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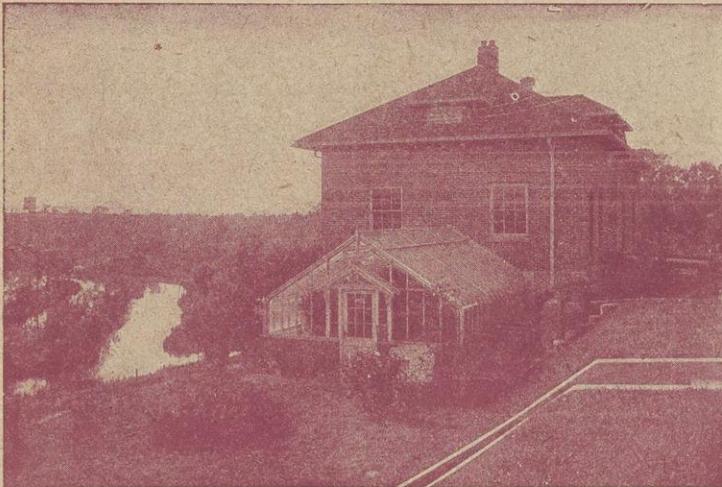
COLLEGE OF AGRICULTURE
UNIVERSITY OF WISCONSIN
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THE
CANADIAN HORTICULTURIST &
BECKEEPER

Vol. 27, No. 5, May, 1919
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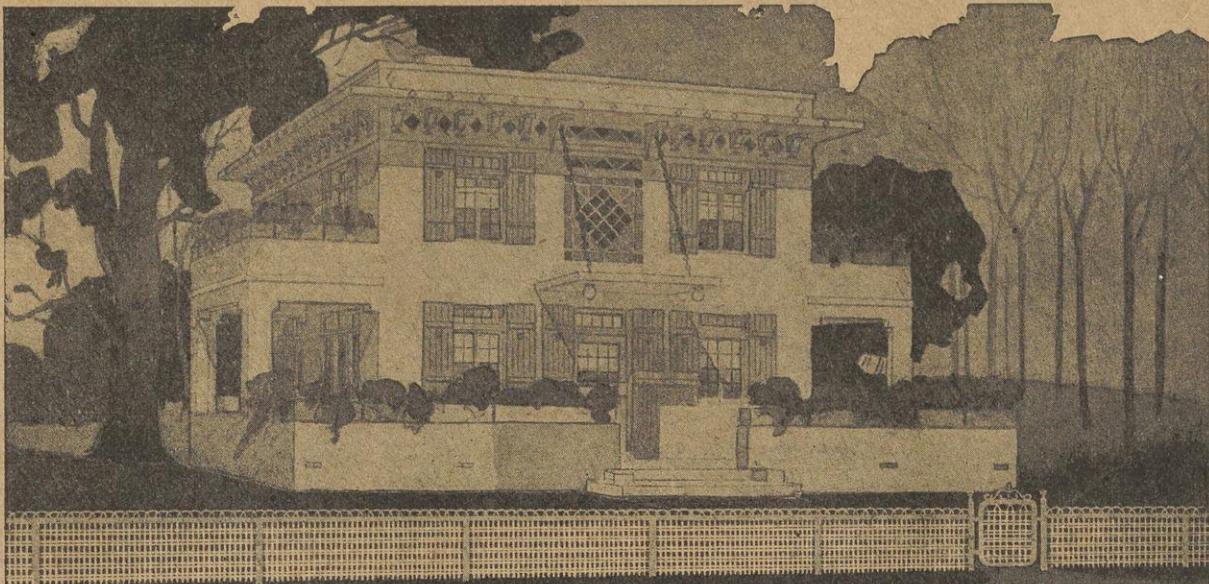
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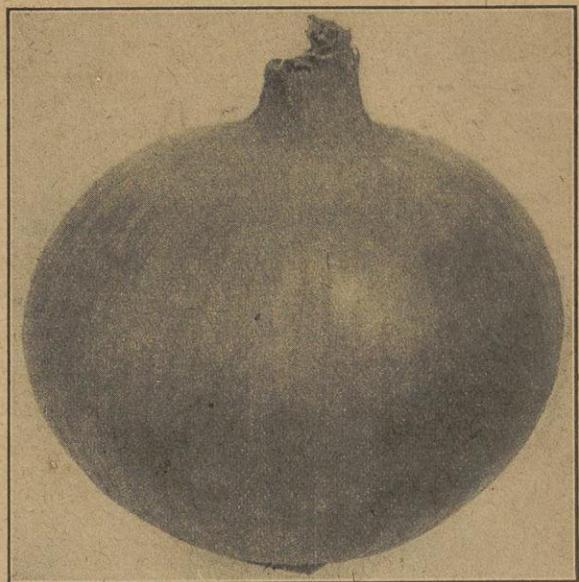
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The Canadian Horticulturist

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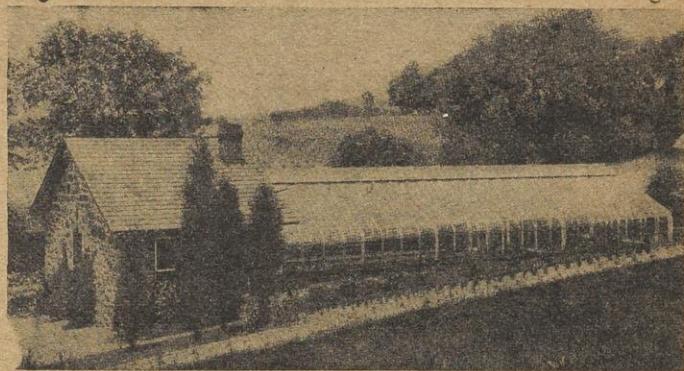
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The Dominion Department of Agriculture, after a careful calculation, estimated that in 1917 between \$20,000,000 and \$30,000,000 worth of food was raised on vacant lots and backyard gardens in Canada, and no doubt this was greatly increased last year.

The gardening enthusiasm will still continue because so many homes will have learned to appreciate to the full the true value of home grown garden produce as compared with commercially canned vegetables. That the world's food supply is still far below normal is of course well known. This knowledge, and a commendable desire to lower the high cost of living, will also considerably influence similar gardening efforts this year.

CULTIVATION.—When preparing your garden be sure to cultivate it well. Well cultivated ground is essential to success. It must also be carried on throughout the summer to keep down weeds and conserve the moisture in the ground.

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Established 1874

The Canadian Horticulturist and Beekeeper

(See Pages 137-144)

(See Pages 137-144)

Vol. 27

TORONTO, MAY, 1919

No. 5

Early Cultivation of the Orchard*

Prof. W. S. Blair, Kentville, N.S.

THE first fundamental necessity in orchard practice, is an early working of the soil. It is a fact that many of our growers delay this operation too long in the spring, notwithstanding the fact that orchard lands usually are fit to work before other farm lands. As stated at the start, there may be cases where late plowing will work to advantage, but on general principles it is wrong entirely and cannot, except in certain cases, be carried on to advantage.

Early cultivation promotes active root development because of the soil earlier becoming warm: air penetrating it more deeply, and more uniform moisture conditions having been brought about. Fibrous roots are formed very early in the spring from materials stored up in the tissues of the tree the previous season, and surely there is no advantage in destroying these, making it necessary for the plant to draw upon materials which should be used for other purposes to develop new roots. It is natural for this early fibrous root growth to be made near the surface for there is the available food, heat, and air suitable for early spring growth, hence delay in spring plowing may defeat the very object in view, and the orchard be no better than if not plowed at all.

Moderate plowing is best, and it should not be more than four inches close to the base of the tree, otherwise bracing roots will be injured. I do not see that much of the close plowing practiced is desirable. True it makes the plantation look nice, but to clip the grass several times close around the tree would not take much time and would look about as good. However, I like to see things looking nice, and you can plow close, but do not plow so deeply as you generally do. The only reason why so many of your orchard trees are leaning is that you have cut off the bracing roots. The side from which a bracing root has been cut or injured is affected thereby, owing to normal sap flow having been

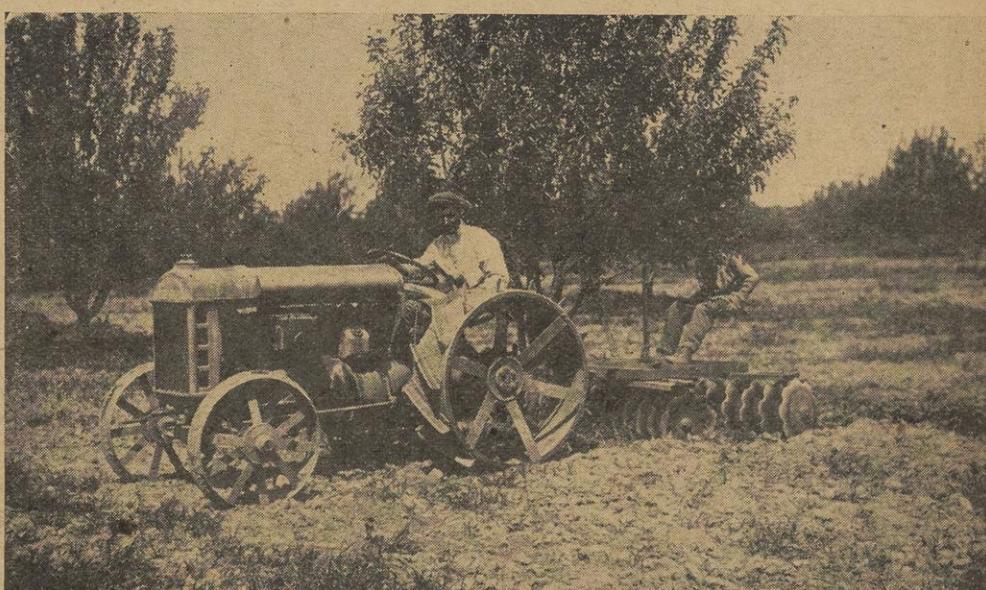
cut off. I believe there are many orchards that would be better producers if sod mulch was practiced in place of deep late plowing. This does not say, however, that the sod mulch is the best method, if plowing and cultivating is properly done.

The second fundamental necessity in orchard practice is shallow cultivation after plowing. It is necessary to cultivate deep enough to produce the fine earth mulch. It should be done often and shallow, about two inches. You thereby give the feeding roots a chance to get to where they can get the food you have supplied. It does not make any difference to you if later on these roots die in the surface soil for want of moisture, because in going after what they were intended for early, when the tree wanted it the most, they performed their part.

It was in 1904 that I pointed out in an address before the Nova Scotia Fruit Growers' Association the importance of early spring cultivation. Experimental data secured during that season, showed that land plowed on May 13th, contained on August 4th, 15.10 per cent of moisture, and that plowed May 26th, two weeks later, con-

tained on the same date 9.49 per cent of moisture, a difference in favor of early plowing of 5.61 per cent, or 132 tons more water to the acre to a depth of 14 inches. We are told by those who have studied the matter that when the soil moisture falls below 12 per cent, the tree fails to function properly. Early plowing may not appear to you to amount to much, and certainly in seasons of heavy rainfall it would not amount to as much as in dry seasons, but it is because we cannot determine the character of the season beforehand, and that the season influences subsequent crops, that we should not take a chance but adopt what will in the long run give the greatest returns.

Experiments conducted by the writer in 1905 indicated a soil moisture content of 8.08 per cent on July 17th, where clover was growing, as compared with a similar plot on which the clover was cut when 12 inches high and allowed to remain as a mulch, which on the same date contained 11.77 per cent. An adjoining plot at the same date cultivated four times to June 15th and seeded to a cover crop contained 13.89 per cent, and another



These light tractors are playing an increasingly important part in orchard cultivation. This one has made good in the Quebec province orchard where it is used.



The work of the strawberry weevil is here shown. Note the severed and partly severed buds and the punctures made by the snout of the weevil in the petals. (Photo by W. A. Ross, Vineland, Ont.)

plot cultivated six times and seeded to a cover crop on July 20th contained 15.65 per cent. The difference between the clover uncut and clean cultivation on July 17th was 7½ per cent, on the 2nd August it was 8.25, August 15th 8.20, ranging on August 30th from 5.90 on the sod to 14.11 on the area seeded to cover crop July 20th, a difference of 213 tons in favor of cultivating; and yet the rainfall during June and July was nearly five inches. The point is, can your fruiting trees do as they should, if the soil contains only 5 per cent. of moisture, and is it possible for the fruit buds to be developed and the fruit as well under such conditions? Nature will develop the fruit because the natural thing is to develop seed so that the species may carry on. So I say do not take a chance, but rather adopt methods which are fundamentally correct from every angle you may look at it, and I may say the only method we can pin our faith to covering a wide range of conditions.

