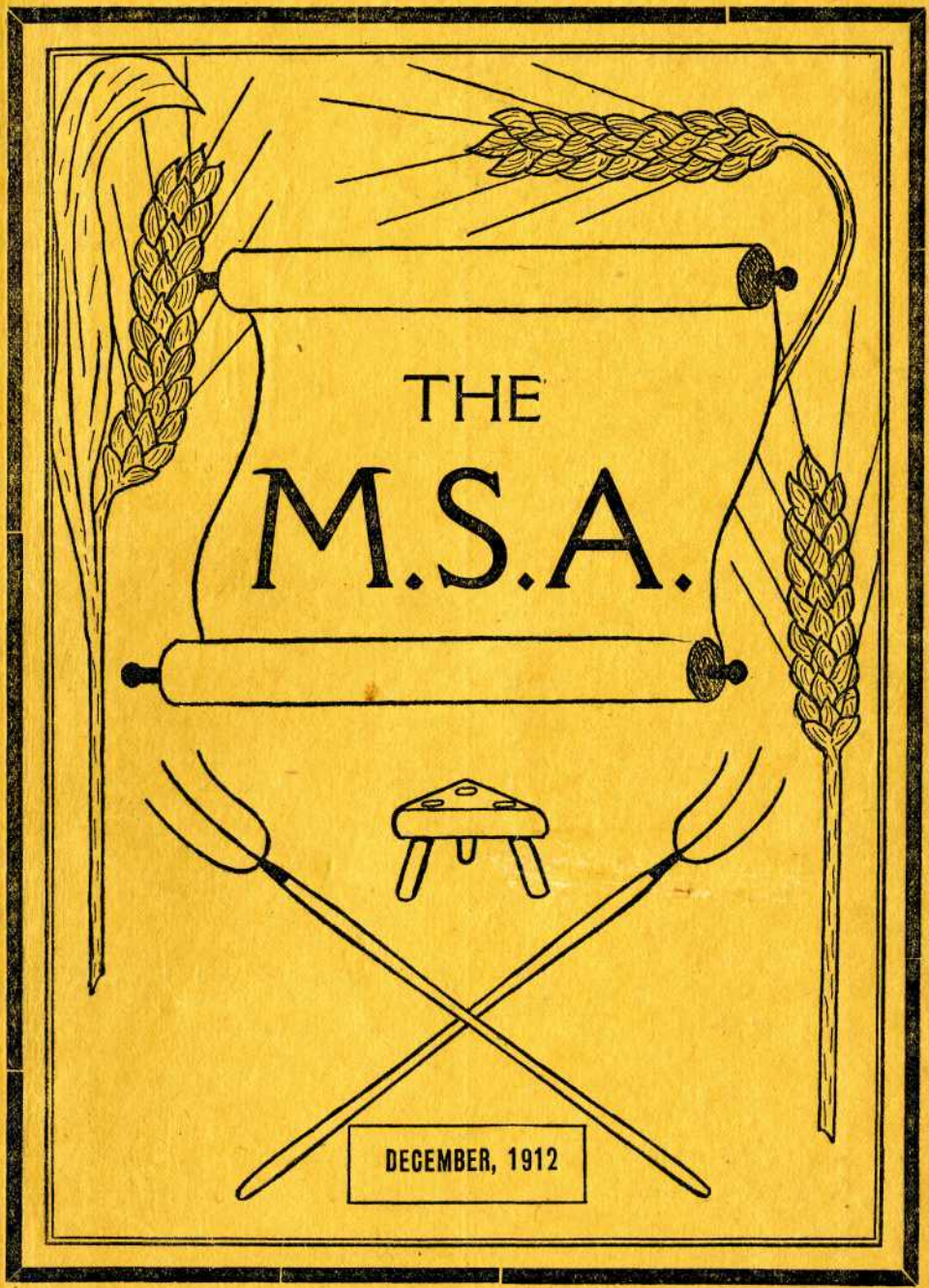
Grave



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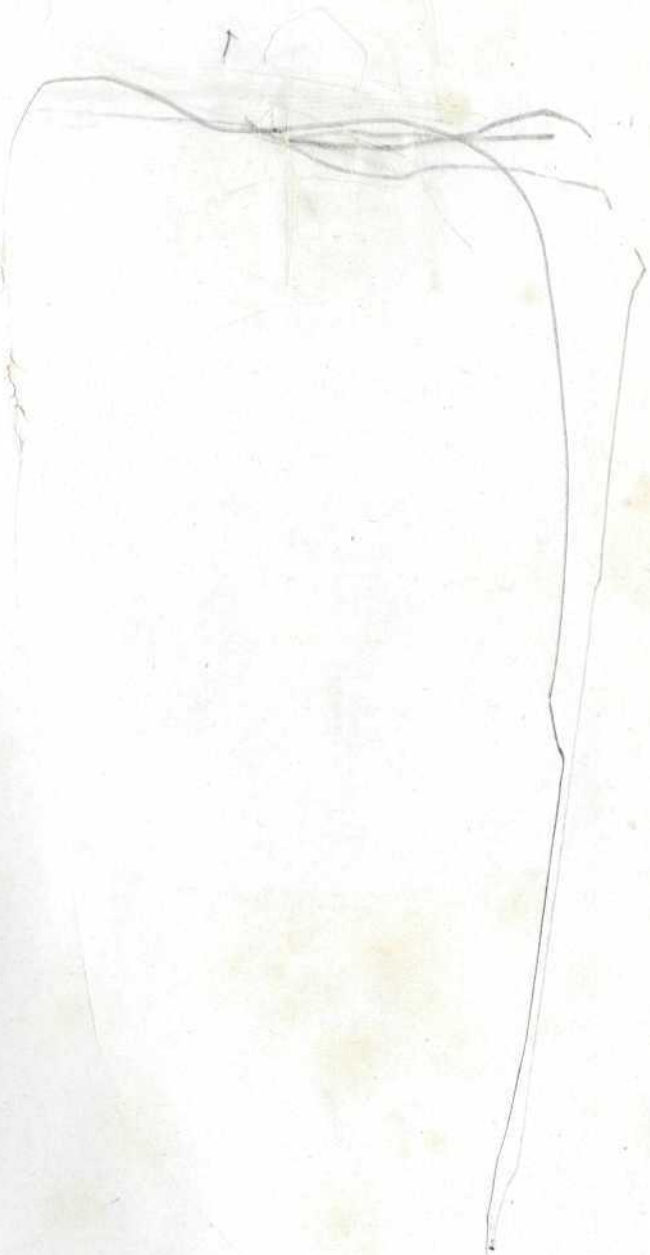

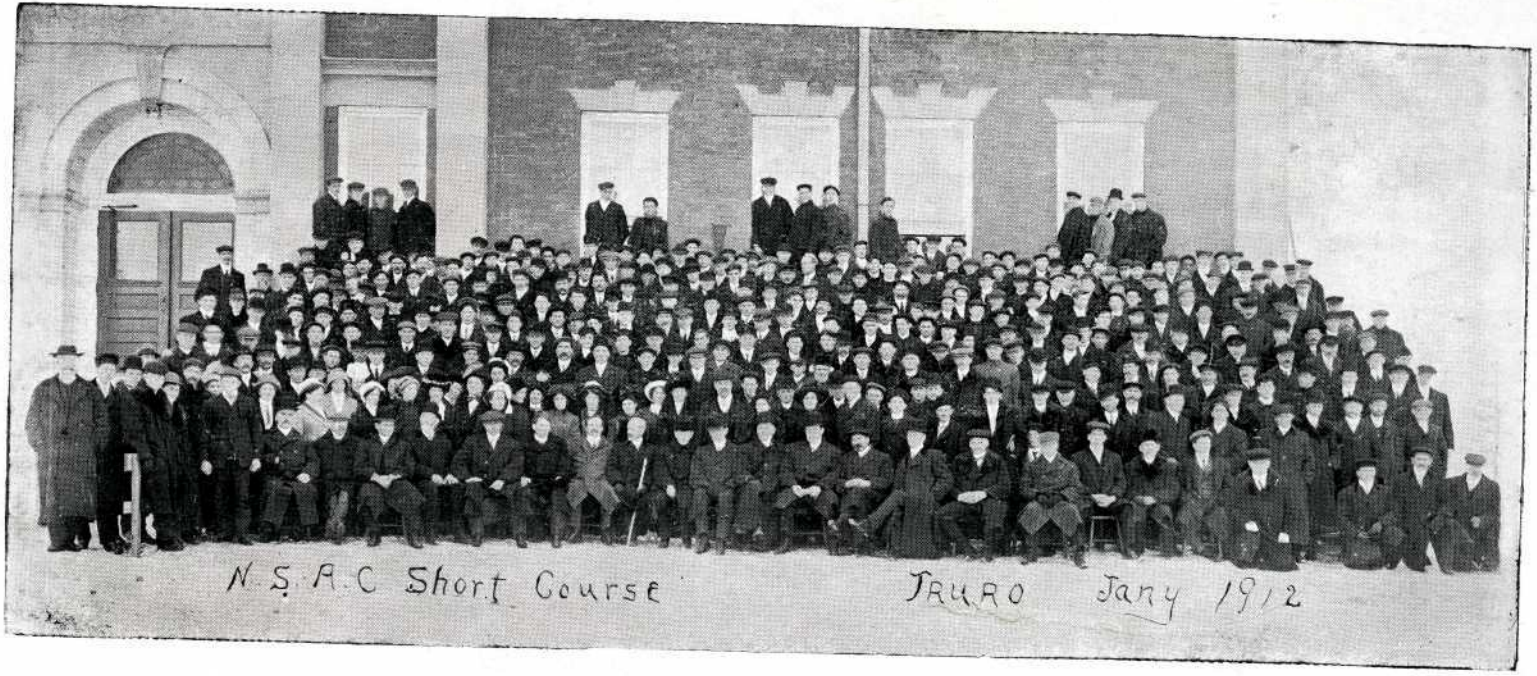

SHORT COURSE 1912

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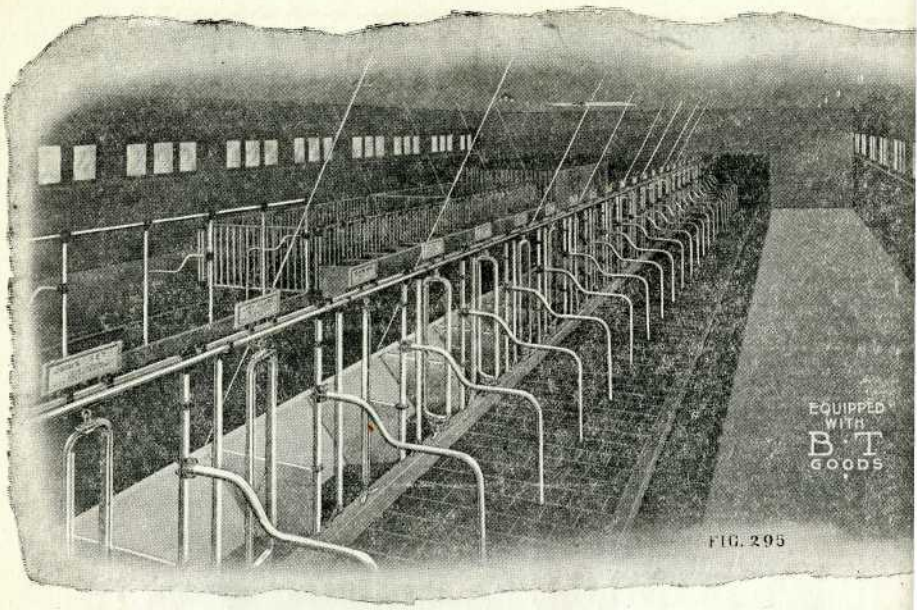

FIG. 295

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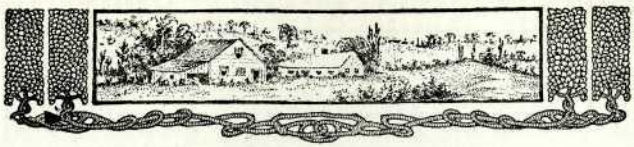

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VOL. V. DECEMBER, 1912 No. 2

The *Maritime Students' Agriculturist* is published by the Students of the N. S. A. C., at Truro.

