when school opens, to estimate yields, etc.

Aim and Method of Teaching—The measure of success in the work will not be how much information has been imparted about this particular matter, but how much interest has been aroused in **doing things, seeing things,** and **understanding things** pertaining to all the crops in the neighborhood.

While each teacher will develop his or her own plans as seems best for him or her a few general directions may be found helpful:—

1. Allot a definite portion of time and a definite place on the time table to the work. At the commencement, two lesson periods a week may be needed, afterwards one lesson a week may be found sufficient. Friday afternoon will be found most suitable, perhaps.

2. Make due preparations for the lessons. A week before the lesson is taken, if possible, announce the problem or task for the next Friday in order to give the pupils' observation or experimenting a definite direction and end. Do not allow the work to become haphazard.

3. Have records of the work systematically kept. The Third and Fourth Classes should be required to keep their records in note books.

4. It will often be profitable and advisable to take lessons with the entire school.

5. Use the help of trustees and other friends of the school whenever the chance occurs. Have them give talks to the children on special subjects or apply to them for information concerning weeds, trees, cultivation, harvesting, etc. Do not hesitate to say "I do not know" and always be ready to say "let us find out."

SUGGESTED LESSONS IN AGRICULTURE.—The outlines offered here are intended as suggestions only. One of them may be used for several lessons, and some of them may be found unsuited for some schools.

1. DISCUSSION OF THE GENERAL SCHEME.—The work of the Experimental Union—The best way to carry out the Schools' Experiments—Arrangements for getting the ground ready, making of labels, stakes, repairing fence and gate.

2. ENQUIRY RE VARIETIES.—Enquiry to learn the names of the varieties of barley grown in the locality. Examination of different barleys brought in by pupils to learn to distinguish them.

3. GERMINATION TEST.—Sprouting 100 seeds between damp blotters, enclosed by two plates, to find the percentage of good seed as well as to learn how the seedlings develop roots and root hairs. (Seeds brought from the pupils' homes may be used.)

4. ON PLANTING SEED.—Discussion of the method of seeding on the farms—The distance of the drills apart. The machinery used and the places where it is made—Inquiry as to methods of seeding in the pioneer days—Instructions for the planting to be done in the school plot—Preparation of a plan by each pupil made to a scale.

5. ON THE GRAIN-GROWING OF THE SCHOOL SECTION.—Investigation at home of the grain fields of each farm—Preparation by the pupils of maps of the home farms marking the different grains in colors—Preparation at school of a similar map of the section and summarization of acreages of each grain—This map may be made on a large sheet of paper and kept as a wall-chart for further use and reference.

6. ON THE GROWTH OF SEED—The work outlined here is not one lesson, but a long series of observations on:—

(1) Percentage of grains that germinate. (2) Comparitive length of time of different sowings in germinating. (3) Time of appearance of second leaf, etc. (4) Rate of growth and relation to the weather. (5) Amount of stooling or tillering. (6) Appearance of rust. (7) Attacks by insects. (8) First evidences of the formation of a head. (9) Recognition of the flowers. (10) Relative lengths and strengths of straw. (11) Times of ripening. (12) Recognition of the four stages of ripening: (a) the milk-ripe; (b) the yellow-ripe; (c) the ripe; (d) the dead-ripe.

7. ON THE COMPOSITION OF THE SOIL.—Take a sample of the soil, dry it thoroughly and then break it down into a fine powder. Spread small quantities of it on stiff white paper held on an incline and tap the paper—This will separate the particles and allow one to see the sand, clay, humus, small gravel, etc., spread out (see O. A. C. Bulletin 124, Nature Study Stories in Agriculture). This experiment may be taken as a lesson for the winter season.

8. ON MEASURING THE WATER IN THE SOIL.—Some day shortly after a soaking rain, weigh out a pound or two of the soil in the plot, allow this to dry thoroughly in the sun and weigh again. Estimate the maximum water-holding capacity of the soil—Again, take a sample after a very dry spell and repeat above weighings. Estimate its lower limit of water-holding.

9. ON CULTIVATING THE PLOTS.—Keeping the top layer of the soil mulched to keep down weeds, prevents the evaporation of water from the soil and supplies the roots with air. This work should be done by the pupils once or twice a week and always after a rain.

10. ON THE LENGTH OF THE ROOT SYSTEMS.—Plants of different ages may be brought from home carefully, so as not to break the roots and measurements made of the relative length of the root system. Pupils will learn from this of the great importance of the roots to a plant.