I have no quarrel with the sod mulch man, but as just pointed out, in the case of the clover growth cut when 12 inches high on June 15th and again July 6th, and left on the ground as a mulch, the moisture content of the soil on August 15th was 5.64, as compared with 14.11 on the area clean cultivated to July 20th, a difference of 225 tons of water to the acre to a depth of 14 inches. Had there been a heavy mulch I can readily understand that the moisture conditions would have been different; for without a doubt the success of sod mulch is largely dependent upon the mulch supplied; in this case it was equal to 2½ tons of hay, but this was not sufficient to give the

protection necessary to prevent the drying out of the soil.

The success, therefore, of mulching, provided sufficient plant food is supplied, is dependent largely upon the control of the moisture supply. If reasonable water supply is assured there is no good reason why it cannot be practiced, but too light mulching may not give proper summer moisture, and if too heavy the too abundant fall moisture may prove injurious. The natural moisture conditions of the soil, or its ability to obtain a moderate supply by capillarity, is a big factor. I have in mind two orchards at Abbotsford, Quebec, both owned by one man and situated on boulder soil, where it was about impossible to cultivate and where the practice of cutting the grass with a scythe several times was followed. The upper one had not been profitable. The lower one was profitable. One had a stunted, ill-nourished appearance and the other looked healthy, and yet of the two the upper orchard had been fertilized the best. I ventured the suggestion that his whole trouble was due to lack of summer moisture in the upper orchard, and to find out took with me several soil samples to a depth of 12 inches on the middle of August, to find out the moisture content. The analysis revealed the fact that the lower orchard contained 16.42 per cent and the upper one 8.21 per cent. of moisture. Another case I have in mind is a small orchard from which grass was always cut, yet which remained healthy and productive, and the soil of which was always moist. Along the edge of this orchard a small stream flowed continuously, feeding

water into the soil, making up for the loss of moisture due to the drying out resulting from the growth of the grass and trees, and giving ideal moisture conditions for growth. I mention these observations to point out that situation may have a lot to do with the success of a method of orchard management.

Sod Mulch vs. Tillage.

A five years' test conducted by Professor U. P. Hedrick, of the New York Experiment Station, comparing the sod mulch and tillage methods, shows that the cost of production on the sod mulch was \$53.75 per year and on the tilled \$76.06, an advantage of \$22.31 in favor of the sod mulch, but the net income from the sod mulch acre was \$71.52 and from the tilled acre \$110.32, an advantage for tillage of \$28.91.

In tests made in August at Macdonald College, Que., the soil under a mulch so heavy that no grass grew, contained 18.12 per cent of moisture, and the adjoining plot in grass from which the grass was cut when six inches high and allowed to dry, but which gave very little protection as a mulch, contained 11.95 per cent, and the plot allowed to grow and cut for hay contained 6.11 per cent. A plot cultivated and seeded to crimson clover contained 16.16 per cent, and the clean cultivated plot without cover crop 16.31 per cent of moisture. The old orchard of Fameuse, never cultivated and the grass always kept cut every two weeks with the mowing machine, and lightly dressed with manure each spring, contained 10.84 per cent of moisture at the same time.

It should be kept in mind that in addition to moisture removed by the growing plants, large amounts are lost from the surface of the soil by evaporation. The principal object of cultivation is to conserve this and at the same time of course prevent growth of weeds or grass, which would not only take up moisture but plant food as well. It will be seen at once that an orchard with a dense top throwing much shade would materially lessen the evaporation from the surface soil, and for this reason the problem of moisture control may be quite different in various orchards.

Cover-cropping.

The matter of cover-cropping must be considered if we are to obtain best results. As pointed out, it may be objectionable to have excess of moisture late in the summer, for late vegetative growth may be the result. The cover crop will prevent this and at the same time hold excessive plant food which might be lost during the late fall, and produce material necessary to turn under to form humus. Too early seed-

ing of a cover crop may not be desirable. In one instance a cover crop seeded June 15th seemed to dry out the soil too much early in August, the soil on this plot containing only 7.87 per cent of moisture, whereas a similar cover crop seeded July 20th reduced the moisture to only 14.11 per cent. It should be kept in mind, however, that the soil on the late seeded plot was cultivated on July 6th and 20th, which of itself would help to retain the moisture. The fact is, nevertheless, that cover crops have a very drying effect on the soil, and it is because of this fact that they are so valuable in helping to check late

growth and promote better ripening of the wood and maturity in fruit buds. Results of tests at Macdonald College show the following moisture content of soils late in September seeded to various cover crops at the same time:

No cover crop	14.9
Crimson clover	12.7
Red clover	12.3
Timothy and Red Clover ..	11.9
Buckwheat	11.6
Winter rye	11.6
Rape	10.1
Oats	10.0
Oats and clover	10.0
Millet	7.24

Where the fertility in the soil is located, there is where the roots go. By having the fertility fairly deep in the soil the roots will naturally go there for their supply of nourishment for the plant. If you top dress and work in the soil the roots will naturally work nearer the top of the soil for their nourishment and the plant will not stand dry weather as well, as if the roots were deep in the soil.

Ploughing.

On heavy, loamy soils I prefer to plough in the fall of the year, but on sand loam soils I would just as soon plough in the spring after top dressing with manure in the winter. In either case I would begin cultivation by harrowing and discing as early in the spring as possible and continue until planting. I use a float in place of a roller for the levelling and pulverizing of the ground before marking.

I have my marker made so that my rows will be 42 inches apart, planting in the row from 24 to 30 inches apart.

The digging of the plants is done with the five or six tined fork. The whole row is dug from the previous year's set bed. Plenty of wet sacks are kept in the field to cover the plants to keep them from drying out before being cleaned. It is policy to dig the plants just a short time before you are ready to clean them.

Cleaning and selecting the plants should be done very carefully. Discard small and dark-rooted plants and remove all old laterals and dead leaves. The roots are of a light yel-

Starting the Strawberry Plantation*

Jas. E. Johnson, Simcoe, Ont.

WHEN selecting a site for the growing of strawberries it is desirable to choose a piece of ground just loamy enough for good drainage situated at a fairly high elevation, which location is warm and not subject to late frosts in blooming time. Good air drainage is important in the growing of strawberries, while you may make a success certain years in growing strawberries on low lands you are also taking a great risk of frost at blooming time, except close to large bodies of water.

The ideal soil is a good, rich humus-containing loam, which is well drained with clay subsoil. The one condition

of soil on which it is never advisable to plant strawberries is fresh-ploughed old sod. I prefer to follow strawberries after a good crop of corn or beans, which has had the best of clean cultivation.

After the selection of the best available site has been made comes the immediate work of preparing the land for planting, and as strawberries are heavy feeders on the soil they require from 30 to 40 tons of manure to the acre to be applied just before ploughing. I prefer ploughing the manure under rather than top dressing and working in with the discs, owing to the fact that the strawberry plants have long roots, the feeders of which will soon feed the plant from the manure.

*Extract from a paper read at the last annual convention of the Ontario Fruit Growers' Association.



The general improvement in the prospects for fruit growers is creating renewed interest in the industry in British Columbia. Greatly increased fruit shipments from the Okanagan Lake District are effected this year. (Photo by G. H. E. Hudson, Kelowna.)



An adult strawberry weevil. This pest is sometimes very destructive to strawberry plantations. A remedy for them is to coat the plants with a dust composed of one part arsenate of lead and five parts finely ground sulphur. (Photo by W. A. Ross, Vineland, Ont.)

first week in May, keeping the tops of the plants wet from the time they are cleaned until planted. Endeavor to get your plants dug and planted the same day if possible. There are many methods in use for planting strawberries, spade, dibble, ploughing a furrow, and the planter. I have used both the spade and the planter and will say that if the spade is to be used it has to be used by those experienced in planting with a spade. The trouble is that a great many planters leave an air space at the bottom of the plant when the spade is used. The planter is especially good in dry weather, as the

low color. There has been a great deal of money lost by the strawberry growers in not being more particular in their selection of plants.

The time to set plants depends on your location. In Norfolk County

I prefer the

plants are watered, which helps to pack the soil around each plant. The dibble has been very successful with a good many planters, especially in light loamy soil.

It is necessary to exercise considerable care in planting. Have the plants set so that the top of the crown is level with the top of the ground. If planted too deep the tender leaves cannot push their way through the ground and the plant is either stunted or dies, or if set too high the roots dry out and the plant dies.

Cultivation should begin as soon as planting is completed. Use a cultivator having small teeth that will keep your ground level. Also work close to the plant without covering it. Take care not to cultivate too deeply, bearing in mind that a dust mulch is what is required. Cultivate often enough so that the weeds are killed before they come through the ground, and as soon as the runners start only cultivate in one direction and narrow your cultivator until the matted rows are 15 inches wide. Place the runner cutters on your cultivator and keep the rows 15 inches wide and cultivate until frosts.

It will be necessary to go over your newly planted field twice to keep all the blossoms removed, as the young plants cannot grow to be strong, healthy plants and produce both laterals and fruit.

Possibilities of the Small Fruit Farm

WE of this generation are inclined to worship at the shrine of "bigness." Fruit growers are no exception to the rule. The men who produce apples in train loads, or the growers whose small fruits are measured in thousand crate lots are the ones who command our admiration. There are some, however, who believe in the merits of a little farm well tilled and who would rather see a country of small farms, each owned by the man who works the land, than a country of big estates with few employers and many servants. One of these is A. B. Harkness, of Winona, in the Niagara fruit district of Ontario. Mr. Harkness was for a time manager of the Jordan Harbor Experimental Station. Now he is putting his faith in the small fruit farm to the test. At the last convention of the Ontario Fruit Growers' Association he told of his farming experience. Here is his estimate of the small fruit farm:

"I am satisfied with the small fruit farm. On my small place of nine acres there are six acres of light soil and three of heavy. A grower on so small an acreage must be near a shipping point and he should be in a district

where he has the advantage of a co-operative association, which enables him to buy supplies at wholesale prices and to secure quantity express rates in shipping. The small grower does a large part of his own work and gets good wages, and I don't think that the wages of the small fruit grower, like the wages of labor, will ever be low again.

"It is important that all of the land be used. For instance, on my own place there is a creek and in 1914 the creek, including its banks on either side, occupied a strip of land 40 feet wide. Now we are cultivating right to the banks and to still further utilize the land we have a row of Wagner apples running along the creek.

"The investment in expensive machinery is mentioned as an argument for the large farm. The small holder does not require expensive machinery. For instance, he can dispense with the power spray pump and use a hand power machine. The power machine may do better work, but good work can be done by hand. I believe too that the small garden tractor is destined to play an important part on our small farms.

"The small holder can make bees and poultry important sources of income. In fact bees are almost a vital factor in successful fruit growing. We plan to have 20 to 50 colonies or perhaps more, and I find that my bees have been a success. In 1916 nine colonies produced 800 lbs. of honey. In 1917, 18 colonies produced 900 lbs. and in 1918, 22 colonies produced 2,400 lbs. all white honey.

What Is Grown.

"Our three acres of heavy soil are planted out to small fruits, mostly raspberries. I question if peaches are the best crop for the small farm. When I bought my place there were 500 peach trees already on it. The first spring we took out several but not enough. In 1917 I took out more, planting raspberries as the peaches were removed with one row of tomatoes between the raspberries. That year we realized \$160 an acre from the tomatoes that were intercropped. The next summer I had a fair crop of raspberries and the following summer a full crop. On a small place we have to grow money crops from the first year, while we are planting for permanent results. Tomatoes is one of the best crops for interplanting. I either sell at the factory or basket them. In 1914 I set out 500 black currants which yielded 480 lbs. in 1916, 980 lbs. in 1917 and 1,350 lbs. in 1918. Asparagus is a good crop for the small fruit farm, but it takes about four years to come in.

"All ground should be under drained for the greatest results. Between the rows of asparagus we grow radish and lettuce. These are shallow rooted and come off early. One of my neighbors has followed this practice with marked success.

"I stated that peaches have not been a particularly profitable crop. In 1914 I had no crop at all. In 1915 and 1916 I had a crop, but the prices were very low. In 1917 the peaches were more profitable, but again in 1918 the crop was very poor.

"I bought my farm in 1914. Practically all of the planting, excepting the peaches and raspberries, was done last year. We set out 226 plum trees and some pears, quince, apples, cherries and grapes. In 1916 we had 50 baskets of peaches, in 1917, 250 baskets and in 1918, 257 baskets, this from 430 trees. My one comment on it is, no money in it.

"Practically my whole income was made through inter-planting. Last year I sold from my small place \$2,410 worth of produce. Baskets and the labor of picking came to \$390 odd dollars. My permanent planting is not yet yielding full returns so the future holds out promise of greater reward."

Fruit Prospects in Nova Scotia

Manning Ells, Port Williams, N.S.