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The

MARITIME STUDENTS' AGRICULTURIST

Vol. V. Truro, N. S., December, 1912 No. 2

EDITORIALS.

The M. S. A. wishes to all its subscribers a very Merry Christmas and a Happy New Year. Although it has in many ways seemed a very short term to us, yet when we review our past labors we find plenty of questions for our Professors to ask in examination papers.

The chief excitement during the past weeks has been the trip to the Maritime Winter Fair at Amherst. Several students were successful in the stock judging competition, although neither of the cups were brought back to College. All of us could not win prizes, but gained a valuable experience in judging; not only was it a benefit to study the large exhibits of Beef and Dairy cattle, but also much was learned from the able speeches made during the evenings.

We hope by after Christmas to have our new assembly hall completed and be able to hold our Debating Society meeting again. We are indebted to the Normal College for the use of their hall in which we have been able to debate.

The delegates from the N. S. A. C. who attended the Students Missionary Convention at Sackville are most grateful to the members of Mt. Allison University for their hospitality.

We were very pleased to be able to show the Acadia dele-

gates over our College property on their return from Sackville.

In last month's issue of this magazine an article was published on the Brown Tail Moth, by Mr. Elderkin, '13. We regret that his name was omitted.

Popular from the very first, the Short Courses at the Nova Scotia Agricultural College have, each year, attracted more and more of the farmers and their sons from all parts of the Maritime Provinces. The Short Courses of January 1913 promise to be the most attractive held in the history of the College. New features will be added and the former features strengthened These courses are intended for every farmer as well as every man interested in farming, living in any part of the Maritime Provinces, all of whom are afforded the opportunity of attending the next Short Course. It makes no difference whether you are over three score and ten or whether you have just passed your sixteenth year, you will find much to interest you and profit you in these Short Courses.

By special arrangement with the Department of Public Works and Mines, a course of instruction will be given in the important subject of road-making. The part of the subject which will receive most attention will be the making of the "dirt road," which is the only practical road that can be made throughout the greater part of the Province. Lectures on the subject will begin on Friday, January 10th, and continue until Wednesday, January 15th. In addition to the efficient members of the staff of the above Department and of the Technical College, the services of Dr. L. I. Hewes, of the Public Roads Department, Washington, D. C., have been secured. He will give two illustrated lectures on Tuesday and Wednesday evening, January 14th and 15th.

A MERRY CHRISTMAS.

"Did you go into see cousin Fred to-day, John ?" said Mrs. Grant as they sat before the blazing fire on the hearth. Out doors a veritable blizzard was raging and the wind driven snow was piling in great drifts across the street. Yet in spite of this the crowds passing and repassing the house were in fine humor, and more than once total strangers who unseeing in the storm had collided parted with a "Merry Christmas." In doors all was cheerful and cosy. Upon the hearth the logs were blazing merrily. From the mantle above were suspended the children's stockings waiting for that mysterious Santa to fill them before morning.

Before the fire sat Mr. and Mrs. Grant, busily tying up their last gifts, when she broke the silence by asking the above question. "I did, my dear, but it is of no use. For some reason Fred has taken a dislike to me and although this is the seventh Christmas I have asked him to spend with us he was almost rude in his refusal." For a moment there was silence then Mrs. Grant replied : "Is there no way we can draw him out of his shell. I hate to think of him spending his Christmas in that great lonely house away from all his people. Even his house keeper goes home for the day and he is all alone." As they were talking a ring sounded at the door and a masculine voice inquired if Mr. Grant was in. This proved to be the expressman with a parcel and after the receipt was signed and the expressman had gone they opened it disclosing yet another Christmas gift. Suddenly John jumped up, "I have an inspiration," he said, "If Fred could get a lot of these presents he might take a more rational view of Christmas. Its worth trying anyway," and he quickly put on his hat and coat and went out into the storm.

On the other side of the city Fred Grant was sitting in his bachelors quarters before a table on which was spread a cold meal left there by his housekeeper before she went to her home. Outside he could hear the people passing and repassing in the storm calling out their "Merry Christmas" to each other, but in his heart was no Christmas cheer. For years he had denounced Christmas as a season when people spent foolishly

their accumulated earnings in a vain endeavor to give as good presents as they received. His great cry was that Christmas had become commercialized, and that he for one would not succumb to the general foolishness. As he was lingering over his lonely meal, growling that housekeepers should stay in their places instead of running off, the bell rang, he went to the door. An expressman handed him a parcel and asked him to sign a receipt "Why I did not order any parcel," he said, "There must be a mistake." "No sir, you are Mr. Grant are you not ?" not. "Then it's all right", answered the expressman and went his way but not before saying "A Merry Christmas." Mr. Grant went inside and opened his parcel which proved to be a Christmas gift. As he was examining it a card fell out but all that was on it was "Merry Christmas" without any name. Soon other parcels began to arrive. All anonymous and all bearing the simple message "Merry Christmas." In spite of him the man's heart began to warm with Christmas Cheer, and as the gifts continued to arrive he thought that after all perhaps he had been too hard. As the evening wore on and his gifts accumulated a certain shame sprang up within him that he should be receiving so much and giving nothing. Accordingly he called up the butcher shop on the phone and ordered ten turkeys to be delivered at his house Christmas morning.

Next morning the turkeys arrived. Ten large fat birds, but the question was what to do with them. It had seemed an easy matter the night before with the inspiration of his good resolution upon him to give them to the deserving needy, but how to accomplish that purpose now was a more difficult problem. At that moment he heard the postman knock, and summoning all his courage he went to the door with a turkey in his hand. "Er ! Could you make use of a turkey", he said, "I find that I have more than I need." For a moment the postman stared, then as he comprehended the situation he broke forth in voluble thanks. "God bless you, sir, for your kind act. The children were set upon having a turkey for Christmas but I could not afford it. God bless you, and may you have a very Merry Christmas."

Fred Grant watched him, as he went down the street hugging his turkey close with mingled feelings. It had been a long

time since he had heard any man call down blessings upon him and the sensation was one he could not easily forget. Acting upon the inspiration of the moment he piled the turkeys just inside the door and watched the passers by. Soon came a woman, leading two children. Poverty had set its stamp strongly upon her. Their clothing was in rags, and the emaciated faces of the children were pitiful in the extreme. Again he grasped a turkey and went down the steps. He accosted the woman saying, "Pardon me, Madam, but could you use this turkey ?" She tried to thank him but her voice broke from gratitude. Grant hurried in the house leaving her standing in the street holding the turkey as if she expected it to fade away from her grasp.

Again and again he sallied forth with his turkeys until all were gone by which time his face shone with happiness and each gift was accompanied by a "Merry Christmas" which was more than echoed by the recipient.

As John Grant and his family were about to assemble for their Christmas dinner the telephone rang and the following one sided conversation took place.

Hello !

What ! Is that you Fred ?

Why certainly ! We are always glad to have you.

Yes, we will wait dinner for you.

Hurry up before the turkey gets cold.

Au revoir.

H. E. W. '13.

WILL NOVA SCOTIA FORESTS LAST FOREVER.

Forestry is practiced in every civilized country in the world, except China, Turkey and Nova Scotia. Nova Scotia forests will not last forever, sharp advances in the price of timber, lumber and forest lands indicate the coming pinch of want and the Province must come to forestry some time as a matter of necessity. Why not have a forest policy now ? Why not have a forest branch under the Department of Agriculture.

The more advanced and progressive countries arrive first and go farthest in forestry as they do in other things. It is high time that we bluenoses were waking up to the opportunity of conserving our timber lands and doing somrthing toward reforesting the many acres large and small which are unproductive. In travelling through the province by rail, water or road, I have been much impressed by the neglect of owners of logged over timber lands which are in every instance left to grow up weed trees. A little forethought on the part of owners and these valuable lands of to-day might have been worth hundreds of dollars per acre had the owner aided nature in starting a growth of spruce or pine.

Something must be done now that the generations to be born may have timber and lumber to carry on the work of this branch of the nation. If the owners of denuded lands can not be awakened to action, can not be educated or assisted to reforestation, the lands should be secured by the crown and proper forest system inaugurated, that the lumber supply of the future may be secured.

Nature endowed this province with a wealth of spruce and pine. Man has abused this heritage by axe and fire. Nature, is now clothing the neglected denuded lands with poplar bitrch, alder and other weed trees. Will the day come when all Nova Scotia forest land will be covered with such trees useless for timber ? Why not encourage reforestatuon with spruce and pine. Nature will do the work if man would only help and see that little trees of the desired kind were started right.

The countries of Europe and Asia have passed through all stages of the forest history and applied all the known principles

of forestry. They are rich in forest experience through lessons brought home to them by hard knocks. It is a serious work undertaken as a manner of relief and continued as a safe guard against future calamity.

Those countries which to-day manage their forsts on sound principles have passed through four stages of forest experience. At first the forests were so abundant as to be in the way and were either neglected or destroyed.

Next, as settlements grew and the borders of the forest receded farther and farther from the places where wood was needed and used the question of local wood supplies had to be faced and the forests were spared and even protected. Third, the increasing need of wood together with a better knowledge of the forest and its growth led to the recognition of the forest as a crop, like agricultural crops which must be harvested and which should therefore be made to grow again. In this stage silriculture or management of the forest so as to encourage its continued best growth was born. Finally, as natural and industrial progress led to measures for the general welfare inluding a wiser and less wasteful use of natural resources, the forest was safeguarded and controlled so as to yield a constant maximum profit year after year and from one generation to another. Systematic forestry, therefore, applied by the crown for the benefit of the people and practiced increasingly by far sighted private citizens, comes when the last lesson in the school of forest experience is mastered.

Nova Scotia if she would attack the problem how best to use her forest resources would not be in the position of a pioneer in the field. She would have the experience of all other countries to go upon. She would not need to experiment with untried theories. The forest principles whichhundreds of years of actual practise have proved right are at her command. The only question is how should these be modified or extended to best meet the Nova Scotia conditions. Such will insure to all our people alike the fullest and best use of all forest resources.