11. ON SELECTING CHOICE SEED.—Should there be evidence in any of the rows of one plant or one head being of superior quality, it should be specially marked by a piece of red yarn or a tag and harvested separately. This is seed selection.

12. WEEDS OF THE FIELDS.—Search for weeds in the home grain fields—Examination and comparison of these at school—Sending those which are not known to the Dominion Botanist, Ottawa, or the Agricultural College, Guelph, for identification—Collections of their seeds in vials for a school exhibit—N. B. In bringing specimens to school, pupils should be obliged to keep them wrapped closely in paper so that there can be no chance of their being spread.

13. INSTRUCTION FOR HARVESTING.—Before the holidays commence, have it definitely arranged that certain of the pupils are to harvest the crop. It will be necessary to have each plot harvested separately. The little sheaves should be tied securely and neatly and labelled. They will need to be hung up where birds or mice can not get at them. If there is danger of the grain shelling out the heads will need to have loose paper bags tied over them. Should they be required for exhibition purposes at a Fall Fair they may be made more attractive by tying them with red tape or ribbon. They will make a very good decoration for the school room.

14. ON ESTIMATING THE RELATIVE AMOUNTS OF GRAIN AND STRAW.—Weigh the sheaf taken from one of the rows of barley—Thresh out the grain and weigh it—Compare the two weights and figure them in percentages—(Care should be taken that general conclusions are not drawn from one weighing.)

15. ON ESTIMATING THE WEIGHT OF A BUSHEL OF THE GRAIN.—Approximate figures may be obtained by using a pint measure—Fill the measure and level off the top with a straight-edge—Weigh the grain and multiply by 64. Compare results with the weights of the standard legal bushel. It should be kept in mind that the figures obtained in this calculation are very liable to error.

16. ON THE STRUCTURE AND YIELD OF A HEAD OF BARLEY.—Examine heads of barley to find how many spikelets there are, how many grains in a spikelet, the relation of the chaff to the grains, the total number of grains in the head. (See Story of Wheat, O. A. C. Bulletin 124.)

17. ON A CENSUS OF THE WHEAT GROWING OF THE SCHOOL SECTION.—Make a map of the School Section showing the farms and mark on it the barley fields of the previous season, the amount of grain produced, the varieties grown, etc.

18. ON VISITS TO SEED FAIR OR FALL FAIR.—If pupils in Senior Classes attend any fairs, have them report on the classes of grains in competition, and if possible secure samples of the best. They should be directed, too, to find out how they have been grown and what the judge's reasons were for his decisions.

19. ON THE CANADIAN SEED GROWERS' ASSOCIATION.—Write to the Secretary of this Association, (L. H. Newman, Esq., B.S.A., Canadian Building, Ottawa,) asking for reports and instructions regarding the work of this Association in improving the quality of seed used on Canadian farms—Some of the older pupils may be led to take up this interesting branch of agriculture.

20. ON BARLEY GROWING IN ONTARIO.—Consult the Report of the Bureau of Industries of Ontario (this may be had free on application to the Department of Agriculture, Toronto), to find out the relative interests of the different counties in barley growing.

21. SMUT AND WEED SEEDS.—As seeding time approaches, have pupils bring samples of grain intended for seed—Examine for smutted grains and weed seeds—Send weed seeds to Seed Department, Ottawa, or Botanical Department, O. A. C., Guelph, to be identified if they are unknown—Discuss the treatment of seed with formalin solution for killing smut—(See O. A. C. Annual Reports Field Husbandry Department).

Exam. Time.

Ram it in, cram it in,
Still there's more to follow.
Scold it in, hold it in,
All that they can swallow,
Crunch it in, punch it in,
Rap it in, slap it in,
Pump it in, stump it in,
Students heads are hollow.

A Toast.

"A health to the girl that can dance like a dream,
And the girl that can pound the piano;
A health to the girl that writes verse by the ream,
Or toys with high C in soprano;
To the girl that can talk, and the girl that does not;
To the saint and the sweet little sinner—
But here's to the cleverest girl of the lot,
The girl that can cook a good dinner."

—Vox Collegii, Whitby.

Professor Crow (in Horticulture)—Were you ever through a nursery, Mr. Hogarth?

Hogarth—Yes, sir! But I was very young, and I don't remember much about it.

Minister (in chapel)—The reason why Daniel was not eaten by the lions is that he was all backbone.

Clarke—Where are all the soda-biscuits gone, Joe?

Addison—Search me!

Gifford—Please, Mr. Crow, are sour cherries sweet?