NOW that the English market is again open to apples from this side of the water and conditions as regards shipping are likely to be more nearly normal before another harvest season comes around, fruit growers in Nova Scotia can look forward with confidence to some few years of exceptional prosperity. Even during the days of the embargo, now so happily passed, the grower, who with faith in his business and the future went on giving his orchard the usual good attention, never had more prosperous times. Of course the future looked black and the call was for beef, grain and other most necessary food crops. No one could say but what the next apple crop might have to harvest itself for want of a market, for it is remembered in normal times 85 per cent of the apples from Nova Scotia were sent across the water.

The various agencies, however, that control seed time and harvest never united during all the years of the war to produce a big crop. Neglected orchards gave very little, and only those with best attention yielded the average

of past seasons. Consequently, a limited production was fitted to a limited market, and the business as a whole sort of marked time, not going ahead very much but not going back. Indeed the last decade has not seen any increase in the production of apples in Nova Scotia. Since 1910 practically no new orchards have been set out. Over production was the cry at first, and then the war a few years later kept matters as they were.

The Fear Unfounded.

Now we know that the over production cry was a bugbear that never existed in fact. With production stationary or growing less in all eastern America for the past ten years, our market has increased fourfold. People are learning the value of fruit in their every-day diet. The merchants in any of our towns that ten years ago sold one or two barrels of apples a week, to-day sell from five to ten. In the year just past some 65,000 barrels of Gravensteins were shipped from the Annapolis Valley and 90 per cent were marketed in Nova Scotia and New

Brunswick. Five years ago 20,000 barrels would have glutted these same markets to stagnation. What does this change mean? For one thing money is more plentiful; at first fruit was looked upon as a luxury and eaten as such. Habits of eating are hard to change, but as more fruit was taken into the diet more was required until now the working people in all our towns are a fruit eating people, and these habits, as they mean better health, will never be broken.

The Nova Scotia apple grower, depending as he did on the English market, never appreciated or catered to the local market in Canada; the war forced him to do this and greatly to his advantage. Now he has two strings to his bow and can use one or the other as each pays him best, and both will pay him well if the orchard takes the premier position it should occupy on Annapolis Valley farms, and other crops be built around it as the farmers' individual conditions call for them.

In looking for a market for future apple crops we should not lose sight of the fact that marketing conditions in England have changed greatly since the years before the embargo. Prices are on a different plane, for the people, the great class of working people, have more money to spend and values are different. For the next few years at least a barrel of apples in the English market should net twice what it did before the war; the old days of from ten to twenty shillings gross sales will be a long time in returning.

During the war Halifax has become one of the great shipping ports of the world, and with splendid new terminals and docking facilities no one can doubt but that this position will be maintained. As apples are one of the best paying freights and one of the easiest to handle, our position near this great ocean port gives the Annapolis Valley a wonderful advantage when it comes to shipping fruit. But as our fruit growers have wonderful opportunities they also have great responsibilities. No market will yield its best returns unless catered to and given what it requires, and good fruit to-day cannot be produced by haphazard methods. We want larger orchards that can be looked after in a scientific manner because it pays good returns to do so. The small orchards on the small farms never can give a large amount of high grade fruit as a whole, because the small farm cannot afford the necessary equipment in addition to that needed for other lines of work.

With all our natural advantages for fruit growing it looks like a great mistake to grow crops in Nova Scotia that



The promise of a big crop in an Ontario orchard.

will compete with apples for attention at the same time. In the writer's opinion at least, potatoes and apples cannot both be handled as money-making ventures on the same farm; one or the other will suffer. With the work that is being done at our experimental farms and stations to show the best ways in which to conduct the orchard industry, and with the best market we have ever known opening right at our doors, it is surely up to the producer in Nova Scotia to make good.

Raspberry Culture

F. L. Gabel, Dundas, Ont.

RASPBERRY culture has great possibilities. To secure a crop you must thoroughly clean and manure the land one year previous to planting, bringing the soil to the highest possible state of cultivation.

I have had very good results by fall planting young shoots that lay dormant all winter. These start to grow with the first vegetation, and thereby strengthen the first season canes.

I would always advise, either in spring or fall, the planting of young stock. If you plant old roots you are more likely to spread disease, "which is very much in evidence" throughout our berry districts.

The Marlboro is early and the Cuthbert a late variety, and hard to beat, although the Herbert is an exceptionally good producer but inclined to be soft. In planting I would advise nothing less than a space of seven to eight feet, making it possible to cultivate with a team. You can secure a large crop in extreme hot or dry weather by thoroughly cultivating your soil, holding and creating a moisture which is absolutely necessary for the vitality of the canes.

The tops of the canes should not be trimmed in the fall, as the fly commonly known as the Snowy Tree Cricket, has in the past ruined a large number of patches. It pierces the cane and deposits a number of eggs generally on the sunny side of the cane in the fall. They do not hatch until the following June. The only cure is to cut off the affected parts and burn. The same thing applies practically to all raspberry diseases, Curl Leaf, Cane Borer, etc., which should be dug out and destroyed.

The acreage of raspberry plantations is decreasing alarmingly fast, due in some cases to the shortage of labor, lack of cultivation, and the extreme weather of 1917 and 1918. I consider now is an opportune time to plant new strawberry and raspberry beds. Our factories are compelled to export berries in great quantities to meet their demands.

What Strawberries Shall We Plant?

Strawberries are grown either for home consumption or for market. While those grown for market should be as good as those grown for home use, the fact is that in some cases those produced for market are grown more because of their productiveness and shipping quality than because of their flavor and general palatability.

The most popular variety, taking the whole of Canada, is undoubtedly the Senator Dunlap. This is a very hardy variety, and the fruit is handsome in appearance, good in quality, and is an excellent variety for canning. It is desirable both for home use and market. Like all varieties, it has some faults, the chief one being that on account of its making such a large number of plants the fruit begins to get small too early in the season in parts of Canada where dry, hot weather often occurs during the fruiting season; hence, where there are such conditions some other sort is desirable. In the Parson's Beauty and Glen Mary there are two commercial varieties which are succeeding very well in many places in Canada, especially in eastern Canada. These are both large varieties and keep their size well to the end of the season. The Parson's Beauty is better in quality than Glen Mary and the latter is not very desirable for home use, but both should be tried to determine which succeeds best in the particular locality and soil where they are grown.

The Williams is a firm berry, which is a very popular commercial sort in western Ontario, but is not very popular in most other parts of Canada. It has a white tip which increases its shipping qualities but lessens its value when it is to be eaten raw. Splendid is a rather early variety which has made a good record in eastern Canada, and Beder Wood is also another reliable early sort. The Marshall is one of the best in quality but must be grown under high cultivation in eastern Canada to get fair crops and is not now much grown on account of its light cropping, but on the lower mainland of British Columbia it does well and is one of the best commercial varieties there. The Magoon is also a commercial variety which is also grown mainly in British Columbia.

The foregoing are the leading commercial varieties in Canada although to these might be added Sample, Pocomoke, and Warfield as succeeding very well in some places. For the prairies, a variety called Dakota, rather small in fruit but very hardy, has proved one of the most reliable, though Sen-

ator Dunlap also does well if well cared for.

The best varieties for home use in eastern Canada are Senator Dunlap, Bubach, Parson's Beauty and Wm. Belt, the latter and the Bubach being large varieties of good quality. In British Columbia the Royal Sovereign, Paxton, and Marshall are three of the best for home use. The two former are English varieties not satisfactory except in the mildest sections of the Dominion. The Everbearing strawberries are particularly desirable for home use. Two of the best of these are Progressive and Americus.—Experimental Farms Note.

Results From Fertilizers

Plots on which nitrate of soda (five pounds per tree, scattered in a circle beneath the outer extremities of the branches) was used, either alone or in combination with other chemical elements of plant food, returned an average cash gain per acre annually, for a 5-year period, as recorded below:

Orchard of J. E. Fultz, Torch, Athens County	\$112.75
Orchard of John M. Walker, New Matamoras, Washington County	118.00
Orchard of S. L. Canfield, Flem- ing, Washington County ...	146.50

During this period of five years' work, on account of the freezing weather of May, 1913, the crop for that year in all our experimental plots, as well as in most of the orchards in central and southeastern Ohio, was totally destroyed. Therefore, the gain recorded in the foregoing statement, for each series of plots, is in reality that from four crops produced in five years—which is not a bad record for orchards which practically had been abandoned for years and considered as farm encumbrances rather than possible sources of profit.—Ohio Experiment Station, Bulletin 301.

Planting trees should be done when the soil is fresh and moist. In general, avoid applying water when planting, except towards the end of the operation, when before filling in the last few inches a deliberate soaking may be given; when this has soaked away the filling in can be completed and the planting finished by firming the soil well with the foot.—C. F. Clark, Toronto, Ont.

Barnyard manure makes an ideal fertilizer for strawberries, because it carries with it essential plant-breeding elements and stores the soil with humus.

A Small Orchard, Its Care and Its Profits*

Frank Shearer, Vittoria, Ont.

SMALL orchards of standard varieties rightly located, and well cared for, will return good profits. This has been my experience and it is from the results I have obtained that I am speaking.

My orchard contains an acre and a half with sixty-five bearing trees set on the square, 30 feet apart and is about 40 years old. The trees are too close together, and there are too many varieties: Wagners, Greenings, Baldwins, Spies, Russets, and Grimes Golden, and a few odd trees of other varieties. It is planted on fairly good sandy soil, with good soil and air drainage; this last a feature almost entirely overlooked in years gone by. We began taking care of the orchard sixteen years ago. Up to that time it was in sod and sometimes had a crop and sometimes did not.

The care of the orchard may begin any time after the crop is harvested. Put the manure on any time convenient during the winter. A light coat regularly gives best results. We set the spreader at three loads to the acre or about the same amount spread from the wagon.

Scraping is another winter operation. With a dull hoe scrape off the old rough bark from the trunk and large limbs, being careful not to dig deep enough to show the green wood. This puts the

trees in better shape to obtain results from spraying.

Trimming is another essential operation. It can be done any time after the severe cold is over. Cut away all surplus wood, let the sunshine in and keep the tree in shape and in bounds. Clear the brush out and burn along with any rubbish. If this is done regularly a man can give a fairly good trim to four trees in ten hours.

SPRING WORK.

As soon as the spring opens up we try to get the orchard ploughed and worked down. This is needed especially if we have a very dry spell the latter part of May, as then frequent cultivation tends to hold the moisture. One of the best instruments for cultivation is the spring tooth harrow. In our district we like to plough in April and cultivate from the middle of April until the last of June, according to the season. A fairly heavy seeding of buckwheat finishes the season's work.

In the spring we try to follow the spray calendar as given by the Department and the Association, using the lime sulphur and lead spray entirely. The dormant spray is 1 to 8 or 9, and the last two 1 to 27 or 30 with 2½ pounds lead to 40 gallons. Only once or twice have we used the fourth spray for scab.

Hand thinning has been practised to a limited extent with very beneficial results. It has tended to give regular crops and much better apples. It is

needed much more on some varieties than on others. The Grimes Golden are very heavy setters of fruit and require thinning, more perhaps than any other variety. With a heavy set and little June drop we try to leave only one apple in a place or an apple about eight inches apart on the limbs. One year from ten trees of Grimes Golden we packed 17 bbls. with more culls than packed apples. The next year with practically the same set and two men, two days thinning, we packed 57 bbls., a gain of 40 bbls. for four days' work. The next year the same trees gave a good crop.

The apples are picked and put in barrels or crates, taken to the barn and all packing is done in the barn. There is a gain in the season in this, as the packing can go on during wet mornings and rainy days, and picking is done during good weather.

We pack in barrels, two grades: 1st and 2nd, with occasionally 3rd, or domestics, if the conditions warrant it. The apples are handled by our local Association, sold by the manager and the returns are pro-rated to the members according to the value of the different varieties on the market.

Now for the financial end of the cost.

FINANCIAL STATEMENT.

	COST
5 tons manure, spread.....	\$ 7.00
Scraping, two days.....	5.00
65 trees, trimming (4 trees per day).....	40.00
Bush removing and burning.....	10.00
Ploughing.....	5.00
Cultivation (6 times).....	8.00
Spraying: Material.....	\$18.00
Time.....	15.00
Interest and taxes.....	40.00
Interest and depreciation power outfit.....	40.00
 Total yearly cost.....	 \$188.00
	RETURNS.
1907.....	64 bbls.....
1908.....	98 ".....
1909.....	220 ".....
1910.....	154 ".....
1911.....	170 ".....
1912.....	238 ".....
1913.....	147 ".....
1914.....	190 ".....
1915.....	52 " (hail hit).....
1916.....	111 ".....
1917.....	67 ".....
1918.....	203 ".....
 1714	 \$4,125.00

This gives a yearly average of 143 bbls. or 2.2. bbls. per tree per year.