Two things stand out with striking clearness with those countries where forestry has been practisd. One is that the prosperity of the people, the largest proportion of waste land

and the most promising future goes with the practice of forestry. The other is that those countries which spend most upon their forests receive from them the greatest net returns.

L. STEVENSON.

TO TELL THE AGE OF A HORSE.

To tell the age of any horse,
Inspect the lower jaws of course,
The six front teeth the truth will tell,
And every doubt and fear dispel.

Two middle "nippers" you behold
Before the colt is two weeks old,
Before eight weeks two more will come,
Eight months, the "corners" cut the gum.

Two outside grooves will disappear
From the middle two in just one year,
In two years from the second pair,
In three the "corners" too, are bare.

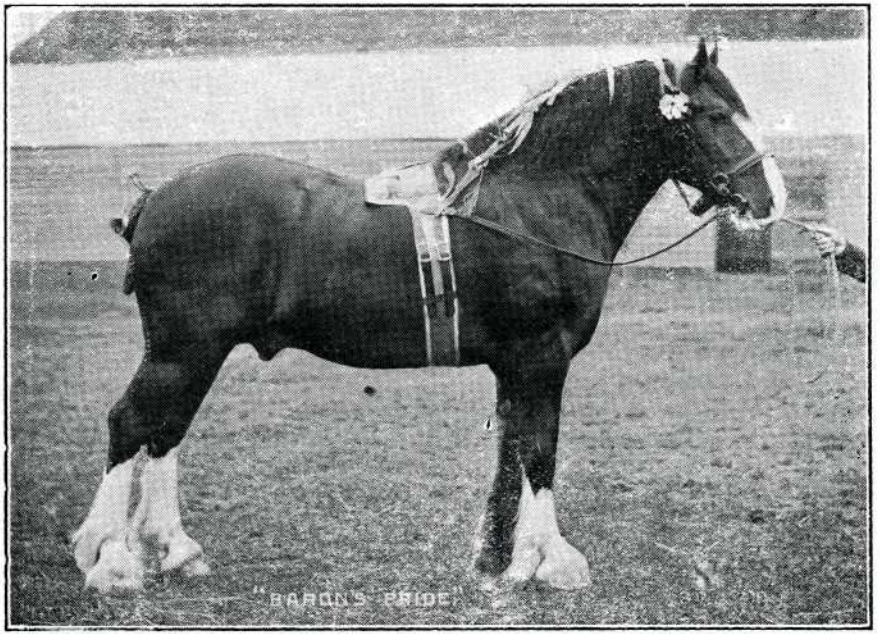
At two the middle "nippers" drop,
At three the second pair can't stop,
When four year old the third pair goes,
At five a full new set he shows.

The deep black spots will pass from view,
At six years form the middle two,
The second pair at seven comes,
At eight the spot each "corner" clears.

From middle "nippers" upper jaw,
At nine the black spots will withdraw ;
The second pair at ten are white,
Eleven finds the "corners" light.

As time goes on the horseman know
The oval teeth three-sided grow ;
They larger get, project before,
Till twenty, when we know no more.

—*Farmer's Advocate.*



"BARON'S PRIDE" The Ruling Horse of the Clydesdale Breed.

: : AGRICULTURE : :

COMMERCIAL FERTILIZER.

The question of the use of commercial fertjlizer is indeed a broad one and the writer will not attempt in this short article to do more than set forth the fundamental principles applying to the subject.

Many farmers have given commercial fertilizers a single trial and have forthwith condemned them as worthless, but in nearly every case it has been the abuse and not the intelligent use of them that has led to their condemnation. Though everyone acknowledges that farmyard manure is the standard of excellence in fertilizers still we must admit that when rightly used commercial fertilizers have a wide range of usefulness. It will be the aim of the writer to point out in this article, (1). What elements of plant food fertilizers should supply. (2). How these elements are fixed by the soil. (3) The classification of fertilizers. (4) The plant food requirement of the various farm crops. (5). A few words in regard to each class of fertilizers.

1.—The essential elements of plant food which fertilizers should supply is : Nitrogen (N), Phosphoric acid (P2O5) and Potash (K2O).

2.—The different elements mentioned above are fixed by the soil each in its own peculiar manner. (a). Nitrogen may be applied in the organic form, as in ordinary manures, dried blood or tankage, in compound of ammonia as in ammonium sulphate, $(NH_4)_2SO_4$; or in the nitrate, as in sodium nitrate , (NO_3). The only form in which it is readily available to plants is the nitrate form, and in such form it readily washes out of the soil, as the nitrates are very soluble in water. When applied in the organic form and left exposed to the air it rapidly decomposes if warmth and moisture be present. This decomposition results in the formation of compounds of ammonia which when thus exposed pass off into the air, carrying the

valuable nitrogen with them and it is thus lost to the plants. On the other hand when these organic fertilizers are covered as soon as applied they decompose more slowly and the compounds of ammonia instead of passing off in the air unite with the soil acids and form nitric acid which in turn unites with the soil bases and forms the nitrates so readily available to the plant, but which unless used by the plant at once are subject to loss from leaching. Thus it will be seen that nitrogen in the available form is not easily fixed by soils but is subject to considerable loss from leaching, and that no matter what form it is originally applied in it will in the course of a season become converted to these readily available but easily wasted nitrates. The following important facts in regard to conservation may therefore be noted :

1. Always plow in or cover in some manner immediately any manure or fertilizer containing organic nitrogen.

2. Always plan to apply any nitrogen fertilizer so that the soluble nitrates will be used immediately by the growing crop a and not allowed to wash out of the soil.

(b). Phosphoric acid is generally applied in chemical combination in the phosphates of lime. Of these there are three forms, popularly known as the one-lime, the two-lime, and the three-lime forms. The first of these is the form present in all superphosphates and is soluble in water, readily available, and consequently washes out of the soil easily. The second is insoluble in water but soluble in the weak acids of the plant roots ; consefiuently it is readily available to the plants and does not suffer loss from leaching. The third is the form present in the original phosphate rock and in barnyard manures ; it is insoluble and inavailable to plants but is made available by being gradually changed to the two-lime form. Summing up we find that the two and three-lime forms are not subject to loss from leaching but that the one-lime form readily leaches out of the soil. But, when the one-lime form is applied in excess of requirement it soon changes back to the two-time form and loss is thus prevented. The conclusion drawn is : Phosphoric acid is easily fixed by soils and is not subject to loss from leaching as is nitrogen.

(c). Potash is usually applied to the soil in wood ashes or

in the sulphate or muriate of potash. These compounds are very soluble and if they remain in the form in which they are applied would soon leach out of the soil. They do not, however, remain in this form but the potash in them replaces lime or sodium in the zeolites of the soil and thus becomes permanently fixed. In such form the potash is soluble in the weak acids of the plant roots, and is consequently readily available, but being insoluble in water does not suffer loss from leaching. Thus we see that potash as well as phosphoric acid is much more easily and permanently fixed than in nitrogen.

III. CLASSIFICATION OF FERTILIZERS.

Fertilizers are classified according to the element which they suppoy us :

(a). Nitrogen fertilizers.

(b). Phosphoric acid fertilizers.

(c). Potash fertilizers.

(d). Complete fertilizers, which should contain all three elements in suitable proportions.

(e). Indirect fertilizers.

4. The various farm crops seem to require the elements of plant food in varying proportions, each crop having a dominant element of which it frequires more than of any other element.

The crops for which nitrogen appears to be the chief requirement are the grasses and the cereal grains. Those which require the most phosphoric acid are turnips and othr roots and cabbages.

Those requiring the most potash are potatoes, Indian corn and the legumes.

5. Discussion of the different fertilizers.

(a). Nitrogen fertilizers.

The most important are dried blood, dried meat meal, tankage, sulfate of ammonia, nitrate of soda, and calcium cyanmid. The first three named are organic compounds, they decompose fairly rapidly and are fairly rich in nitrogen, dried blood running as high as 12 per cent. nitrogen and tankage about 7 or 8 per cent. The last three are chemical substances,

they are quickly available and relatively high in nitrogen, containing about 20, 16, and 18 per cent. nitrogen respectively. In view of what has been said above on the comparatively poor fixation of nitrogen by soils great care should be taken in applying this class of fertilizers. They should be supplied only in sufficient quantity for the needs of the crop and not long beforehand. Never run away with the idea that you can permanently increase the nitrogen contents of the soil by applying such fertilizers in excess of requirement. Such excess is always a loss.

(b). Phosphoric acid fertilizers.

The principal ones are bone meal, basic slag, ground rock phosphate and superphosphate. The first three are rather slowly available the phosphate in them being in the three-lime form. They contain respectively about 22, 15, 36 per cent. of phosphoric acid. Basic slag is also highly valued for its lime content which is about 45 per cent. This acts as an indirect fertilizer as will be explained further on. In the superphosphate the acid is mostly in the one-lime form and consequently is readily available to the plants ; a good superphosphate should contain from 13 to 16 per cent. of phosphoric acid. In applying phosphoric acid fertilizers, especially those containing three-lime phosphate, the case is just the reverse of what it is for nitrogen. To secure best results the fertilizer should be applied some time before the crop is put in as it requires some time for the acid to become available and no loss is suffered from leaching.

(c). Potash fertilizers.

The principal sources of potash are wood-ashes, muriate of potash (K Cl), and sulphate of potash (K2SO4). Wood ashes varies greatly in composition, the percentage of potash ranging from 5 to 20 per cent. Leached ashes are almost worthless as a direct fertilizer, but are a fair indirect fertilizer. The muriate and sulphate are very soluble and quickly available and are extremely rich in potash containing about 50 per cent. Buy only the high grade sulphate ; it contains about twice as mucht potash as does the low grade. Like phosphoric acid fertilizers those containing potash suffer but little from waste and may be applied some time beforehand and in excess of requirement.

Best results are obtained when the soil contains a larger supply of this element, and this can be most advantageously applied to the crop in the rotation requiring potash as its dominant element.

(d). Complete fertilizers.

These should contain a quantity of each element sufficient for the needs of the crop for which they are recommended. They are sold under guaranteed analysis which is stamped on the bag. Before buying a farmer should know which particular crop he wishes to apply the fertilizer to, and should ascertaint he proportion of plant food constituents suitable to that crop. Then when he buys he should stand by the ideal he has and if he does so good results will follow. A great many different combinations are offered and it is sometimes bewildering to know which to choose.

A good mixture for grasses or grain is one containing : N—6 per cent, P2O5—4 pr cent., K2O—6 per cent.

One for turnips contains : N—3 per cent, P2O5—9 per cent, K2O—6 per cent. A good one for potatoes or corn contains : N—4 per cent, P2O5—8 per cent, K2P—10 per cent.

Complete fertilizers never give such good results as those made by buying the unmixed materials and mixing in the desired proportion at home. When this is done the farmer can formulate any mixture he desires and be sure of its contents. There are however certain fertilizing materials that cannot be mixed satisfactorily. Before attempting to mix fertilizers a farmer should obtain a chart of such materials and be governed accordingly. The chart is too lengthy to be set forth in this article.

(e). Indirect fertilizers.