THINGS SEEN

ESSENTIALS OF GREATNESS

ROMANCE OF CANADIAN HISTORY

REALIZATION OF AN IDEAL

Bramhill (to Jenkins who has just returned from a visit home)—How is Mrs. Jenkins?

Jenkins—Which one do you mean?

Vernon King—Do you think, darling, if I can get a salary of $1,500 a year upon receiving my degree, that it will be sufficient for us to marry on.

Darling One—Oh yes, Vernon, I could manage very nicely on that. But what would you do, dear?

Tomlinson is a very remarkable writer. We do not say that his writing is illegible, but merely original. The other day we came across a scrap of paper with some hieriogliphics upon it executed by him during physics lecture. To test the point, we took it down town and handed it over to a drug clerk. In about five minutes that intelligent young man handed us a bottle labelled, "Cough Mixture," and charged us fifty cents.

Culham (called upon for speech in public-speaking class) — Gentleman, when I came to this class only heaven and myself knew what I was going to say; now heaven only knows; I don't.

Tommy Clark (to his Chinese laundryman)—Say, John, I don't see that other shirt, where is it?

Lee Wing—Too dirty, bring next week.

Mumps

The Hen—By a Boy.

"Hens is curious animals. They don't have no nose nor no teeth, nor no ears. They swallow their wittles whole, and chew it up in their crops in side of 'em. The outside of hens is generally put into pillers and made in to feather dusters. The inside of a hen is sometimes filled up with marbles and shirt-buttons, and sich. A hen is very much smaller than a good many other animals; but they'll dig up more tomato and corn-plants than anything that ain't a hen. Hens is very useful to lay eggs for plum-pudding. Gee! I like pudding. Hens has got wings and can fly when they are scairt. I cut my uncle's hen's neck off with a hatchet and it scairt her to death. Hens some times make very fine spring chickens."
—Maritime Student's Agriculturist.

Extract from a Recent Speech.

I, gentlemen, am the result of a peculiarly cosmopolitan set of circumstances. My parents were English, but I was born in Canada. I have a French name and come from Newfoundland, and I have been told that I possess an Irish accent and look like the devil.

On my trip to Vancouver last summer, says Monroe, there was an exceedingly taciturn old Scotchman in the car. He didn't seem to want to converse much with anybody, but on the third day I ventured to remark that it was a fine day. "Wha said it wasna," he replied.

Official Calendar of the Department of Education for the year 1911

APRIL:

1. Returns by Clerks of counties, cities, etc., of population, to Department, due. (On or before 1st April).

6. Normal School Final Examination for Grade A students begins (Subjejct to appointment).

13. High Schools, second term, and Normal, Public and Separate Schools close. (Thursday before Easter Sunday).

14. Good Friday.

15. Annual Examination in Applied Science begins. (Subject to appointment).

The Royal Military College of Canada

The Royal Military College of Canada.

There are few national institutions of more value and interest to the country than the Royal Military College of Canada. Notwithstanding this, its object and the work it is accomplishing are not sufficiently understood by the general public.

The College is a Government institution, designed primarily for the purpose of giving instruction in all branches of military science to cadets and officers of the Canadian Militia. In fact it corresponds to Woolwich and Sandhurst.

The Commandant and military instructors are all officers on the active list of the Imperial army, lent for the purpose, and there is in addition a complete staff of professors for the civil subjects which form such an important part of the College course. Medical attendance is also provided.

Whilst the College is organized on a strictly military basis the cadets receive a practical and scientific training in subjects essential to a sound modern education.

The course includes a thorough grounding in Mathematics, Civil Engineering, Surveying, Physics, Chemistry, French and English.

The strict discipline maintained at the College is one of the most valuable features of the course, and, in addition, the constant practice of gymnastics, drills and outdoor exercise of all kinds, ensures health and excellent physical condition.

Commissions in all branches of the Imperial service and Canadian Permanent Force are offered annually.

The diploma of graduation, is considered by the authorities conducting the examination for Dominion Land Surveyor to be equivalent to a university degree, and by the Regulations of the Law Society of Ontario, it obtains the same examination as a B. A. degree.

The length of the course is three years, in three terms of 9½ months each.

The total cost of the course, including board, uniform, instructional material, and all extras, is about $800.

The annual competitive examinations for admission to the College, take place in May of each year, at the headquarters of the several military districts.

For full particulars regarding this examination and for any other information, application should be made to the Secretary of the Militia Council, Ottawa, Ont.; or to the Commandant, Royal Military College, Kingston, Ont.

H.Q. 94—5 9—09.