The cost of barrels, spray material and manager's commission have been taken out of these amounts but not the cost of picking and packing. This item has grown from 50c. per barrel in 1907 to practically 80c. in 1918. The cost items are figured on basis of \$2.50 per day for the man and \$5.00 per day for man and team. The cost of caring for the small orchard is necessarily greater than in the large one and while I do not advocate the setting out of a small orchard, the returns from mine have been such that I have set twenty-five more acres beside it.



Growing onion seed is a comparatively new industry in British Columbia. This illustration shows seed being picked on the Casorso Ranch, Kelowna, B.C.

The Spray Gun: Its Use and Abuse*

Prof. P. J. Parrott, Geneva, N.Y.

If they are strikingly successful, all new and notable weapons for warfare against injurious insects are sure to be credited in the public mind with powers that they do not possess. Let a novel invention prove itself and more often than not it will be trumpeted abroad and headlined as the final and decisive weapon. What has this to do with the spray-gun? It is this: No invention of spraying machinery in recent years has caught the imagination and made a stronger appeal to the practical sense of our fruit growers than has this new contrivance. Certainly it is not too much to characterize the new system of applying spraying mixtures as marking an epoch in the development of spraying methods adapted to the needs of the modern commercial orchardist. Economy in time, labor and materials are its principal achievements.

It may be safely said that no extensive fruit grower can afford to be without the spray-gun as an accessory to his usual spraying equipment. However, he will do well not to acquire a greatly exaggerated sense of its value and importance, and he should not be so obsessed with what the spray-gun can accomplish as to undervalue the teachings of long established spraying practices. He must still have an eye on the safety of the spraying to fruit and foliage and on proper field service to insure efficiency of the treatments and reasonable cost of the operations. Of the three elements, stress should be placed on the safety factor.

Spraying with any of our well-known insecticides and fungicides is attended with a certain amount of danger, and sometimes the injury is very severe. The volume of the liquid discharged from a spray-gun under high pressure is large, and it is an easy matter to overspray certain portions of a tree and undertreat other areas. Close spraying with a solid stream may also produce russeted, lobsided apples, which have the appearance of having been injured mechanically. Such results can, however, be largely avoided by careful manipulation of the controlling devices, in order that the spraying liquid may strike the leaves and fruits as a fine mist and by the operator directing the nozzle at different angles to the tree so that the application may be uniform to all surfaces.

Select, as far as possible, days for

* Extract from a paper read at the recent annual convention of the New York State Fruit Growers' Association, held in Rochester, New York, which was attended by a number of Ontario fruit growers.

spraying when the material will dry quickly on the foliage. Follow the approved spraying schedule because, when sulphur preparations are used, trees apparently develop immunity to spray injury as the season advances, provided they have previously received the full complement of treatments. It is also important to bear in mind that, in so far as is possible, applications of lime-sulphur and arsenate of lead should not be made during periods when extremely high temperatures prevail.

An Early Spraying Experience

J. C. Harris, Ingersoll, Ont.

Twenty-four years ago I had a fine crop of apples in a four-acre orchard, but they were wormy. I saw a spray pump advertised in *The Canadian Horticulturist* by a United States firm, there being no Canadian firms manufacturing them at that time. Later I purchased one, a hand pump, and sprayed five times. In August some buyers drove by and wanted to buy the crop. I wanted to sell by the barrel, but they wanted to buy the crop. I was young and inexperienced and did not know what to ask but made up my mind that I would take \$400 for the crop, which was \$75 more than the orchard had ever yielded before. I got them to put a price on the crop, and to my surprise they offered \$600. Finally I sold it to them for \$700. The next year I set out 10 acres more in apples. To-day this land yields me a return of 10% on an investment of \$1,000 an acre. The fruit growers in our district are looking to the future of the fruit industry with every confidence. In our experience winter injury is often due to over pruning and working the ground too late in the fall. We are not bothered in sod land at all.

Thinning the fruit is beneficial, as it is not so hard on the tree. It may not promote annual bearing but it yields excellent returns.

What Are the Best Stocks?

Prof. J. W. Crow, O.A.C., Guelph, Ont.

ALTHOUGH fruit growers should be able to see as far into a stone wall as anyone, nevertheless there are certain important practices which have come down to us as legends and which we continue most foolishly to take for granted. I am thinking particularly of the stocks upon which our fruit trees are propagated, 90 per

cent of which are unsuited to the severe winter climate of the province of Ontario or are otherwise undesirable. What is the best stock for pears, Japan plums, European plums, sour cherries, sweet cherries, peaches, apples? What stocks for these fruits are best for the colder climates, milder climates, light land, heavy land? Which stocks are resistant to disease or to insect pests? Which are more vigorous or longer lived? The only answer is that we do not know. And we shall not know until our growers, to whom these things mean dollars and cents, talk right out loud and say, "We want to know." Meantime we shall continue to lose a million dollars or so annually for lack of the information, because it is no exaggeration to say that a large proportion of the losses occurring among fruit trees can be laid directly to the unsatisfactory character of the stocks in use.

Do not let us blame the nurseryman. He gives us what we want, and if we want something different we shall first have to find out what we do want and then ask him for it. He cannot be expected to undertake such extensive and lengthy experiments as would be requisite for solving this problem. The indications are that until fruit growers take up such matters through their organizations no other agency is likely to undertake the task.

Gooseberries Popular

Gooseberries give promise to become more popular. This is due to the demand for small fruits and to a growing scarcity of cherries and berries.

While gooseberries are sometimes attacked by insects and diseases, control methods have been worked out to such an extent that the currant worm may be controlled by spraying with arsenate of lead; anthracnose, with Bordeaux mixture; and mildew, with potassium sulphide.

Notes On Strawberry Growing

J. E. Johnson, Simcoe, Ont.

NEVER follow strawberries with strawberries. They are gross feeders.

I would not recommend the Warkfield variety. It is a shallow rooter.

We have got to grow berries that are easy for the pickers to pick.

We should all of us try and keep a record of our costs as well as we can on all we produce. Consumers are looking on us as profiteers. They hear of fabulous yields and think they are only average yields. If we kept costs we could show what our actual returns are.

Control of Swarming in Production of Extracted Honey

By J. L. Byer

CONTROL of swarming while producing extracted honey, is as a rule no great problem, provided the beekeepers can make at least one visit each week to the apiary during the honey flow, and as the experience I am about to relate does not come under that kind of management, perhaps the heading should be "Control of swarming in long range beekeeping."

On June 6th, 1918, I closed the deal for an apiary near Fenelon Falls, a point about 70 miles from home, and of course at that distance weekly visits were out of the question, and as no one was on hand to look after the bees on the premises naturally a plan had to be thought of suitable to meet the situation. Nothing original is claimed in what we decided upon, as it was simply a modification of the well-known Demaree plan—a plan by the way that will give the maximum of honey with the minimum of labor, I am firmly convinced, regardless of what many advocates of weekly examinations may claim to the contrary. I had abundance of drawn combs for super purposes, and by the way, without that item to work with I know of no plan to control swarming and get good ripe honey, whether bees are near or far from home.

The season '18 was late, as all will recall, and on June 6th dandelion bloom was just about over in that locality. I tried to clip all queens but had to give up as bees would rob, so I started the season with less than one-third of the queens clipped—a great handicap indeed, as all who have experienced will admit. Bees had been poorly wintered, and on the date mentioned many were still weak, while others were in need of supers, a very few having started cells. But as fruit bloom was just over, no swarming occurred. On June 6th, I examined all colonies and marked those short of stores. Any that I thought might need room inside of three weeks were given an extra body of combs—a few were given two full depth bodies—10-frame Langstroth.

But these extra bodies were not placed on top as we would do at home when room is given just as actually needed. They were placed UNDER the brood nest, as by so placing them no harm would happen to the brood even if the weather did get cool later on, as it is about certain to do here in Ontario during early June.

After putting all in as good shape as I could, I left for home, and my next visit was to be determined by weather conditions. Bees in home district did nothing for next two weeks and I began to get uneasy about the bees up north as many were short of stores when I left them. A good friend near there, Mr. J.

D. Oliver, wrote me about June 25th, and from what he said his bees were doing, I thought best to run up and look over the yard. However to be safe against possibilities, I took up some sugar with me. I found that during my absence the bees had built up well, the stronger colonies having stored a little, while weaker colonies that were short of stores had been brood rearing heavily and were now still shorter of food. As much equalizing as was possible was done as I wanted all to be of nearly equal strength at time I wished to give all the same treatment. Extra bodies were given as needed and I again left them. There was practically no alike in the district and our hope of a honey crop came from a very late white clover bloom, which had been held back by cold, dry weather in spring and then rushed on later on the ranches by a series of downpours of rain with warm weather, at a time when we had no rain in York County at all. On July 5th Mr. Oliver again wrote me stating how his bees were doing, and knowing what our bees were like on June 25th, I thought best to go up again. At this visit all colonies with the exception of four or five too weak for the operation, were treated as follows, regardless as to whether there were any queen cells started or not—if I remember rightly about half a dozen were making preparation for swarming, while all colonies to be treated had from two to three bodies of brood and honey. One comb of brood was placed in bottom story and balance of this body filled with drawn

worker combs. If queen was detected while looking over the combs she was placed in this lower story thus prepared, and if not seen, then all bees were shaken in front of hive and allowed to run in at entrance. A queen excluder was placed over the brood nest thus prepared with queen below, and on this a body of drawn combs was next placed. Brood was looked over and as far as possible all placed in one super and that super was placed on top, whether there was one or more supers between that and brood nest. Where more brood was present than could thus be disposed of, it was piled on the few weak colonies in the yard to be dealt with later on. As I wished to come up eight days later to bring queens and make up increase by forming strong nuclei for this brood in top stories, I did not need to give so much extra room at this time. Eight days later I came up again and first of all I looked to see how many queens were above, as I felt sure that I would miss a few when shaking bees in front of hives, as I had to do in my hurry as I had little time at my disposal when doing the work. Only three were above so I was well satisfied. It was an easy matter to make strong nuclei as I had simply to take out three or four combs of brood as required and carry them to a new stand and give them a queen. Of course the brood was in as fine shape as could be wished for and so handy to get at. Abundance of room was given and I did not come up again till July 29th, when the flow was very heavy but white clover was fast drying up at that date.



Poultry and bees make an ideal combination. So thinks Mr. Murdin, of Gladstone, Manitoba, who is here seen at work in his apiary. Note the location and excellent shelter from winds provided by the trees. (Photo by Immigration and Colonization Department.)

On this trip I had my heaviest work, as that "fly in the ointment," superseding queens, was now cropping up to give a little trouble. Lifting off all those heavy supers, many colonies had three or four full depth supers about filled with honey now, certainly was heavy work, but it had to be done, so as to make things safe till my daughter and I could come up ten days later to do the extracting. I found about a dozen colonies drawing out cells and from general conditions noted I am satisfied every one was a case of supersedure. However, I cut out every cell, and where brood nest appeared to be crowded, I removed brood combs replacing with empty ones only to find out later that such combs were not used by the queen at all as she was failing and at the end of her usefulness. When we came up to extract the honey, three colonies had swarmed, leaving about 150 pounds of honey in each case. I counted the bees as little loss, as I had the crop and there was no buckwheat flow later on. While taking off the honey three more swarmed and were cared for, and that was all the swarming for the whole yard insofar as I know, and I am positive that none swarmed during the clover flow except the three mentioned. The yard averaged 100 per colony and all things considered, I had a lot of pleasure in caring for it with the few visits mentioned, even if I did have two or three days' heavy work. Many, in advocating a plan of this nature, insist that cells be first started before putting queen below and brood above. From our experience I fail to see the logic of such a recommendation unless the apiary was right at home, and in that case almost any plan will do. The bees thus treated went to work with a rush, and after honey was all off I found some colonies that had filled as much as three full depth supers, and yet the bees had never touched two combs at side of brood nest, as the combs were as empty and dry as when I placed them nearly a month earlier in the season. With the brood above, there seems to be an incentive to get the honey there too, and if conditions were such that we could use this plan at our other yards, we certainly would do so. The factors that prevent us, are deep hives with bottom boards fastened, and deep combs that make it well nigh impossible to get all the buckwheat or other dark honey out so completely so as not to have some left to spoil the clover surplus.

Many might quite reasonably ask why we should try to care for bees so far away from home, but that is another question. Briefly we might say that there are other things aside from the mere matter of profits that appeal to us as we go through life. It is said that "variety is the spice of life," and in our own particular case I would amend it to

say that with us it is the very "essence" of life. Leaving home in the morning on the nine a.m. train and travelling in a comfortable railway carriage was a real rest after going hard in the daily work at home. I generally had my dinner at Fenelon Falls, thus meeting many men of many minds, and being refreshed in that way. Usually I would arrive at the yard at about two p.m., and that afternoon and the next forenoon would be my time for work in the yard. A trip back home the same day, leaving about four, and arriving about 8.30 p.m. at home station—really it was like taking an outing every two weeks or so. Yes, the expenses were higher than in running bees nearer home, but like some other items that might be omitted in our daily life, yet they "were worth while."