These do not supply any of the elements of plant food, but increase productiveness by improving the chemical or physical properties of a soil. The most common examples are lime and land plaster. As lime is the most used we will note some of its effects, both chemical and mechanical. Chemically it renders potash and phosphoric acid more available, it hastens decomposition of organic matter, and the conversion of ammonia into nitrates, and it sweetens sour soils by uniting with the free acid

in them. Mechanically it makes the soil more mellow and more open and porous, rendering it more easily worked and allowing better circulation of both air and water.

The best time to apply lime is in the fall or early spring, the land to be treated should be plowed and the lime may be sowed broadcast or with a fertilizer sower. The rate of application depends on the character and condition of the soil, varying from one to three thousand lbs. per acre.

In conclusion let me say that the judicious use of commercial fertilizers is of great benefit in farming, but, let no man think that he can keep on year after year raising crops without barnyard manure. As sure as he does just as surely will he deplete his farm of that most essential of all soil constituents, "humus." J. G. A. '13.

THE IMPORTANCE OF GOOD SEED.

There is no single factor so important for the assurance of good crops as good seed. By good seed we mean seed of high germinating power, free from dirt, foreign matter and weed seeds. It must also be of a variety best suited to the farmers local conditions, such as the character of his soil and climate conditions. It is here that many farmers make a fatal mistake in buying western seed, especially oats, which have been grown under conditions entirely dissimilar to ours,—or in changing this seed annually.

Should this practice be discontinued and the farmers buy good seed at home, properly cleaned by a judicial use of the fanning mill, with the right combination of sieves, the tendency would be toward a yearly improvement of seed and the truism "like begets like" would be exemplified in increased yields of higher grade grain.

Again the use of good home grown seed is economical from the standpoint of the cost of the seed alone. It has been shown repeatedly that good seed sown thinly say 2 1-4 bus. per acre gives a more profitable return than 3 1-2 to 4 bus., which is the rate of seeding practised in some districts. If this 3 1-2 bus. was put through the fanning mill and the second

quality of grain from it be fed to the horses the remainder would not only give a better crop, but the farmer would have the additional fodder to the good.

There are other methods of securing good seed such as field selection on the plan of the C. S. T. A., but the writer considers the use of the fanning mill to be the method best adapted to the conditions of the ordinary farmer. That its value is appreciated by up-to-date farmers is well exemplified by the remark of a New Brunswick man the other day who said : "There is no machine of greater importance used on the farm." This statement is literally true. Good seed is the basis of good crops and the basis of good seed is the proper use of the fanning mill. If more farmers would recognize these facts they would prove to be a source of increased profits and larger returns.

ORA C. HICKS, '13.

WHAT A GOOD SEED BED MEANS TO PLANT GROWTH.

By C. A. Bacon, of the I. H. C. Service.

There has been so much written and said about plant growth, that the average mind wonders how much to believe and how much to disbelieve. A scientist trys a series of experiments that prove successful in one locality, the farmer tries them in another and meets with dismal failure. The farmer discredits the scientist. He puts his experience against the experimenter. There are, however, a number of principles concerning the germination of seeds that are not open to differences of opinion. If these are known and diligently followed, better crops will be the reward.

Germinating seeds must of necessity have water, air and a a certain amount of heat. The rapidity of germanation depends entirely on how these elements re provided. It naturally follows from this that the seed must be planted at the right depth to secure the conditions necessary for germination. The soil is warmer nearer the surface than it is deeper, but it is also dryer. This being a fact under ordinary conditions, the deeper

the seed is planted the longer it takes to germinate. If the farmer prepares his seed bed in the manner that the great majority of farmers do, he must, before planting, take into consideration the amount of moisture that he has in the soil, the way his seed bed has been prepared, and prophesy to a greater or lesser extent the amount of rain fall the season will have. This sort of procedure is guess work at best.

The manner in which the sed bed is prepared has every-? thing tho do with the proper germination and growth of the plant. Suppose the corn stalks are left standing in the fall and stock are turned into the field in winter. In the spring the ground is covered with corn stalks. If the average farm practice is followed, the corn stalks are broken down and plowed under, then the ground is harrowed with a peg-tooth harrow once or twice, and the seed planted.

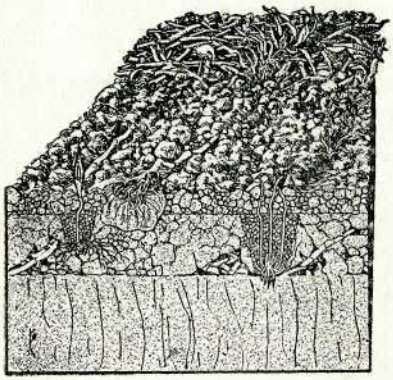


Figure 1. Uncut corn stalks cause many air spaces

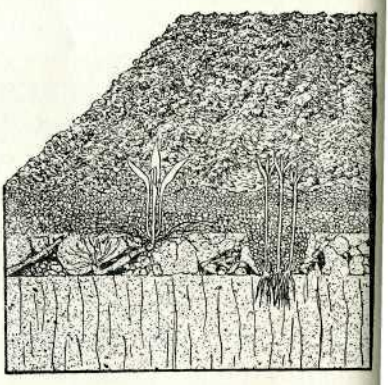


Figure 2. Even though disking after plowing dosen't fill all air spaces

Illustration No. 1 shows a seed bed which has been prepared in this manner. The reader will observe the pile of corn stalks that was left by the man who harrowed the field when he cleared a section of the harrow, the air space left at the bottom of the furrow by the corn stalks and corn stalk roots, also the wheat plant and the hill of corn. He will also notice that the wheat plant is in the ground more than half the depth of the plowed furrow, and that the corn is almost on the bottom.

How many times have we gone into the field and noticed

that one hill of corn will be up nicely, while others will be barely breaking through the ground. The same thing is true of small grain. There are a number of conditions responsible for this, but the most important one is the preparation of the seed bed. In illustration No. 1 the drill was used in planting the grain and the corn planter in planting the corn. The illustration shows that the corn planter and the shoe of the drill left the ground pulverized around the seed, but did not prevent the seed from dropping too deep in the ground. The reason for this is that the bottom of the seed bed, being full of air spaces, the runners either broke through the clods or pushed them to one side. This allowed the seeds to drop further in the ground than they should. The next hill would probably be planted at the right depth, but in close proximity to the pile of corn stalks, which would retard its early germination and growth. In other places in the field the seed would probably be deposited at the right depth and grow into a healthy plant. But there is nothing sure about it.

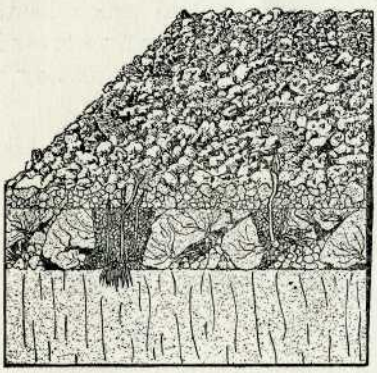


Figure 3. Note air epaces due to plowing before disking

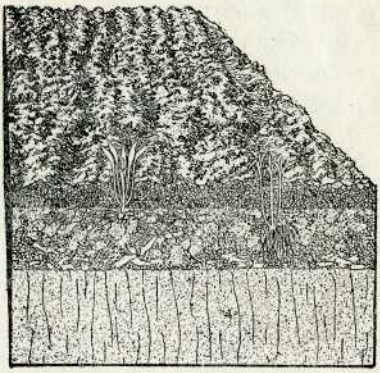


Figure 4. A properly prepared seed bed disked before plowing

If the season happens to be dry these air spaces will prevent proper capillary connection with the sub-surface. The corn stalks and roots burried in the ground will be harbouring places for insects that are common to any locality. It means that just at the time when the plants need moisture to mature the grain they will not get it, and as a consequence there will be a poor crop.

Suppose the spring is late, as it is in some localities this year The farmer thinks he must plow his ground hurriedly in order to get his crop in. Does he gain anything by this method ? Assume that he is planting corn. When the ground is plowed in this manner it is cold and cloddy. He has to plant his corn deeper than he wants to in order to get the planter to cover it. Since the ground becomes increasingly colder the further it is from the surface, it takes the corn longer to germinate and longer to break through the ground, then it would if the farmer had prepared his ground better. When it comes to cultivation he loses time, pulls up a great deal of corn, and has an uneven stand to work. He has hurriedly prepared his seed bed and planted his corn, but waits for it to grow, has trouble all through the cultivation and raises a poor crop because he was in a big hurry to plant his corn.

It is a matter of history in corn growing districts that nature practically always provides a season long enough to raise a crop of corn, consequently the scare caused by a late spring does irreparable harm. The farmer had much better spend the extra time that he is waiting for the corn to grow in the further preparation of the seed bed. This is necessary, if the seed is weak, and a great help to srtong seed.

Illustration No. 2 shows corn stalk ground which has been plowed, disked and harrowed with a smoothing harrow. While this leaves the ground in a little better condition on the surface, the same trouble at the bottom of the seed bed will be experienced as that which exists when the sed bed is prepared as shown in Illustration No. 1. The same corn stalks are there to give trouble. The main difference is that a deeper mulch has been prepared on the surface, and such a seed bed will probably stand the drouth somewhat better.

One of the great troubles with a seed bed of this kind, particularly with reference to the smaller grains, is that germination tion being slower a greater length of time is required for the stem to reach the surface, and then when it gets to the proper stage for growth, a new set of roots forms at the place where air moisture and heat are present in the right proportions. This is the point where the complete system of roots os formed. The lower roots which started from the sed wither and die. Time

is required for this change to take place. And it happens before the plant can grow. All this shows the great importance of planting the sed the right depth. Planting the seed the right depth depends absolutely upon a sed bed prepared in the right manner.

Illiustration No. 3 shows a stubble ground plowed in the spring and hastily prepared by disking and harrowing. Maturally this ground compacts more readily than the corn stalk ground. It does not have the trash to interfere with cultivation, nor does it breed insect pests, but the same trouble at the bottom of the seed bed exists here, as it does in the corn stalk ground.

Illustration No. 4 represents a corn stalk field disked and cross disked before plowing, and then harrowed. This ground compacts readily easily, making a warm, moist, firm seed bed for any kind of a crop. With the bottom of the bed prepared properly the farmer can plant his seed at the right depth and feel sure that it is being deposited in the ground just where it ought to be. He can figure more nearly on what the season will bring forth because the sed bed is in the proper condition to resist excessive drouth or rains. In this sed bed the stalks have been cut into small pieces, they do not interfere with the compactness of the seed bed, capilliary or cultivation. There will be no danger of a second set of roots forming, if the seedg is planted at the right depth. Germination will take place in the quickest time and the shoot will develop into a healthy plant.

Just how the farmer should go about to put his seed bed in this condition he can best judge. He can readily see the difference in the bottoms of the seee beds, and no man can tell him how to prepare best his particular ground. He must decide the matter for himself. The important thing to do is to get the bottom of the seed bed compact so that good connections are made with the sub-surface.

THE SHEEP INDUSTRY IN NEW BRUNSWICK.

While the agricultural sections of New Brunswick are devoted largely to dairy farming, there are many sections of

the province adapted for sheep raising. According to the census returns the province has one cow for each two acres of pasture land, and where organized dairying is the leading industry there is little reason for largely extending the sheep industry. But on rugged and rolling land which is not already returning a profit from cows, the sheep might well be greatly increased.

The mutton produced in New Brunswick, as in the other Maritime Provinces, possesses a grain and flavor of unusual excellence. This fact is recognized by many of the best paying markets, with the result that buyers from Boston and New York are on the ground early each autumn contracting for lambs for the fall trade. Western Canada has also contracted the plan of buying lambs from the Eastern Provinces. During the Autumn of 1907 several carloads were shipped west. Provided the quality of the product is kept up there is very little danger of a decrease in the value of the Maritime lamb, even though the supply is greatly increased. The needs of the market already looking to New Brunswick are not readily supplied, in fact there is every probability of a constant growing demand from these quarters.

The Dominion census of 1901 shows the sheep stock of the province to number 182,524 head, a decrease of 417 since 1891, and 38,222 less than in 1881.

Owing to the increase of prices on wool and mutton during the last few years the farmers in some sections are increasing their flocks. According to the provincial census reports the numbers have increased to about 260,000 or an increase of about 70,000 head since 1901. The use of pure-bred males is also increasing. With a view to encouraging this improvement the provincial government have been purchasing pure-bred sheep in Ontario and selling them at public auction. They are being purchased chiefly by agricultural societies and then resold to individuals, so that there are being pretty well distributed throughout the province. With this improvement the industry is certain to go forward. What is needed is better care of the flocks in the direction of changing pasture in summer, and the growing of a suitable variety of fodder crops for use during the housing season. With due attention to these

and the judicious culling of the ewes, also the use of a high grade sire the agriculture of New Brunswick will have a valuable branch growing into importance each year.

The chief reasons given by the farmer for not keeping sheep are :—dogs, fencing, dairying, and insufficient help. When carefully looked into, none of these reasons presents a sufficient excuse. As to the dog excuse, the province has even more drastic dog laws than the other Maritime provinces, in that a farmer may shoot any dog found trespassing on his property. If this law was carried out the dog nuisance would soon be done away with.

Dairying is certainly a counter attraction to sheep raising in several districts, and while some dairy farms are profitable others are scarcely paying. Lectures on the advantages of dairying have resulted in some farmers taking it up in localities which are not adapted to making a specialty of it, and had they received lectures on sheep raising and followed them up they probably would have been more successful.

Just to show that there is money in sheep raising I will give a short and somewhat incomplete account of an enthusiastic owner of a small flock of grade sheep

Sales.		Expenses.	
230 lbs. wool at 25 cents	$57.50	For keep of sheep from	
9 ram lambs at $10.00	90.00	Dec. 15 to May 15 :	
2 ewe lambs at $7.00	14.00	25 bus. oats at 50c.	$12.50
20 ewe lambs at $4.00	80.00	30 bus. Tur. at 30c.	9.00
13 ewe lambs at $5.00	65.00	5 tons clover $6	30.00
	$306.50		$51.50

This shows a profit of $255.00 from a flock of sixty sheep, and although the account is incomplete, it shows the approximate results.

As to the excuse of insufficient help it is probably the weakest of all, for although sheep require attention and intelligence, they require less labor and less expense than any other kind of farm stock.

G. W. C. '13.

UNDER DRAINAGE.

The growing season of 1912 has passed into history as one of the wettest *ever known* over extensive areas, in all parts of the globe, and has impressed upon the mind of the Agriculturist the need and advantage of thoroughly underdraining low-lying or wet land.

The need of underdrainage was in the past spring shown in many localities, by deferred seeding and the difficulties under which it was often performed, whereas on drained fields the season was often advanced three weeks or more, thereby giving the crop time to mature, and did not water-kill during the excessive rains of the past growing season. The crop on such land was fairly easy to harvest, whereas if such a field had not been drained there would have been no crop at all.

Corn on Drained and Undrained Land

The production of crops is also increased by ten per cent. in the case of spring wheat, to 200 per cent. in the case of oats, Straw and hay. These figures are taken from the reports of twenty-six farmers in Ontario to the Department of Physics, O. A. C. Although the figures quoted are from Ontario, it must not be supposed that experience in Nova Scotia will not verify them. Take for example on the college farm where a formerly worthless field, since being drained, produces four tons of clover hay per acre.

The initial cost of drainage is what usually has intimidated farmers from performing drainage operation. Yet with up-to-date apparatus the cost need not exceed thirty dollars per acre except in the most tenacious clay. .

The most ecomomical way to do drainage work is with

the traction ditcher, two of which are now owned in this province, one by the Government, and the other by the Pictou County Ditching Company. Both are giving entire satisfaction.

The work is made more permanent by using only the best quality of burned tile in the ditches, and the cost lessened by filling in drains with a team and scraper.

As to the benefits of drainage, surely it will make our soils earlier, better aired, sweeter, warmer, deeper,and more drought resistant: It will give proceeds from land that formerly produced nothing. To these add the satisfaction of working a field unbroken by open ditches, etc. It changes disease-breeding swamps,barn yards, etc., into beautiful conditions: When it will do all this, is it not worthy of our most careful consideration?

A. C. T. '13.

HORTICULTURE

CO-OPERATIVE FRUIT COMPANIES.

To those directly interested in fruit growing the subject of co-operation is one which claims immediate consideration. To the fruit grower, the solution of the problem, how to pack to the best advantage and how to sell with the highest returns, will determine his possibilities of profit. Viewing more broadly the co-operative movement, we must consider general principles of co-operation and note that, as a sound business principle, co-operation is the almost inevitable future of the fruit industry. The fruit industry after all differs little from other productive activities. As fruit growing becomes more and more organized and universal, modern scientific methods must be adopted to facilitate its development. For the grower of the present day to successfully compete with fruit growers of his own and of similar exporting companies he must needs pursue up-to-date methods.

Denmark furnishes an oft quoted example of one of the earliest and most successful attempts of co-operation. Being a country highly developed in farming pursuits it became an absolute necessity for the peasants to unite their labors in order to survive the large cost of production and their comparatively low returns. From simple co-operation in the marketing of their farm products, the principle developed, until now, after forty years experience, they have co-operation not only in supplies and marketing but also in buying all supplies. Thus is co-operation shown practicable.

Coming more nearly to the subject of Co-operation among fruit growers, we find that California in the past twenty years has enjoyed several different organizations all more or less beneficial to the producers. Ontario also has benefitted by fruit associations enabling the farmers to market their fruit more effectively. But it is the recent movement toward co-operation in Nova Scotia that demands special attention.

The first fruit company to be organized in Nova Scotia was the "Berwick Fruit Company" in the year 1907. During the last five years twenty-eight other companies have been organized in the Annapolis and Cornwallis Valley. These companies fairly represent the various fruit sections of the Valley. During the past season a further important step in the co-operation movement of the Province was the formation of a United Fruit Company. This combines all individual companies under a central board of control.

The working principle of all these companies is essentially the same. First as a legal co-operation a fixed capital is subscribed and shares are sold to members entering the co-operation tion. Each company averages about thirty shareholders and handling from 20,000 to 35,000 barrels of apples. A warehouse is built to accommodate all the fruit. A manager is chosen who is responsible for the packing and marketing of all fruit. Upon the choice of the manager, therefore, depends almost entirely the failure or success of the company. Perhaps the most pressing danger that co-operation has to face is the inefficient management; but, on the other hand, under a capable manager, the increase of profits from careful management,packing and marketing, is most gratifying.

It is in the companies that the demand for uniform and honest packing is realized. No firm handling large quantities of goods yearly can afford to tamper with the necessary standard of its goods. A fruit company putting out a poor brand of apples will suffer more heavily than an individual under similar circumstances. A recognized reputation is not so essential to the individual who sells to the speculator as to the company dealing with business firms. Hence the quality of the fruit exported from our country under these new conditions is bound to improve.

The advantage secured by co-operative marketing is apparent. The company takes the position heretofore enjoyed by the speculator, and reserves for the producer the profit that otherwise goes to the middleman. Again, the advantages of being able to fill large orders and thus secure good sales is possible to the association. Fruit companies are not forced to sell on commission but can sell directly to the wholesale dealer,

thus obtain private trade arrangements. For example, the Nova Scotia fruit companies besides organizing local markets have also opened up profitable markets in South Africa and the Canadian West. To the individual these markets are impracticable ; either the speculator or the fruit companies must supply them.

Mention must also be made of the advantages secured in the storing and packing of fruit. Farmers in Nova Scotia require frost proof storage rooms for their fruit crop. The cost of such buildings is a large item. But with a company warehouse twenty or thirty farmers can store all their fruit. This one item has induced many farmers to join co-operative companies. Moreover a second reason influencing the formation of these societies is the opportunity of getting free of the responsibility of packing fruit, a task disliked by the majority of farmers. During the busy season of picking the shareholder does not have to stop and pack. He hauls his apples straight from the orchard to the warehouse and all further worry is over. The average farmer, too, cannot expect to keep posted on all conditions of the market and hence he is very willing to have the worry of how, and when, to ship his fruit, transferred to an experienced and capable man who can devote his full attention to it.

Perhaps the question will naturally be asked whether additional expenses necessary to co-operative packing do not counter-balance the higher selling rate promised by co-operative marketing. In discussing this point, briefly, let us remember at the outset that, granting no higher profit per barrel for the shareholders than the average outsider receives, there is still the important advantages of housing, packing and marketing of the fruit in favor of the shareholder. But let us contrast the cost of packing and marketing, on the one hand, and, the increased profit due to extra returns in the form of rebates and returned commissions, on the other hand. The actual cost of packing all the apples in one of the warehouses last season was nine cents per barrel. This includes manager's salary and all expenses of operating. To some farmers this nine cents may appear as so much profit deducted. On the other hand, considering the amount saved by co-operation marketing in

lessened transportation charges and in rebates, the cost of packing is lessened by this amount very materially. Therefore we may readily see barring mismanagement the profits of co-operative packing are assured. It is however interesting to add that shareholders in general have been well satisfied with the work of the companies.

This past year has witnessed a new phase of co-operative life. Twenty-five companies have united under the "United Fruit Companies of Nova Scotia, Limited." Each fruit company sends three delegates which form the united company. A manager of this central association is appointed by a board of directors, one director being chosen from each company. And from this board of directors are also appointed the officers and an executive committee of five who assist the manager in all details of business. With the event of this new central association there comes into being a powerful organization with the future possibility of controlling the entire apple industry of Nova Scotia. What the future of this shall prove we can only as yet prophesy. Under this central management greater advantages are rendered possible.

A uniform pack of apples is guaranteed. A special fruit inspector is appointed to regulate the packing among the various companies. His duty is to enforce the standard of packing authorized by the central association.

The central association takes over the function of marketing all fruit of the companies. During the present season the central association has shipped up to November 18th, 155,241 barrels and 16,207 boxes; of these 40,800 barrels and 12,734 boxes were sold directly by the central association. Representative agents have been sent to the local markets of Sydney, Montreal, Quebec, and the shipping port of Halifax, as well as to foreign markets in the Canadian West, England and Germany. There are great possibilities of establishing large foreign trade with these countries and with South Africa.