Our Correspondents

In this department of The Beekeeper we give a cordial welcome to all our readers to express their opinions on any subject of interest to beekeepers. The publication of a letter, of course, does not necessarily imply an agreement with the views expressed.

Stimulative Feeding and the Sugar Supply

THE Editor, Canadian Horticulturist and Beekeeper.—The April number of the Beekeeper has just come to hand and has been read with more than the usual interest. The feeding of bees is surely an important matter; but evidently Mr. Harkness' reading of bee literature has been confined to that of recent years, for one does not need to look far back in the files of bee journals to find all the changes of stimulative feeding rung repeatedly. This was brought emphatically to my attention in preparing the chapter on this subject in the Ontario Department of Agriculture Bulletin on wintering a couple of years ago. The thing which surprises me most is the emphasis which is placed on stimulating the queen. If requeening has been properly looked after that would seem to be of minor importance, for the chances are she is already dropping eggs on the bottomboard for want of a warm place to deposit them in cells. Mr. Harkness hints at the important point which, so far as I know, has never been brought out clearly by anyone but the late Wm. McEvoy of foul-brood cure fame, the stimulation of the nurses to make them feed the larvae well and keep them "fat". I tried to emphasize this point in the Wintering Bulletin, but no one seemed to notice it.

While Mr. Harkness and Mr. Scott seem to contradict each other flatly, they are not speaking of exactly the same thing. Personally I agree with everything Mr. Scott says in objection

to the daily feeding of a little thin syrup. That is what is commonly understood by the term "stimulative feeding". On the other hand, to insure the presence of unsealed stores close to the brood is very important for the development of the colony and it is our practise to get over all colonies in April or early May, as soon as weather permits, and give a ten-pound pail of syrup wherever it is needed to bring about this condition. But we do not feed any less in the fall on this account. Colony-consumption of stores varies so that one must always allow a wide margin for safety.

Sugar is Safest Feed.

As to quality of winter stores, evidence continues to accumulate overwhelmingly in favor of sugar-syrup as the only safe feed. We are again able to report no winter loss on account of stores, and are standing more firmly than ever on the platform laid down last year that it would be profitable and the only safe practice to sell all honey and pay the price of honey if necessary for granulated sugar for winter feed. That is the sort of ammunition I kept firing at the Canada Food Board by a continuous correspondence all summer, and wherever else it seemed likely to do good, and it was very gratifying that beekeepers got as much recognition from that body as we did.

Now we hope our sugar troubles are all over, but are we sure? Read the following letter from the editor of the "Canadian Grocer", then draw your own conclusions:

"... Present estimates of the world's output of sugar is some 70,000 tons less than last year. This, of course, is not a large item on the whole, and is represented mainly in declines in the Eastern hemisphere.

"The price on the Cuban crop is set by the International Sugar Commission, at figure higher than last year, and British West Indian prices are based on these figures. That being the case there can be no declines in raw sugars, and the only conditions that could influence prices are transportation and labor conditions, that show no immediate prospect of improvement. Added to this Britain and most European countries are still on sugar rations, and it will be probably three years before European beet sugar can care for this demand, as the French, Belgian and Italian beet fields were in the direct path of the warring armies and suffered in consequence. Then, too, there has been an export demand of refined sugar from Canada that has already totalled 2,000,000 tons this season, and which will probably reach much larger figures. This is entirely

new for Canada. For ourselves we do not look for any acute shortage this coming season.

"There is always the possibility of competition inducing some declines, this is the only possible cause for declines that refiners will admit, and they contend that this could not mean more than 25c a hundred decline. . . ."

While there may be nothing to fear from either advancing prices or scarcity at the last minute, after last year's experience, and after reading reports like the above, it gives withal a satis-

fying feeling to have a good stock of sugar stowed away, or better still, to have the syrup made and thinned up ready for use when the best time for fall-feeding comes. There will be interest on the money, and possibly the difference of lower prices to charge against current expenses; but it is like paying insurance and never having a fire,—and that is no joke if you have seen, as I have, good sized apiaries wiped out leaving the man with splendid equipment and a lot of colonies dead on granulated honey.

MORLEY PETTIT.

Notes and Comments

By J. L. Byer

APRIL weather in York Co. has been of the kind we usually get at this season of the year, but a noticeable feature of the month that is of great interest to the cellar winterer, has been the absence of a single first-class day for putting bees outside on summer stands. Where bees are good and quiet they will be all the better for being inside during all the cool and windy weather that has passed, but in some cases at least, the bees are very uneasy and spotting the hives badly, and naturally the owners are looking anxiously forward for a fine warm day. So far as our own bees are concerned up in Victoria County, I have heard nothing from my friend who is going to take them from the cellar, so presume they are inside yet. No matter what shape they are in, I have an idea that the matter is giving me less trouble than if the bees were right here and in poor shape with no weather suitable to better conditions. Even long range beekeeping has some compensations.

Since writing the above, the bees have taken out in good shape.

I know of one large apiary that was placed on summer stands late in March when we had a few warm days. As the first week of April was about the most severe weather of the winter, possibly the bees would have been better left inside.

Mention was made in last issue of the fact that we had quite a lot of colonies short of stores early in season. After a month's time to look over matters more fully, I can only repeat the statement with more emphasis, and certainly to have to be running from apiary to apiary to avoid colonies starving to death, is about the meanest problem we were ever confronted with since keeping bees as an effort to make a living for our self and family. Of course the resolution, "never again," has been passed unanimously by all concerned, but as numerous resolutions along other lines have been made and just as surely

broken in the past, I hesitate to be too emphatic about the matter.

J. A. McKinnon says in March BEEKEEPER, that he stacks up piles of combs with honey in, outdoors in the fall, that said honey never granulates, ferments or sours. I have the greatest respect for friend McKinnon's ideas, as he is a thorough beekeeper in every way, but if he lived here in our locality he would have to modify the statement about the honey not granulating. Last fall hundreds of pounds granulated right in the combs while honey was yet over the bees. This was an unusual condition, I will admit, but while friend McKinnon has reported trouble from sugar syrup granulating in the combs, we on the contrary have no such trouble, but do have lots of trouble many years by reason of honey granulating in the combs with colonies wintering outside. "Locality," while unquestionably an over-worked word, does in many cases cut quite a figure after all.

I understand that the McIntyre outfit of Woodbridge has been sold to A. J. Knox, of Orono, Ont., at a price away up in the five figures—probably the biggest single transaction in bees that has ever been negotiated in Canada. The writer of these "Notes" takes a peculiar interest in the deal for reasons that anyone will understand when I have stated the why and wherefore. Not so many years ago friend McIntyre wrote me from Galt asking if in my trips on bee inspection I had come across any good locations not occupied by beekeepers. I answered and recommended the district around Woodbridge, as there were no extensive beekeepers near there and the locality appealed to me as being first-class, as the soil was heavy clay for the most part and alsike was just being introduced for seed purposes, and was turning out good. Mr. McIntyre promptly came, and it was a case of "veni, vedi, vici." A year or so after that, a letter came one day from

A. J. Knox, of Orono, Ont., asking if he could come and stay with us for a few days to get a few pointers. Although a total stranger to us at that time, the letter appealed to me in many ways, and friend Knox came and stayed with us three days, if I remember correctly. He was a tailor in his home town at that time, but had caught a bad case of bee fever. I don't think he got much from us in his visit except a lot of encouragement, for I felt that he was going to make good, and so felt justified in telling him to go ahead. Ever since his first visit with us a more or less steady correspondence has been kept up between us, and it has been my pleasure to visit him at Orono. Frankly, it would be hard for me to express myself as to how good I feel over the success of these two men, and I am sure that neither one of them will find fault with me if I claim just the least bit of credit for putting out a helping hand at a time when they felt that help was acceptable. Mr. McIntyre is leaving, I believe, for California and our best wishes go with him, while to his successor, we would wish all kinds of good luck in the larger field of work just undertaken.

At our last Convention, the thought was given by Dr. Gates and others, that southern bees are not as hardy as those reared in the north. They may be right but I am not positive on the point. Some of the hardest bees I ever bought were reared from queens purchased in Texas, while by all odds the poorest outdoor winterers we have ever tried out, were Golden stock from New York State. But after all, is this not a matter that could be easily adjusted provided the claims of Dr. Gates and others are justified by actual results? Why could Southern breeders not send North every year or two and get first-class breeding stock from expert bee breeders? I certainly do not think that one or two generations reared in the South would have any effect upon the hardiness of such a wonderful insect as the honey bee, that all down through the ages in so far as we have any record, has shown little if any variation whether bred in Far East or West, North or South. Southern breeders have advantages over the Northern breeders in the way of climatic differences that we can never overcome. If there is anything in the claim as to lack of hardiness of bees reared in the south, it is certainly to our interest and the interests of the men in the South that these matters be tested out, for the difficulty, if real, can easily be remedied.

Nominally it requires about 15,000 bees to collect one pound of honey in a day. Some blossoms will yield nectar all day long, others only for an hour or so in the morning and evening.

Preparatory Work For Comb Honey Production

By D. Anguish, Lambeth

IN the production of good comb honey there are several very necessary requirements. The first and chief one of these is an up-to-date hive, one that can be manipulated to fit any size colony with as little trouble as possible. The hive that I use has what might be called a divisible brood chamber. The size of frame, outside measure, is 16 $\frac{1}{2}$ in. in length by 7 in. deep. There is only this one size frame in use in all of our yards, each super is interchangeable, and is as good for extracted honey as it is for comb. As for wintering, it fills all requirements, as bees can be wintered in either one or two chambers to suit the individual requirements.

In the April issue of *The Beekeeper* I note that in Mr. Deadman's article he mentions me twice, once as a hobbyist with the Dadants, Roots, Chrysiers and others of that ilk. Then I am quoted as using a frame between the two extremes, as Mr. Deadman classes the shallows and deeps. It is not my intention to make any arbitrary statement as to the kind of hive all beekeepers should use. For myself, I have tried many. I started with the Jones, and meeting little success with it I turned my attention to the old fashioned Langstroth, with no better results. It was not until I adopted the hive I am now using that I met with much success in the production of comb honey. This hive has a shallow frame with a light top bar so that the brood is as near the sections as possible.

Adaptability.

The second requirement in successful honey production is that the beekeeper be able and willing to adapt himself to the unforeseen circumstances that may arise and to adopt whatever means are at hand to meet the exigencies of the hour. I sometimes think that many of our politicians would make excellent beekeepers, as they can change their minds with the most astonishing facility when the winds of public opinion seem blowing against them. A beekeeper who has studied the habits of his bees knows that there is a whole lot of human nature about them, and as long as they think they are having their own way, the beekeeper can have them do wonders for him, but once let them get the idea that they are being imposed upon and they rebel. It is up to the beekeeper, therefore, to treat them as he does his wife—have your own way, but don't let them or her know it.

To get good comb honey, of course, it is necessary to have a good honey flow. Have everything in readiness for it when it comes. Perhaps, here before I pass on to my methods of producing comb honey, I might be permitted to say a word on marketing. After the harvest is over have all the honey put up as attractively as possible, for there is no article of food, it seems to me, that looks worse than comb honey put on the market just as it came off the hive, especially if the sections have been in use for several seasons. Sections should never be used more than once, and after being taken off the bees they should be scraped to take off all the propolis, then crated into new boxes. Were all honey put on the market as it should be, there would not be so much variation in prices.

I will now try to give a brief outline of my methods in producing a No. 1 grade of comb honey. Should I fail to make myself clear to the would-be comb honey producer, you will be very welcome to come and spend a couple of days with us and see just how we

do it, the only stipulation I make is that you come when the honey flow is on and leave your own pet hobbies behind you.

Our Methods.

As nice white cappings are necessary, one of our methods is to place a second body filled with full sheets of foundation on top of one of the colonies that has been wintered in a single super. After the bees are taken out of the cases they have been wintered in, they are left alone until a few days after the white honey flow commences. We then take out the under super or body and set down the top super with new combs. I use what is called tee rests to have as short a space as possible between the brood and sections. I use perforated separators to have the bees clustered in one body and to preserve natural conditions as far as possible.

After having arranged the hive and leveled up sideways, as the sections are run lengthways of hive, and as combs are always built by the bees perpendicular, it is necessary to have frames hanging plumb. Take the super that was taken out from underneath, shake all the bees and queen off combs in front of colony that has been prepared, and as there is no other place to go they will just naturally rush into the comb honey super, and it is surprising how soon they commence to do the trick. In a few days there can be another super added by just lifting up the one that is nicely started and placing a new one underneath. Section supers can be added the same way up to near the end of the honey flow.

I have said nothing about the super of old combs of brood that was taken out from underneath. They are handy in several ways. For instance just put on top of a strong colony with queen excluder between, leave for a week, then lift off bees and all, set on a new stand with a good ripe queen and you have a new colony right there. If increase is not needed old combs can be used for upper stories for extracted honey or to build up weak colonies.

This is only one of our methods of producing comb honey I have outlined. In a later issue I may have something to say on our methods of producing extracted honey.

Making an Increase. A Cheap and Easy Way

FRED STATTON, MITCHELL, ONT.

THE following method of making an increase which I am about to relate will, I know, be frowned upon by the more experienced and up-to-date beekeepers on account of its introducing a swarming strain of bees which, of course, is contrary to the method repeatedly advocated in recent years. However, the method is one that I have proved to my satisfaction, and is passed on for the benefit of some beginner with bees who desires to make an increase.

Those of you who practice clipping queens every year will have no trouble in moving the hive body filled with brood from the old stands when the first, or prime swarm emerges. This will have the old queen, which should be clipped. Usually I find the queen crawling in the grass, and use a small cage for caging her majesty. When this is done the hive is taken off its stand and a hive body containing comb or wired sheets of foundation put in its place. Remove the supers to the new hive body on the old stand. When the swarm commences to come back to the old stand release the queen, so as to allow her to enter the hive with the bees. After everything is quiet around the hive take and place the hive containing the brood beside the old stand on which the new hive sits, making sure the entrances of both hives are on the same level and not closer than four inches.

After twenty-four hours move the hive containing the brood to a permanent stand a good distance from the old one. If this hive has nine frames of brood equally divide in three parts, making sure each part has one or more queen cells. Take two hive bodies, thus making three hives, and place three frames of brood in each. Go to a super, take out three frames of new uncapped honey, and place one in each of the hives. Set these frames on permanent stands a considerable distance apart. This will give you three virgin colonies from this one hive of brood, and four counting the swarm. After two weeks fill the three hives with empty combs. By dividing the brood in this way I avoid afterswarms known as second and third swarms. The hive I use is the eight frame Langstroth, and in this way I make two colonies out of six frames of brood, with splendid success. I do not recommend dividing the brood before June 15 or after July 15. If left too late the brood will not develop before the honey flow ends, and will consequently have to be fed for winter, which will leave the colony in a weakened condition to go into winter quarters.



In the apiary of Mr. G. H. Ball, Dominion City, Manitoba. Last year Mr. Ball wintered 84 colonies; 8 colonies outside in quadruple cases came through well. Wintering in Manitoba is still quite a problem. (Photo courtesy of Immigration and Colonization Branch, Manitoba.)



Where one beekeeper has his apiary high above the din and dust of the city streets. Mr. E. F. Farrington annually garners his honey crop from the apiary on his roof.

What Hive and Frame Shall I Use?

Light Hives and Easy Handling of Primary Consideration

By G. A. Deadman

I DO not know of any business or profession where those engaged therein differ so much as apiculture. Fortunately there is a scapegoat which, if it does not help to solve the difficulty, it at least affords a way out of a controversy without either party claiming more than they should, or calling the other by some name he should not. The scapegoat is "locality"; the difference they say must be due to "locality."

There are some differences of opinion that cannot be downed in that way, but I need not mention them now. From long use we may prefer such and such a hive, but that is no argument for its adoption. It may only reveal to others how far behind the times such a one may be.

There are very few in the apicultural world who can truthfully say, "I lack nothing," and yet it should be our ambition to have our apiary so complete that we can say that. It has been my aim to have my apiary as perfect as I can make it and so I have asked the question more than once: "What lack I yet." I told you I had a strong conviction about the superiority of a double walled hive, and I might add that I feel just as strongly regarding out of date things, things and ways that should have long since been scrapped. Most honey houses are an example of this; any old shack would do it would seem. Our apicultural journals might do good work by having plans of some up-to-date ones; something that has been lacking so far.

Keep Up to Date.

One will travel far ere you come to a really up-to-date apiary. You will see on all sides appliances antiquated and methods befitting a past age. In one way this is the natural outcome of things, shall I say the force of example. We do not blame the beginner for going slowly, keeping down expenses and such like until he is sure he is going to make good, but for those who have gotten past the experimental stage to tolerate some things is a bad example to say the least.

Lighten the Work.

There is one thing especially I have always in view. It is this: Not only to lessen the work but to lighten it as well. The twelve-frame hive may suit a Holterman and the equal to a fourteen-frame a Dadant, but not all of us have the strength of these men. I recall the former as photographed carrying his hive to his winter repository, and of his telling how he moved his bees to some out-place on a hay rack with the supers on. I will bear in mind those who are not strong, the light weight, the disabled soldier, and the fairer sex who are joining our ranks more and more.

All By Herself.

I have in mind a university girl who helped me one season, a helper full of enthusiasm, but by no means strong. A swarm came off and she begged me to let her manage it all by herself. She first caught and caged the queen, then took off the super and lifted the hive back, placed the empty hive on the old stand, put on the super, waited for the swarm to return, let the queen run in and it was done. Had this been a twelve-frame hive or larger she could not have done it. I am going to show you how by having a smaller hive, the best all round frame, or a Langstroth if you like, and a combination of the two systems, the deep and the shallow one, can accomplish all the twelve or larger frame hive men can and with greater ease.

A Standard Frame.

An effort has been made to have a standard frame, but to no avail. We can easily understand why. We cannot blame an apiarist who is doing well with the frame he is using, although it may not be the best, to go to the necessary expense and trouble it may be to adopt another. It might be questionable also, in many cases, whether even a beginner would be wise to. It will do us no harm, however, to have an ideal in view to which some day we may attain to. It is utterly impossible to have a frame

without some imperfections. The best we can do is to choose one that has the least. If we had a good wintering frame we would choose a short and a deep one, but just the opposite of this for good work in the supers. If we adopt the shallow system I have referred to we must of necessity have a shallow frame and not too short, but for convenience in handling we don't want one very long. I like a frame that I can lift with one hand by its centre if I so desire, and my right hand is then free. Then instead of holding at arms length by the end bars and swinging in the air to bring the opposite side to view as you see it so frequently shown, I simply rest one corner of the frame on something, more likely the top of another frame, and I can whirl it around as if on a swivel. To me this holding a frame with both hands at arms length or so is very tiresome, and worse yet when reversing.

The Langstroth Frame.

As the Langstroth frame is the one most commonly in use I will take it for an example. This frame for producing good work in the supers is all that could be desired. For handling and for finding the queen a shorter one is better, as also for wintering. Its inside measurement is $16\frac{1}{2}$ x 8 or 135 square inches. One 11 inches deep and $12\frac{1}{4}$ long contains the same and is the frame I would choose if I were beginning again. My own is very near it being $\frac{5}{8}$ inch shorter and containing 128 square inches. It answers all purposes as I see it. With a frame this length we can use a thinner top bar than is necessary with the Langstroth; 7-16 inch is plenty. A larger frame is objectionable for the following reasons: It is heavier to handle, more danger of a honey clogged brood nest, entails more loss in case of diseased colonies and more difficult to deal with weak ones. When using a combination of the two systems we do not require a large frame, as we get that or equal to it in that way.

(To be continued.)

Beekeepers in B.C. Must Register By June 1st

A circular letter issued by the Department of Agriculture of British Columbia recently brings to the notice of beekeepers of the province the requirements of the new Apiaries Act, 1919. Under the provisions of this law every person who keeps bees must register name and address with the department on or before June 1. The registration fee is a dollar and a half, with an additional twenty-five cents for every hive over six, but not exceeding the maximum of five dollars. The act also stipulates that bees shall not be kept except in a "frame" hive, meaning that the old soap-box and homemade contraption is legislated out of existence, only hives with movable frames carrying the combs will be tolerated. This is to allow for thorough inspection of all parts of the "bee nest." Furthermore, no bees may be moved from any property until they have been examined by a government inspector and given a clean bill of health. This ruling obtains so long as the district is known to be infected with foul brood.

A further clause in the act requires that persons selling honey produced in the province shall affix a label to the container bearing a statement of its net weight and the fact that it is British Columbia honey. This should protect the home product as it is now known that no finer blend of honey is gathered anywhere than that garnered by the British Columbia bee.

Nitrate of Soda



*A luxuriant growth,
the result of using
Nitrate of Soda.
Compare this with
No. 1 where no Ni-
trate of Soda was
applied.—Idaho Ex-
perimental Station.*

No Soil Is Inexhaustible.

If sold off the farm, every load of hay, every bale of straw, every bushel of grain, every bag of potatoes, every barrel of apples, every crate of berries, every basket of onions, every hog or sheep or cow or horse, every chicken or duck or turkey, every dozen of eggs, every quart of milk deprives your soil of some of its fertility.

*This must be replaced by
Fertilizers in some form
to restore fertility*

Nitrate of Soda is a refined product extracted from the surface crust of the rainless deserts of Chili in South America. Hundreds of thousands of tons of it have been used annually in British and European agriculture for a long period and this fact explains in a large measure the remarkably high yields attained on their century-old soils.

In Canada and the United States its use increases at a rapid rate. Farmers, fruit growers and gardeners are adopting the practice of the Old Country more and more yearly.

Nitrate of Soda furnishes Nitrogen—that most expensive element of Fertilizers—in its most available form. It far surpasses tankage, blood meal, feed cake refuse and such nitrogen-bearing fertilizers in this respect, and also in its economy. It is recognized as the Nitrogen plant food PAR EXCELLENCE.

Try a Spring Tonic for Your Crops. You

Some Advantages and

It stimulates the rapid growth and early maturity of most garden crops.

It makes plants resistant. Plants made strong by vigorous early growth can better resist drought, attacks of insects and plant diseases.

It increases yields of special crops. It is of great importance in the production of sugar beets, fibre plants, fodder crops and tobacco.

It improves pastures and meadows. Applied as a top-dressing it increases the growth of the grasses and clovers greatly.

Sometimes crops are checked in their spring growth owing to the delayed action of the soil bacteria. The Nitrate keeps the plants growing.

Price and Instructions for Orders

\$82.00 per net ton in carload lots, f.o.b. cars at shipping point.

In less than car lots the price will be \$9.00 per bag.
Minimum shipment five bags.

All orders must be sent to Imperial Munitions Board by a marked cheque or money order for full amount of favor of Imperial Munitions Board, and must be paid in advance. Orders should be accompanied by full address, name of railhead, and name of receiver. Freight charges will be collected at destination.

Imperial Munitions Board,

Increases Crops

we seen small patches of luxuriant growth in pastures due to the manure or urine of the cattle—This is the work of Nitrogen.

You have seen the house plants of some flower-loving Homemaker grow and thrive from the judicious use of manure-water—This is the work of Nitrogen also.

uses of Nitrate of Soda

ing until the soil is stirred into full life. It provides the highest-priced ingredient of complete fertilizers. Phosphoric Acid and Potash which are required by plants as well as Nitrogen, are not so costly as the Nitrogen nor are they so often lacking in our soils as is Nitrogen.

It forms basis of fertilizer mixtures. It is estimated that ready-made fertilizers cost from 25 to 35 per cent more than home-made mixtures. The scientific agriculturist will buy his supplies of Nitrate of Soda, Acid-Phosphate and Potash separately and make such mixtures as he knows his soils and crops require.

The Nitrate of Soda is stored in Ontario at Brighton, Cobourg, Trenton, Nobel and Sulphide. The Price is

the Board reserves the option of selecting the shipping

g approximately 200 lbs. each, f.o.b. shipping point.

Church St., Toronto, and each order must be accompanied by a case. Cheques and money orders should be made out in favour of the Canadian Nitrate Company in Toronto. In ordering please give full shipping directions of your nearest railway station. All shipments will be

Nitrate of Soda supplies Nitrogen to plants even more readily than does manure. Backward pastures are stimulated into vigorous growth. Struggling fall wheat or spring crops are forced to grow; they do not have to wait for the bacteria to unlock the stores of plant foods held in the soil. Trees in the orchard attain a richer leafage. Vegetables in the garden shoot ahead. Lawns are made greener and richer.

Use Nitrate of Soda as a Spring Plant Food

The element of plant food first exhausted in soils is Nitrogen and in many cases a marked increase in crops is obtained by top-dressings of Nitrate alone. However, the skilful farmer will use it with Phosphoric Acid and Potash as the condition of the soil and the necessity of the crop indicates.

A comprehensive report on "Nitrate of Soda, its nature and use in agriculture," has been prepared by the Dominion Department and appeared in the last edition of this publication. It has been prepared by Frank T. Shutt, M.A.D.Sc., Dominion Chemist, and B. Leslie Emslie, F.C.S., Supervisor of Investigational Work with Fertilizers. Write to-day for a copy of this report. It shows the value of purchasing fertilizers in pure form.



There was no Nitrate of Soda used on this crop. The stalks are weak and the yield is much less.—Idaho Experimental Station.