However bright the future appears we must not minimise the difficulties that confront its development. We must not too eagerly look for big results in an institution so new as the United Association. A few serious mistakes may cause disaster. The utmost caution and intelligence must be exercised

by those few men promoting this new movement. It is a business proposition which must be worked out by experience.

One step further is being accomplished. Supplies of feed, fertilizers, seeds, etc., are being purchased by the association, for its members during the coming year.

Under wise and careful management what a wonderful organization is developing in our Province. We feel its power already. New companies are in progress of formation for the coming year. It is with interest we will watch its development and hope for good results.

R. W. D. '13.

THE ORCHARD SITE.

The site of the orchard should not be confounded with the location which means situation as it is determined by the map. By the orchard site we mean the situation of the orchard in respect to the whole farm.

In selecting an orchare site the first condition to be looked for is an elevated piece of ground. The orchard should be a little higher than the land which surrounds it. This insures deeper and better drained soil and a condition known as air drainage which insures greater freedom from frost.

Perhaps here it would be well to distinguish between the words frost and freeze. A frost is a drop in temperature to below the freezing point always occurring on a still cloudless night between the hours of twelve and six A. M., and of a local nature. A freeze is a drop in temperature to below the freezing point always occurring in a wind on a clear or frosty day of greater duration and always occurring over a greater area than a frost.

Any deep well drained soil which is good for ordinary farm crops is suitable for an orchard. In the Annapolis Valley apples are successfully grown on nearly all classes of soils from a clay to a sand. Clay soils are very retentive to moisture and contain a great abundance of plant food. A sandy soil on the other hand gives up its water quite readily and is deficient

in plant food and humus. The best soil for an orchard would be a loam containing sand and clay for then we would have combined the friability of the sandy soil and the plant food and water holding capacity of the clay soil.

A slope is another important factor in determining the orchard site. The advantages due to a slope are the following :

1. Water drainage.
2. Air drainage.
3. Production of better colored fruit.
4. Windbreak.
5. Protection from frost.

Different slopes have different advantages. A southerly slope gives earlier, better matured and more highly colored fruit. It also serves as a better protection against the northerly winds. A northerly slope delays the blossoming period until after the danger from late spring frosts has passed. An easterly slope provides protection against the prevailing westerly winds. A westerly slope is not desirable because the prevailing winds are westerly and draw heavily on the water in the soil and increase the loss in drops and windfalls. If an orchard is to be planted near a body of water the fall should be toward the water for reasons that are obvious.

In laying out an orchard it is a great mistake to put it in the middle of a field on which farm crops are raised for this always interferes with a systematic rotation of crops. Always plant the orchard along an end or a side of the fields for then it will be out of the way. There is no greater display of poor judgment than to plant an orchard in the middle of a beautiful smooth field. The farmer who does this does not realize, although he is improving his farm how much he is inconveniencing himself and every one who owns the field after him.

Of course we take for granted that no man will set out an orchard if he is not advantageously situated with regard to markets and cannot place his fruit there at a good net profit to himself.

Now if selecting a good site for an orchard will mean more profit and satisfaction for the farmer than he would otherwise have, the points above stated are well worth considering.

H. P. MUNRO, '13.

SPRAYING THE ORCHARD.

To the fruit growers of Nova Scotia this is one of the most important steps in growing fruit of the finest quality. During the spring and early summer the fruit growers have to be constantly fighting against insect pests and Apple Scab. Last summer it was against the latter they had to combat with mostly, and many a farmer who did not believe in the use of spray mixtures and who would not use them found that his apple crop was almost an entire failure. Owing to the wet season the scab spread rapidly, especially down the western end of the Annapolis Valley, which is a great apple growing section Several farmers who did use the spray pump often found that they were not free from this fungus, and wondered how it came to be in their orchards after using the spray. The reason for this is, they let too much time elapse between spraying, and so allowed the scab to start.

How should we fight these enemies of the fruit grower, and what shall we use to destroy them? First we must spray with the right materials, spray often and thoroughly, and at the right time.

How shall we know the right time to spray ? The apple scab is a fungus growth that lives on the old leaves in small sacks throughout the winter. In the spring these sacs burst and myriads of spores are thus set free by the wind till they lodge on the moist leaves or fruit and there commence to grow, and unless killed by spray will destroy the fruit. Thus we see that the time to begin spraying is early in the spring as soon as the leaf bud begins to open and the green leaf begin to show. How often shall we spray ? If the season is a damp one it should be done about every ten or fourteen days, as the scab grows very quickly during the damp season. If the season is very dry the time may be lengthened a bit but still it is better not to wait too long. The first spray then should be put on just after the leaf buds have opened ; this is a protection against apple scab. The second spray should be put on just before the blossoms open, this is also for apple scab and will also kill some of the insect pests such as the canker worm, the American tent caterpillar, etc. The third spray should be put

on directly after the blossom falls before the calyx of the apple close. This spray is for the scab, also for the codling moth which gets into the calyx of the apple and eats its way to the centre, and later on eats its way out again, thus causing wormy apples; and if the spray is put on as soon as the blossoms fall this insect can be destroyed. The fourth spray should be put on about a fortnight later, for scab, and any late brood of the codling moth, etc.

What spray mixture can we use ? The most popular mixture to-day is lime-sulphur. This is used as a fungicide and is a very good one to control the apple scab. This mixture can be bought on the market or it can be made at home by boiling together in a large tank 60 lbs. of lime, 125 lbs. of sulphur, with enough water to give 50 gallons at the finish. Boil about one hour ; when cooled test its strength and dilute accordingly. The commercial lime-sulphur should test about 33 degrees Beau Beaume. This should be diluted about one gallon mixture to forty gallons of water. For killing the insects we should use lead-arsenate, it being the safest poison to use with lime-sulphur. About three pounds of this should be mixed with the forty gallons of diluted spray which is then ready for use. When spraying the trees use a nozzel that is fairly coarse, not one that sends the mixture out in a stream or one that is too fine. Spray so as to wet every part of the foliage both the inside of the tree as well as the outside. People are too apt to go around the outside with never a thought for the inside leaving that to take care of itself. Insects work both inside and out, so it is necessary to spray thoroughly. A large tree requires about eight gallons of mixture. Be sure that the more the spray pump is used and the work be done well the better the returns will be by producing fruit of a better quality.

C. B. GOODERHAM '13.

ROSE CULTURE.

The ideal spot for a rose garden is on a southern exposure airy but sheltered, open to the sun some part of the day and quite free from the influence of large or growing trees.

A well drained, deep, rich loam upon which roses have never before been grown is necessary for best results in this branch of floriculture ; but if the site has been used before, fresh earth may be substituted for the old. Drainage may be supplied by digging out the earth to a depth of three feet and filling in one foot with broken stone, bricks, cinders, gravel or anything that will permit a free passage of water.

The size of the beds must be governed by certain considerations of convenience for the following years. All the bushes must be readily reached without leaving the walks, there should be no unnecessary space entailing greater cost of cultivation and all parts of the bed should be readily accessible to insure easier and more thorough cultivation.

The plants, with the exception of the climbers, which should never be put in beds, should be put at spaces of twenty-one inches apart in the beds. It is considered a good plan to set them diagonally rather than in squares as they will thus economize space, and at the same time get exposed to the air and light from all sides without any crowding of their neighbors. A walk five feet in width should be left between the beds to allow the sprayer and cultivator through without injuring any of the plants.

In preparing a bed on the lawn the sod should first be entirely removed and placed apart. The best of the sub-soil should then be taken out and placed on the opposite side of the trench and finally the portion to be discarded making in all a depth of at least two feet. The bottom should then be loosened to the full depth of a pick head and the good sub-soil mixed with a generous dressing of well decayed manure replaced. The sod and top soil should then be put in, after being well broken up and mixed with manure and the bed fillled with good unmanured top soil until two or three inches above adjoining surface ; enough good soil being added to replace the discarded earth. When the bed has settled the surface should be an inch below the adjoining sod in order that all rainfall and moisture be retained. It is a great mistake to make the bed higher than the adjacent surface as in hot weather the soil will dry out and the plants suffer from drought.

This bed, if possible, should be made several weeks before planting in order to allow time for setting, but this is not essential.

The roses should be planted just as soon as the soil is in suitable condition. In Nova Scotia this is usually about the second or third week in May, or even later, when the danger of sharp frosts have passed. Should the plants arrive too early or during wet weather, do not open the box, but put in a dry place, where there is no artificial heat ; if the weather is cold cover them with mats or blankets. When the conditions favor planting, unpack the bushes in a place sheltered from the wind and sun and keep the roots covered from any undue exposure. Take to the beds only as many as can be properly protected there or promptly planted. It is a good policy to protect the roots during transit by dipping them in mud or immersing them in a pail of water.

These precautions are necessary in order to avoid the drying action of the sun and wind upon the fibrous roots of the plants, since if they become dried out the solution surrounding the roots are stronger than those in the roots, the flow is then from the plant to the earth and the plant dies.

In planting avoid putting the plants either too deep or too shallow. In the first place if they are put too deep the stems will rot and the plant will die, while if they are planted too shallow the growth will be spindly and the roots will be strained in the case of a heavy wind.

There are many hardy varieties of roses which will withstand the rigors of Nova Scotia winter, and it is unfortunate that there are not more of them grown throughout the farming districts. A flower garden around the farm house is a valuable asset indeed. It furnishes a recreation ground for the women, beautifies the lawn, and fills the house with fragrant flowers which have a certain refining influence, that nothing else can bring. The farmer who devotes a half day to the flower garden willl get good returns for the time expended in the increased enjoyment he will receive from it during the summer beside the additional pride in having a front which is "A thing of beauty and a joy forever." R. M. F. '13.