Church St., Toronto, Ontario

Japanese Honey and the Locality that Produces It

By YASUSA HIRATSUKA, TARA, GIFU-KEN, JAPAN.

IN the early part of this year the editor received a request from Mr. Hiratsuka for a few sample copies of THE BEEKEEPER. These were sent, and in sending us his subscription and acknowledging the papers, Mr. Hiratsuka sent us the following article on Japanese Honey, which we feel sure will be read with interest by Canadian beekeepers. Enclosed with his article were two samples of the labels which Mr. Hiratsuka uses on his cans and bottles for shipment to the European market. These labels are most attractively designed and are the finest specimens of the lithographers' art we have seen for a long while. It will interest our readers to know that Mr. Hiratsuka has never been to school outside Japan, which says much for his English teacher and for his own ability in mastering our language, as his English, though sometimes quaintly expressed, is very good. Here is an extract from his letter just as he wrote it:

"I am very sorry to say I have never been to school either in your country or in Europe, so my English must be so broken. If you please accept me only with the heart and not in language." We will always be glad to hear from our friend on beekeeping conditions in Japan.—Editor.

Japanese honey is graded as the "Genge-Mitsu," the "Natane-Mitsu," the "Mikan-Mitsu," the "Sola-Mitsu," the "Naginata-Mitsu," and so forth, according to its source. The word "Mitsu" is Japanese for honey and "Genge" is the name of the plant from which the honey is taken. (This corresponds to our Clover honey, Buckwheat honey, etc.) The Genge-Mitsu is white in color and of fine quality. It is a superior grade of Japanese honey and more of it is produced throughout the country than of any other kind. The "Genge" (*Astragalus Simicus*) is cultivated so abundantly in Gifu-ken, the home of the writer, that the district has become famous for it.

The "Natane-Mitsu" is light amber in color and of perfect quality. Its only drawback is that it granulates rather quickly. It is graded second rate. The "Natane-Mitsu" (*Drassica Chinensis*) is a kind of rape, and is famous as a honey producing flower throughout the adjoining province of Aichi-ken.

The Mikan-Mitsu is gathered from Mikans, a flower of the orange variety which flourishes mostly in Waka-yama and in the western part of Japan. The "mitsu" or honey from the mikan is white in color, of good texture and quality, and has an orange-like flavor. It is graded between "Genge" and "Natane," but is produced in lesser quantities than either of these.

The "Sola-Mitsu" is produced from buckwheat, and is too well known to Canadian beekeepers to require any comment by me. I might say in passing that the "Sola" or buckwheat is cultivated quite extensively in different parts of Japan.

The "Naginatakuju" honey is extracted from the flower of that name. This plant is the successor of buckwheat in the late fall and is grown extensively on the northeast island of Japan. The honey is lighter in color, with a peppermint-like flavor and tastes better than the buckwheat.

Besides these "mitsu," I have mentioned there are other grades of honey in our country such as "Hagi" (bush clover), "Kaki" (a kind of persimmon), "Cha" (tea), and a variety of others in different localities. Some of this honey is not produced until late in the season, and is used only as stores for wintering bees. Much of it also is of inferior quality. This is also that mixed production of honey of all kinds with which all beekeepers are familiar.

A Correction

On page 104 of the April issue of The Beekeeper in the Notes and Comments column there is a printer's error. There the statement is made by Mr. Byer that "the few colonies around home here that we fed sugar have shown signs of dysentery for some time." This should read "fed raw sugar" instead of sugar. Mr. Byer informs us that the bees fed granulated sugar are as usual in fine shape, and that those up north that were fed on a better grade of raw sugar than was fed at home have wintered in good shape, no dysentery showing at all.

HERE AND THERE WITH THE BEEKEEPERS

Short Reports of Ontario Conditions

Lambeth

Bees here have come through in fine shape. All colonies are strong for this time of season, with lots of stores. I am doing some experimenting in the way of stimulating, with fairly good results. I am also experimenting on the making of increase by getting queens from the south and drawing brood from very strong colonies and placing above other strong colonies with double screens between and giving entrance alone. Prospects are bright for a good crop and a good price.—D. Anguish.

Zurich

May 1, 1919.

Bees have held their own pretty well here. We only had five days during April that they could gather pollen for a few hours. Most of the stimulating blossoms got killed by frost. Our bees have mostly an abundance of food yet. At our home yard open air feeding has been practised. To get rid of raw sugar use 2-5 sugar, 3-5 or even more water. This will prevent robbing if there is nothing else to gather from. Clover has been badly frozen lately.—Jacob Haberer.

Simcoe Co.

Conditions re bees and clover have changed very little since April. It is still cold and wet and the prospects are not very bright at present. The clover is badly heaved, and there is hardly a dandelion to be seen yet and beekeepers would do well to take a look into the hives and see how the supply of food is hanging out.—R. G. Houghton.

Little Britain

Owing to the cold and wet weather colonies are building up very slowly.

May is a good month for clipping queens. Before the colony becomes too populous is the time to perform the operation. There are two distinct ways, viz.: by the better and more up-to-date method as they move along the comb and without capturing them or by the old established way of capturing them and occasionally pulling off a leg or injuring them in some other way in the attempt.

Be sure and select a

nice day when honey is coming in from dandelion or fruit bloom. Watch her majesty as she inspects the cells. Then as she bobs her head down to the bottom of a cell at the opportune time with a sharp pair of curved scissors clip the wings. If she fails to reach down in the cell get a move on and clip her as she crawls over the comb. Failing in this try the old method of capturing her.—W. W. Webster.

Inglewood

April 30.

From reports received from York, Peel and Halton counties, bees have wintered exceptionally good. Some are short of stores. Clover also has wintered well, so prospects are good for a honey crop.—H. G. Sibbald.

Belleville

May 1st, 1919.

Clover in our vicinity is looking good at present, but weather conditions are not favorable. Several have had losses with queens. Bees are not gathering much pollen. Brooding is backward.—J. N. Chisholm.

Athens

April 30, 1919.

Rain and cloudy cool weather has certainly been much in evidence throughout the present month. On the 22nd and 23rd, however, there was sunshine with temperature favorable for bees in first spring flight. Information so far received would seem to indicate approximately five per cent loss of colonies of bees in the long period of cellar-wintering in this district. This said loss seems to be chargeable under three heads, namely:—1st, Queenlessness; 2nd, poor quality of food; 3rd, shortage of stores. This experience only emphasizes the oft-repeated advice and directions relating to fall preparation of colonies, namely, *Good queens, good food, abundance of stores*.—M. B. Holmes.

Carleton Place

May 1, 1919.

Bees in this locality have wintered unusually well—not more than two or three per cent loss, with a small percentage of weak colonies. Consumption of stores was heavy. The cellar-wintered colonies have consumed as much, if not more, than those wintered outside. Prospects of clover crop good.—A. McTavish.



Fair enthusiasts of the beekeeping art. Beekeeping demonstration class at Rural Science School, Sussex, N.B.

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Fungine controls rust and mildew

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Vermine destroys worms, maggots, etc.

Good for potted plants, in which it destroys eel and angle worms as well as for sterilizing the garden soil which it rids of maggots, grubs, worms and root lice.

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British Columbia

The British Columbia Fruit Growers' Association has passed a strong resolution protesting against any reduction in the Canadian tariff without a proper investigation being held beforehand. The resolution calls attention to the propaganda that has been carried on by the Organized Farmers of Alberta, Saskatchewan and Manitoba to obtain material reductions in the tariff as set forth in the platform of The Canadian Council of Agriculture. One clause of the resolution sets forth that the British Columbia Fruit Growers do not agree with the organized farmers in the prairie provinces in this matter. They do not endorse or accept the tariff platform of the Council of Agriculture and protest against any tariff legislation in the interest of any one class of industry without due consideration being given to the welfare of others and the progress of the Dominion. The resolution favors the appointment of a tariff commission. A somewhat similar resolution has been adopted by The United Farmers of British Columbia.

Mr. R. M. Winslow, of Vancouver, who for a number of years was Provincial Horticulturist of British Columbia, which position he resigned to become manager of the Mutual, Limited, of Vancouver, has recently been appointed manager and secretary of The British Columbia Traffic and Credit Association. His headquarters will be in Vernon, B.C. Mr. Winslow states that from a preliminary estimate of production for 1919 the indications are that from 700 to 1,000 more cars of fruit will be shipped from the Okanagan this year than were sent out during 1918.

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The St. Catharines Cold Storage Co.,
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For the district between Hamilton and Peachland:

A. Hewson,
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We have warehouses at Winona, Grimsby and Jordan Station.

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MOTT'S Northern Bred Italian Queens

have proved for the last 12 years to the Canadian friends to be the best of E.F.B. resisters. Hardy, hustlers and gentle.

Sel. tested, \$2.00; Unt., \$1.00; 6, \$5.50.
12, \$10.00.

Plans "How to Introduce Queens and Increase," 25c. Lists free.

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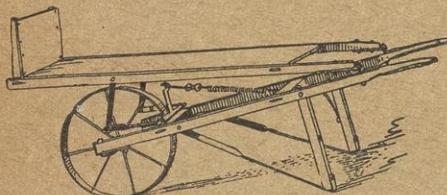
Canadian - Bred Italian Queens

Untested Queens after June 15th, \$1.25 each; \$12.00 a dozen. Tested, \$2.00 each.

Choice Breeding Queens \$5, Tested Breeder \$10

A few colonies of choice Italians with tested Queens at \$15.00 per colony. I guarantee you a square deal.

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Queens - Italian - Queens

Bred in Ontario from Doolittle Stock

1919 - PRICE LIST - 1919

Delivery Beginning June 15th.

	1	6	12	50
UNTESTED.....	\$ 1.00	\$ 5.50	\$10.00	\$37.50
SELECT UNTESTED.....	1.25	7.00	13.00	50.00



Send us list of your requirements EARLY so as to insure date of delivery. We are booking orders now. Queens' Wings clipped free of charge.

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FOREST - - - - -

ONTARIO

The Okanagan United Growers

P. P. Woodbridge

THE Okanagan United Growers was organized in the spring of 1913, and made its first shipment in May of that year. The O.U.G., as it is more familiarly known, is the selling and distributing agency, also the central purchasing agency for supplies for the following eight locals: The Vernon Fruit Union, the Kelowna Growers' Exchange, the Summerland Fruit Union, the Penticton Fruit Union, the Peachland Fruit Union, the Armstrong Growers' Association, the Enderby Growers' Association and the Tappen Farmers' Exchange. It also, last year, handled fruit from Keremeos and other points where growers' associations are in process of formation.

Each of these locals is a complete body in itself and enjoys the most complete autonomy and freedom of action on its own behalf. They own their own packing houses, storage, pre-cooler and other modern requirements of the up-to-date fruit industry. The Vernon Fruit Union has under construction and almost completed the largest packing and storage warehouse in Canada. It will be 400 feet long by 80 feet, and has frostproof storage for 250 cars of apples. The loading platform will permit of the loading of 10 cars at a time. The cost will be \$50,000. Each of the locals has been financed through the sale of stock as capital, and it is interesting to note that the government has lent its aid along the same lines as that given to the financing of elevators on the prairies. Certain fixed charges are made for packing and other work and surplus profits are returned to the grower on a patronage basis. Profits from the sale of supplies are also returned to the members on a patronage basis after other charges have been taken care of. Each local agrees to market the produce of its members through the Okanagan United Growers under a contract the renewal of which is optional each year.

How Capitalized.

The Okanagan United Growers has no capital stock other than the purely nominal issue of 28 one dollar shares to the locals for voting purposes. The locals vote in proportion to the tonnage contributed by each. Having no stock the Okanagan United Growers has no profit to make. Its working capital is supplied by an assess-

ment of two per cent taken off the returns of each grower. Five per cent interest is allowed on these assessments while the money is in use and negotiable bonds are issued redeemable by the Okanagan United Growers meanwhile. No one therefore

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either lends or receives money from the organization other than those who are active participants in its work and success. The control of the selling and purchasing agency is in the hands of the locals, who in turn are governed only by those who are actual shippers of fruit. It is under such a system that the growers are trying to work out their own salvation, and that the Okanagan United Growers has steadily increased the volume of business handled each year.

In the five years for which the complete records are available the Okanagan United Growers has handled a total of 6,634 cars of which slightly over 2,000 have been vegetables, the balance straight fruit. In 1913 the total number of cars handled was 897 which was steadily increased until 1916 when the total was 1,706. A number of cars from outside non-affiliated points were handled that year, but in the interests of the organization it was decided to discontinue the plan until these points were in a position to guarantee better quality and become affiliated with the Okanagan United Growers in accordance with the requirements laid down for all locals. In 1917 due partly to a short crop the shipments fell to 1,436 cars, of which 357 were vegetables. The total value of sales made aggregate nearly four million dollars ranging from \$455,918 in 1913 to \$1,117,749 in 1917.