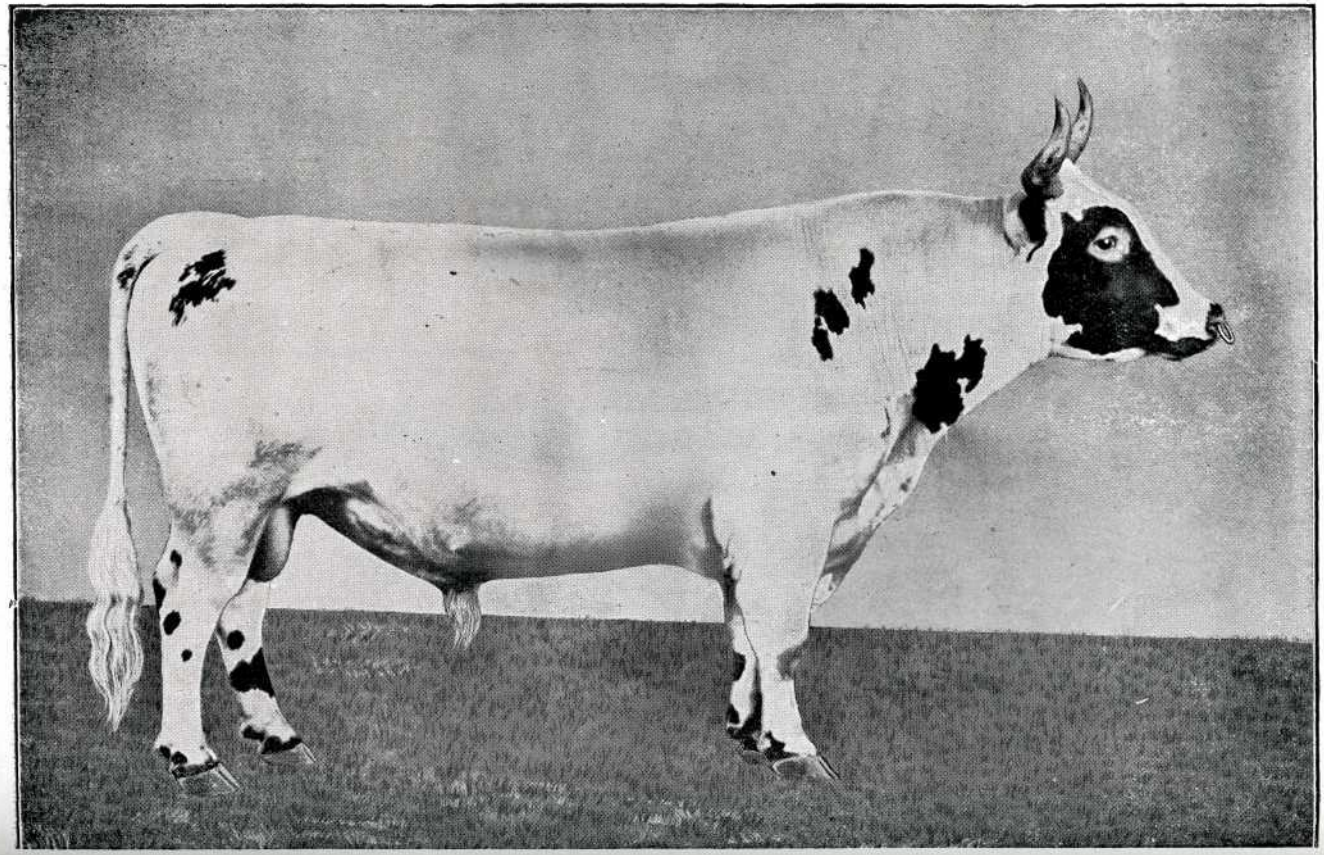
ADVANTAGES OF FRUIT GROWING FOR SMALL FARMS.

"In addition to the many other advantages which are possessed by a section of country devoted to the growing of fruits of various kinds is the tendency to sub-divide large farms into smaller holdings," says W. H. Bunting, concluding his recently-published report on fruit-growing conditions in Canada. "Professor Warren, of Cornell University, head of the department of Farm Management, after a thorough survey of two of the more important counties of New York State, devoted largely to general farming, sums up the limit of profitable farm management as being in inverse ratio from the smaller holdings to the farm of at least two hundred acres, under which the greatest efficiency can be obtained with a minimum of expense. He shows by actual data that 90 per cent. of the farmers in these counties whose farms do not exceed thirty acres in extent, receive less than $500 per annum net for their labor. On the farms of two hundred acres and over, only one-third of the farmers receive $1,000 and over as a reward for their labor in the course of the year.

"When we come to compare these figures with the average returns from a well-managed fruit plantation, one year with another, there is a marked difference. Net returns from $50 to $200 per acre and even more are not at all unusual, and it is safe to say, from a perusal of the replies received from over one hundred and fifty correspondents in all parts of Canada in answer to an inquiry on this subject, that at least $50 pe acre, net, may be counted upon in this country for the area under fruit. In many sections farms of one and two hundred acres, which were returning their owners not more than a comfortable living while devoted to general farming, are now supporting from six to twelve families who are devoting their energies to fruit culture, and doing so successfully.

"Fruit growing furnishes pleasant and profitable employment to all the members of the family, encourages the subdividing of the old into smaller holdings, gives social and educational advantages, leads to the establishment of many allied industries in the district, and in many other ways adds materially to the substantial wealth of the community."

—*Farmer's Advocate.*



"BARCHESKI KING'S OWN," Champion Ayrshire Bull of America.

Dairying and Poultry

STUDY THE COWS.

We should know the good and bad qualities of our individual cows just as well as we know those of the men we employ. It is just as much importance and is much easier to control as we can do as we please with our cows. We do not keep a man permanently when we know where we can secure a better one and yet we go along with a large percentage of our herds unprofitable. Why not get ourselves up to the business standards of our merchants and manufacturers ? There is as much room to apply intelligent thought to dairying as to any business in our country. In a sense we are doing a higher grade of work than the manufacturer. We are dealing with machines that have life like ourselves, machines that respond to kind treatment, with increased profit to the owner.

A WAY OF VALUING A COW.

No one will become rich milking cows that do not produce more than 200 pounds of butter per year. Many farmers keep cows that get in debt to them every year and the funny part of it all is they keep on boarding the robber cow.

The cow that will make only 200 lbs. of butter annually is worth about $30.00. The 250 lb. cow gives us 50 lbs. profit, which we will say is worth 20 cents per pound or $10.00 which will pay 10 per cent. interest on $100.00. Therefore if the 200 lb. cow is worth $30.00 the 250 lb. cow is worth $130.00. In other words you can as well afflord pay $130.00 for a cow that will make 250 lbs of butter yearly as to pay $30.00 for one that will produce only 200 lbs. No one would think of paying $13 for the 250 lb. cow but she is just as good an investment as the 200 lb. cow is when both are to be kept for a term of years. On the basis the 300 lb. cow would give 100 lbs of butter for profit which would be worth $20.00 or 10 per cent. interest on $200.00

Therefore the 300 lb. cow is as good an investment at $230.00, as the 200 lb. cow is at $30.00. When we have a four hundred lb. cow she gives us still another $20 for profit to figure as interl est on another $200 and makes her worth $430.00 and each additional 50 lbs. of butter that a cow will produce each year will raise her value another $100.00 as an investment. The foregoing will hold true and is a fair comparison where the dairyman raises the heifer calves to keep up his herd. But will not hold good if the dairyman buys his cows from year to year and sells them at the end of each milking period.

L. STEVENSON.

DAIRYING IN THE MARITIME PROVINCES.

Throughout the whole of the Dominion of Cqnada and in fact other countries as well, we find farmers devoting special attention to one or another of the different branches of agrivulture. In the far wesr we see them producing large quantities of wheat, in Ontario and Quebec the tendency seems to be more toward stock and to Horticulture, then we come down to our own Maritime Provinces and here also we find men in different localities devoting to a certain extent their time and energy to some particular branch of agriculture.

If we take a second look we will see that in each case they are producing that to which the certain locality in which they live is best adapted.

This being the case surely we of the Maritime Provinces should be dairymen. With our large acreage of rich upland for pasturage and a correspondingly large amount of interval and lowland on which to grow our hay and roots grain roots for winter feeding. We should have no trouble in producing a maximum amount of dairy products.

Our climate too is particularly well adapted to this branch of agriculture. Our summers are cool though not cold, our rainfall during this time is quite sufficient to make good feeding for the dairy cows. So that while the cattle of the upper provinces are suffering from heat, flies, and scarcity of good feed.

ing thus giving little milk while ours are giving their average amount.

Then our nearness to the great British market is no small item in our favor. Consuming as she does great quantities of butter and cheese each year we would find a ready makr for all surplus products.

Having considered these important points I fail to see why dairying would not be the most provfltable branch of agriculture for Maritime farmers. N. L. L. '14.

THE CARE OF THE MARKET EGGS.

Under the direction of the Department of Agriculture, a recent bulletin on the car of market eggas has been issued from Ottawa. It directs particular attention to the enormous losses that result form the unsatisfactory methods of the handling of market eggs; and suggests that means by which permanent and needed improvement may be brought about in the Canadian egg trade, to the avdvantage of both consumer and producer.

The bulletin which is No. 156 of the Live Stock Branch, is a pamphlet of 24 pages, in which are shown a number of clear photo engravings, which are very helpful to a clear understanding of the contents. It may be obtained free by applying to the Department of Agriculture at Ottawa.

After describing the usual method of handling eggs, and the result of lack of care of various kinds, this bulletin offers specific suggestions to the farmer, the merchant, egg buyer, railway and express companies, the dealers and packers, retailer and consumer. The farmer is advised among other things to remove the male bird immediately after the breeding season, and market no fertile eggs ; to provide roomy nests, and plenty of clean nesting material ; to collect the eggs regularly, at least once, better twice a day, in moderate weather, and more frequently in very warm or very cold weather, and to remove them at once in clean crates to a cool dry cellar ; to cover with a clean cloth to prevent evaporation and fading ; to market them in suitable cases as frequently and as directly as possible. The suggestions offered to merchants, buyers, transportation companies and others are equally specific and practical.

College Life

On Monday evening, November 24th, a very enjoyable and successful dance was arranged by some of the seniors and held in the Curling Rink. The affair was not a large one, there being but twenty couples present. Dancing began about nine o'clock continuing until 1.30, with an interval for refresh ments ; which were supplied by the ladies and being of a a very superior order were exceedingly enjoyed by every one, particularly the gentlemen.

We wish to thank Mr. and Mrs. Cox, who, as chaperons, could not have been excelled.

On Friday evening, December 6th, the Junior vs. Senior debate was held. The question was,—Resolved ; "That a.. Canadian built and manned navy would be preferable to a direct monetary contribution to the British navy."

The resolution was affirmed by the Juniors, represented by Mr. Illsley, Mr. Coughlan, and Mr. McLean. The negative was dealt with by the seniors represented by Mr. Woodman, Mr. Cochran and Mr. Smith.

The judges were Prof. Campbell, Prof. Shaw and Mr. H. Putnam. They gave the decision to the Juniors.

Together with the debate there was a short programme which added considerably to the enjoyment of the evening.

THE STOCK JUDGING COMPETITION.

In former years a large number of our students have made it a point to attend the winter fair. This year being no exception nearly half of the college went to (Busy Amherst) to increase their practical knowledge of live stock and to take part in the judging contest. The result was rather disappoint-

ing to the students as th cup instead of coming back to college went to Mr. A. O. F. Gill, of Little York, P. E. I.

However if our junior prize winners keep on there is no doubt but that next year will see the cup at the N. S. A. C. again.

The following is the list of students winning prizes ;

DAIRY CATTLE CLASS.

1st.—Hannah '14	$7.00
3rd.—J. H. Archibald, '13	5.00
4th.—G. Hubbard, '13	4.00

BEEF. CATTLE CLASS.

1st.—W. Shaw, '14	$7.00
2nd.—A. C. Starr, '14	6.00
3rd.—J. W. Landells, '13	5.00
4th.—C. E. Boulden, '13	4.00
5th.—R. A. Weldon, '13	3.00

SHEEP CLASS.

2nd.—W. Shaw, 14	$6.00
3rd.—H. C. Secord, '13	5.00
4th.—H. P. Monro, '13	4.00
5th.—Mm. Keenan, '13	3.00

Alumni and Exchange

It is the wish of this Department to keep in touch with all graduates from N. S. A. C. It will greatly help in this respect to recceive items at any time that concern the "old boys", whether they are at home or attending other colleges.

Carl M. Dickey, '12 is at O. A. C. taking third year, and shows a lively interest in N. S. A. C. by helping to account for many of '12 class.

O. Schafheitlin has moved his violin to McDonald, third year, aided and abetted by V. B. Durling.

"Bill" Chisholm and A. Christie are supporting C. M. Dickey at Guelph.

C. E. Chute is now on the trail of the lonesome brown tail moth.

J. E. Campbell and D. Moore are improving their home farms at Hopewell and Shubenacadie.

H. S. Cunningham is also on his home farm and likely leads the debating societies in his section.

Cunningham, Moore and Chappelle all attended the Winter Fair.

Denton has been scale hunting all summer.

Brown is farming in Grafton.

From latest accounts A. McDonald is in Vancouver, and W. V. Smythe occupies the other extreme, Waterville.

Johnson is working on a farm not far from Truro and N. S. A. C.

Shipton was brought to light at Windsor, where he rendered "Rickety, rackety" with the crowd coming to college.

G. E. O'Brien, '11 is graduating from McDonald next year.

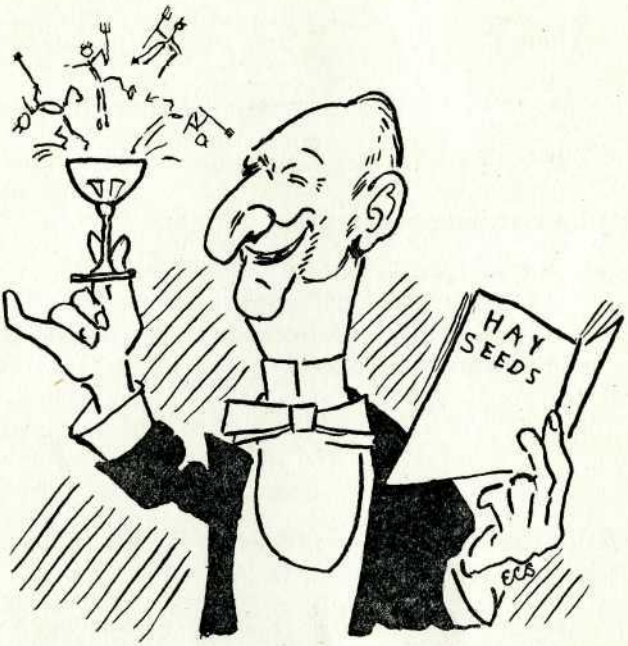
He appears prominent in social and business circles there, being advertising manager of the McDonald College Magazine.

C. Henry, '12, "the genius with the microscope" is practising chemistry for a soap company in Boston, and intends to take third year at O. A. C. next year.

A. E. Crooker hunted the scale all summer.

Malcolm B. Davis, '10 the pioneer Business Manager of the Maritime Student's Agriculturst was successful in obtaining his B. S. A. degree at McDonald this year. Although Mr. Davis had the offer of an excellent position in the West we are glad to see that he is wide awake to the splendid opportunities offered by this province and that he has decided to till the soil with us. He is now director of the Sunnyside Farm Ltd., Bridgetown, N. S.

Under Exchange we are pleased to list the following magazines ; King's College Record, O. A. C. "Review," McDonald College Magazine, Mt. Allison "Argosy," P. N. C. "Gazette," Dalhousie "Gazette" and "Theologul," Pine Hill.



Prof. Smith to unattentive student;
"Would you kindly give me your attention, sir ?

Student walking up and grabbing note-book—
"Please repeat that Prof. Smith."

Prof. in Ent.—"Young man, what is a caterpillar ?"

Student.—Absent-minded. A catterpillar is an upholstered worm.

1st Junior.—That plant up there, is "Red Clover".

2nd Junior.—"That is a legume is it not ?

3rd Junior.—"Certainly, I can see its legs quite plainly."

Friend.—"I suppose you will miss your boy while he is at college.

"Yep," replied farmer Hamilton, "I don't know wat I'll do without Ham ; he got the live stock so they won't move unless

he gives them the college yell, and I'll be sling-busted if I can remember it."

The Senior Class wish to express their thanks to Prof. Shaw for explaining Cr-w-o-ds dulness. No one else thought of putting it down to-overwork.

Hunt,—addressing girl in book store.—"Excuse me, but have you got Animal Breeding ?"

Girl.—Looked like a drum and beat it ! ! !
Hunt making a noise like a barrel rolled away. ! !

W—— at dining table—"Mrs. —— this is a rather small steak you have given me."

Landlady—"Yes sir, but it will take a wonderfully long time to eat it sir.

1st Junior—"I took you home the other night.

2nd Junior—"Yes ! you coward ! and then you left me to face my landlady alone."

He was milking and when his attention was elsewhere, a grasshopper jumped into the pail.
Upon sight of which he exclaimed ;
"Well by heck ! If there ain't one of them durned germs !"

Prof. S——, calling roll.

Mr. "A——— "Here."
Mr. "B——— ———"Sick."
Mr. "C——— ———"Present."
"Order" ———"Sick."

What we all would like to know is,—who is responsible for the jokes at the play on December 5.

Prof. S.——— lecturing at Amherst—

"Ladies and Gentlemen, pointing to the same, this is the picture of a horse.

(Great surprise of audience every one thought it was a lemon.)

Heard in the Principal's office while the Juniors were registering ;

Prin.— "You reside ?"

Junior Student.— "With my brother."

Prin.— "And your brother lives ?"

Junior Student.— "With me."

Prin.— Yes ! yes ! but you both live—

Junior Student.—"Together."

Land lady ;—"I greatly disapprove of that young N. S. A. C. Junior, and one particular reason is his lack of industry in his calling."

Normalite ;—"His calling ? Why, he calls seven evenings in the week !"

1st Normalite referring to N. S. A. C. sport.—He calls himself a human dynamo."

2nd Normalite.—"No wonder, everything he has on is changed.

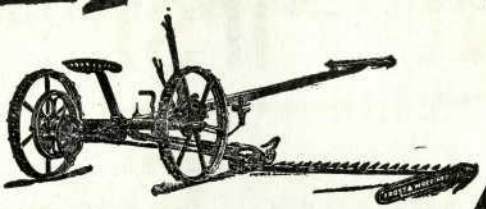
Sunny Jim at Amherst ;
"I asked her if I could see her home."

"Why, certainly," she answered ; "I will send you a picture of it.

Prof. to Editor-in-chief—"Aren't you afraid you will catch cold on a night like this."

Ed— "No, sir, selling papers keeps up the circulation.

THE FROST & WOOD MOWER



GET this Frost and Wood Mower. It has in it every improvement that seventy years of experience can suggest. You can cut a bigger acreage with it in a day than ever before. Now why is this? There are several reasons. First, you have large roller bearings on all power shafting. These save draft, and your team can cover the ground at full walking speed. You can cut quickly. Ample power for all requirements is produced by the wide tread tires and the large gear on axle. The gear picture above at the center shows how two pinion teeth are taking power from three teeth on that gear. This makes the pressure and wear only 1-3rd on these teeth. In other words these gears are always in such perfect mesh that your knife starts cutting whenever you start the mower. This saves clogging and broken knives. You start speedily. You save delays. A foot-lift for cutter bar lifts it over stumps and stones, and makes turning corners easier. The long pitman saves broken knives at knife head. Here is time and delay saved. Built in 3 ft. 6 ins.; 4 ft.; 4 ft. 6 ins.; 5 ft. and 6 ft. widths.

Get our Mower Book and learn more about this machine. A Post Card gets you full information Write to-day.

THE FROST & WOOD COMPANY, Limited

SMITH'S FALLS, ONTARIO

89

Sold in Western Ontario and Western Canada by

COCKSHUTT PLOW CO., Limited, BRANTFORD, WINNIPEG

POTASH PROMOTES PROSPERITY.

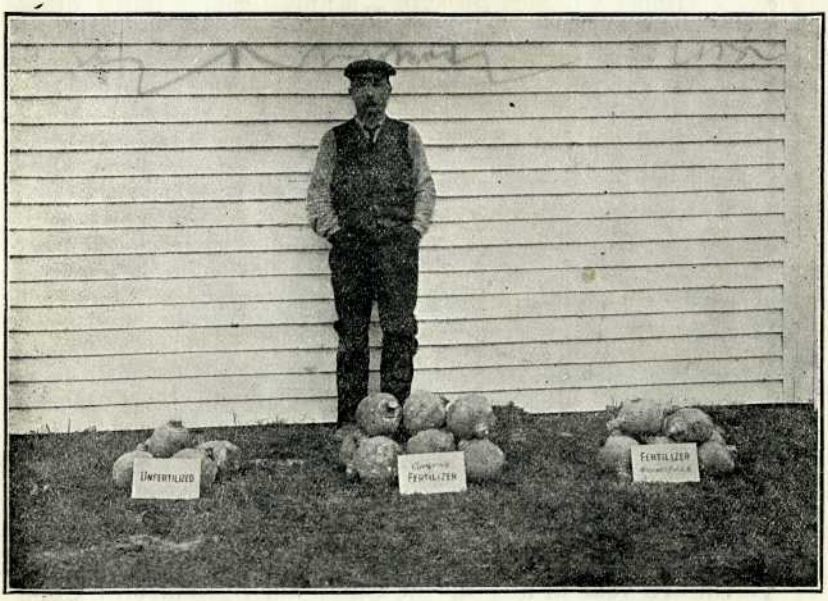
Maximum Crops cannot be produced unless the soil contains sufficient quantities of Nitrogen, Phosphoric Acid and **Potash.** The soil becomes depleted of these essential Plant-Foods by continual cropping and they must be returned to the soil in some form if fertility is to be maintained.

Potash is necessary to the production of first class crops.

Potash promotes **Maturity,** increases **Quality** and **Quantity.**

The highly concentrated **Potash** salts, **Muriate of Potash** and **Sulphate of Potash** may be obtained from all reliable fertilizer dealers and seedsmen.

An experiment on Turnips conducted by A. Anderson, Baddeck Forks, N. S.



PLOT I	PLOT II	PLOT III
Unfertilized	160 lbs. Muriate of Potash. 500 " Acid Phosphate 140 " Nitrate of Soda	500 lbs. Acid Phosphate 140 " Nitrate of Soda.
Yield per acre—882 bus.	1722 bus.	1320 bus.

Write us for copies of our Free, illustrated bulletins, which include:—"Artificial Fertilizers, Their Nature and Use." "Fertilizing Fodder Crops." "The Potato Crop in Canada," etc.

The German Potash Syndicate,

1105 Temple Building, TORONTO, ONT.

BUSINESS CARDS

Rickety! Rackety! Ric, Rac, Ree,
Bacteria, Zoo, Biology.
Gee gamililio, gee, haw, gee!
Farmers, farmers, Don't you see!
Rip! Rap! Rah!
Rip! Rap! Ree!
N. S. A. C. Yes, Siree!