Last year 220,000 crates of soft fruits with a total sales value of approximately \$300,000 were shipped through the Okanagan United Growers. This represents an increase of considerably more than double that of any previous year. Pears also showed a large increase. The growers are to-day handling through their own organization from 50 to 60 per cent of the fruit yield of the Okanagan Valley, which in its turn produces from 70 to 99 per cent of all

fruit marketed from British Columbia with the exception of the smaller bush fruits.

It is not to be assumed that the growers have reached their present success without trouble or that all of the problems and difficulties have been satisfactorily solved. There have been the usual troubles both within and without. It does not require a vivid imagination to see that the possibilities for trouble are intensified with any or-

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of Dr. C. C. Miller's strain of three band Italian bees, gentle and good honey gatherers. May 1st to July 1st, untested \$1.25 each—\$12.00 per dozen; tested, \$1.75 each, \$18.00 per dozen; selected tested, \$2.25 each. Safe arrival and satisfaction guaranteed. Will be able to furnish six times as many queens as last season.

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Untested—\$1.00 each; 6 for \$5.00; 12 for \$9.00.

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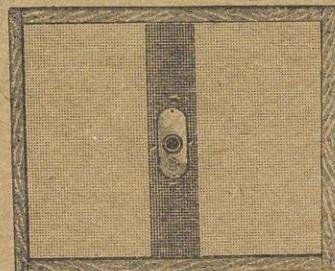
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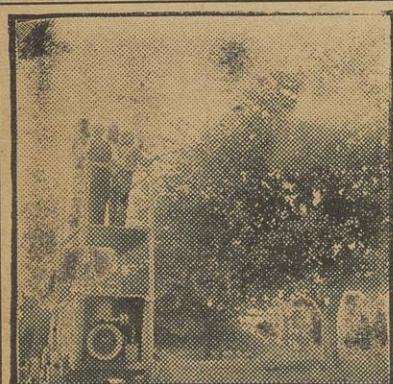
Aster, choice mixed
Balsam Camelia, flowered
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Nasturtium, dwarf mixed
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ganization handling almost exclusively a highly perishable product. Yet the Okanagan United Growers is not only handling a larger volume each year, but is also steadily increasing the number of growers under contract to it. This contract is not a purchasing contract with a guaranteed price but merely an agreement on the part of the grower to ship his fruit through the Central and to accept market price less certain fixed charges and various other details. Thus in supporting his own organization the grower does not know what he is likely to receive until late in the season, whereas the private interests quote him a definite price per pound early in the season while the trees are still in bloom.

Another interesting point about the work of the growers is the pooling system. This has been another supreme test of the co-operative spirit of the British Columbia grower. The selling rules provide for local pools and valley pools. A local pool simply means that all fruit of like variety and grade shipped by a local during a given period shall be averaged as to sales and paid for at the average price. The valley pool means the same thing covering all locals instead of one. These pools may be semi-weekly, weekly, monthly or the entire season and are fixed by the Central Board of Directors. No such system is practiced by the private interests, of course, who often pay premiums if only to entice growers away from their own organization. Under the pooling system the grower will often have to wait some time before getting final returns. He receives up to 60% of the estimated value of his shipments twice a month. To accept this small advance, take the delay in final returns and the uncertainty as to his likely price almost up to the last minute surely betokens a considerable progress in co-operation when 60% of the growers are found willing to do it year after year.

Items of Interest

Indications are that the peach crop in the Niagara district this year is likely to be the best that has been known for many years. Growers throughout the peach belt are optimistic over the prospects.

An effort is being made in the Province of Quebec to promote co-operation among

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Owing to the uncertainty of the markets in raw materials, please arrange to place your order NOW for Spring delivery if you want to be sure of getting a machine.

the various horticultural societies of the province and incidentally to arrange for the holding of a provincial exhibition of fruit, flowers, vegetables, honey and maple sugar products, similar to the Ontario Horticultural Exhibition, which is to be resumed next fall. The movement is being promoted by Prof. T. G. Bunting, of Macdonald College and by Mr. R. Brodie, past president of the Quebec Pomological and Fruit Growing Society.

At a short course in fruit packing, held recently in Berwick, N.S., Mr. P. J. Carey, of the Fruit Division, Ottawa, gave a demonstration in fruit packing and described the new fruit box which is now the standard box in Canada and which is similar to the United States box. A leading grower in the Annapolis Valley, N.S., expressed the view recently that the new box is likely to lead to more box packing in Nova Scotia than heretofore, as the demand for boxed apples is increasing and the new box is likely to be more popular than the old.



You Get Everything in Carhartt's Overalls

EVERY worth while idea in Overall making, evolved within the past 25 years, is found in my Carhartt Overalls, besides some features which belong to Carhartt's alone.

Many garments sold have the double seams only where they are seen—my Carhartt Overalls are double seamed throughout. I use first-grade denim entirely. Also inter-lacing suspenders which do not get separated in the wash or slip off the shoulders. This is my own idea. Suspender buttons are on to stay, because they are riveted on reinforced bands. The nuisance of picking up tools and rules when you bend over is obviated by my Carhartt swing pocket, which stops all that. So does the angular rule pocket. My Carhartts are made in generous sizes. They have all the comfort devices you require in Overalls—and the price is reasonable.

Hamilton Carhartt
President

HAMILTON CARHARTT COTTON MILLS, Limited

Toronto
Winnipeg

Montreal
Vancouver

Mention has been made in the columns of The Canadian Horticulturist on several occasions of the success that Mr. Walter T. Ross, secretary of the Picton Horticultural Society, has met with in the growing of tropical fruit in Canada. Recently Mr. Ross has succeeded in growing thirteen grape fruit as large as good sized lemons. The tree on which these were produced was kept during the winter in the greenhouse of Mr. Geo. Ward and contained fragrant blossoms at the same time that it was bearing fruit. The branches of the tree were supported with cords to the roof to prevent the weight of the fruit injuring the tree. Mr. Ross has also a coffee tree that is making new growth.

Miscible Oils

The members of the Ontario and Niagara Peninsula Fruit Growers' Associations are thoroughly justified in petitioning the Dominion Government to remove the duty on miscible oils. No industry in Canada would be injuriously affected by such action, as they are not manufactured in the Dominion. Little or no revenue would be lost to the Government as the effect of the present tariff is practically prohibitive. Why the duty was imposed in the first place it is not easy to understand.

The fruit industry is being injuriously affected by the inability of our fruit growers to obtain these oils for insecticidal purposes. During the past few years spraying operations have not been conducted in many orchards as faithfully and thoroughly as formerly. This year much spraying must be done in order that ground lost during the war may be regained at least in part. Our fruit growers, therefore, are looking with every confidence to the Dominion Government to see that these oils are granted free admission to Canada at the earliest practicable date.

False Marking

C. W. Baxter, Dominion Fruit Commissioner, Ottawa.

Before the last amendments to the Inspection and Sales Act it was only possible for the inspector, when he found packages overfaced, to mark them "Falsely Packed", and if he found them below the grade mark on the package, "Falsely Marked". In many cases this conveyed very little to the purchaser. The amendments now provide that where a package is found to be fraudulently filled, or where the face does not give a fair representation of the contents of the package, the inspector may mark the package "Overfaced"; also, where the fruit is found to be packed not in accordance with the grade mark, he may mark it "Below Grade", or erase the grade mark and place thereon the proper grade mark; that is to say, where an inspector finds a barrel of apples graded No. 1, and the fruit is not up to the quality of No. 1, he may erase No. 1 and mark it No. 2, Domestic or No. 3.

This amendment is of considerable importance as it affords protection to the purchaser and to the packer. Cases are not infrequent where fruit marked No. 1 has not been up to the requirements of that grade, and if the inspector simply marked the words "Falsely Marked", advantage was taken of this, but under the amendments the fruit is sold on its merit.

When it's Nitrate Time for Apples

Nitrate of Soda gets busy at once. Apply at the rate of 300 lbs. to the acre for full-grown trees. This averages from 3 to 6 lbs. to the tree.

Nitrate of Soda

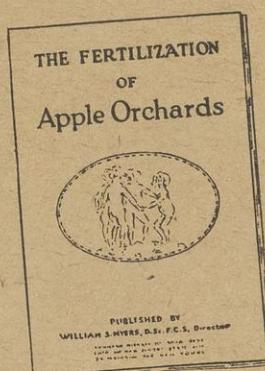
increases the value and size of your crop by furnishing it with the essential food it requires while growing. Apply when growth starts in the spring. Early applications have a most favorable influence. Nitrate of Soda also supplies the strength needed to resist cold weather, drought and disease.

For any of these adverse conditions, use later applications as may be required.

FREE Book

Send for free copy of "Fertilization of Apple Orchards." It's attractive and instructive. Facts and experiences are given which show how Nitrate of Soda has helped crops to bigger and more profitable growth.

DR. WILLIAM S. MYERS
CHILEAN NITRATE COMMITTEE
25 Madison Ave., New York



FREE Full of practical information on apple culture and fertilization. It has made hundreds of dollars in one season for others. Send for it now. Experiment Stations are recommending the use of Nitrate of Soda.

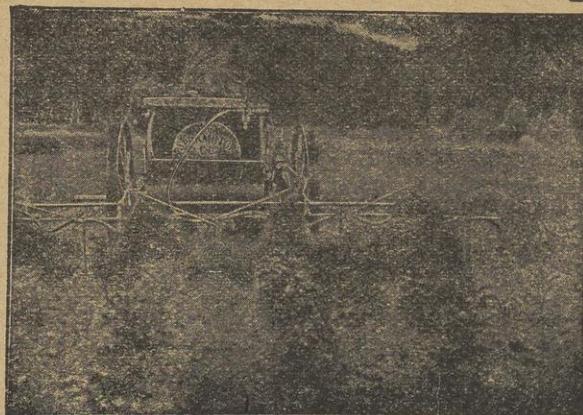
Dr. WILLIAM S. MYERS
Chilean Nitrate Committee, 25 Madison Ave., N. Y.
Please send me a FREE copy of "Fertilization of Apple Orchards."

Name
P. O. State

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FREE We have a valuable illustrated work on "Crop Diseases" to send you, postpaid, for the asking. Also catalogues showing our complete line of hand, horse, knapsack and power machines. Write to-day for your copy
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Quality Plants

YOUR profits and pleasure depend on this. Poor quality plants are dear at any price. We offer you select vegetable, bedding and house plants at live and let live prices.

Mitchell Nursery Co.
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Northern Ontario

A vast new land of promise and freedom now open for settlement at 50c an acre in some districts—in others, Free.

Thousands of farmers are responding to the call. Here, right at the door of Southern Ontario, a home awaits you.

For information as to terms, regulations and railway rates to settlers, write to

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Parliament Bldgs., TORONTO, CAN.

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POULTRY YARD

Feeding the Chicks

By F. E. ELLIS, Peterboro, Ont.

ARTIFICIAL incubation is easy; at least we have found it so. It is artificial brooding that calls for the utmost care and it is here that the poultryman registers his heaviest losses. We have never failed to hatch out a good percentage of chickens, but during the first season or two when we were getting our experience with artificial brooding, we paid dearly for



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AN EXCELLENT PLANT FOOD

Kills Bugs, Prevents Blight
Non-Poisonous

Send 30c for pound box, and Dr. Twitchell's book, "Home Garden Nuggets," post-paid.

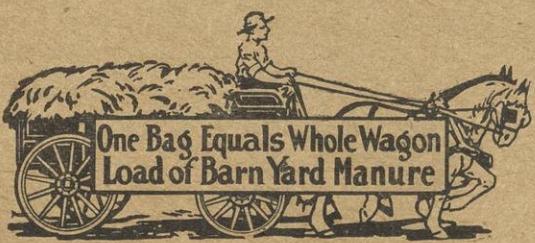
BUG DEATH CHEMICAL CO., LTD.
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WIZARD
TRADE BRAND MARK
CONCENTRATED
MANURES

ARE GOOD FERTILIZERS BECAUSE THEY DO GIVE THE SOIL WHAT IT NEEDS TO MAKE THINGS GROW.

Order Wizard Brand from your supply house or write us for prices and freight rates on a bag or a carload

THE PULVERIZED MANURE COMPANY
49 UNION STOCK YARDS - - CHICAGO, ILL.



One Bag Equals Whole Wagon Load of Barn Yard Manure

the knowledge gained. The method that we have found most satisfactory is one recommended by Prof. W. R. Graham at Guelph. It is a method that calls for care, as the chicks are fed five or six times a day and every ounce of feed that they get must be weighed carefully.

The first day the chicks are in the brooder house they have warm water to drink and grit on the feed board. For the second day and the rest of the first week they are fed six times—at 6:45 a.m., 9:30 a.m., 11:30 a.m., and 2, 4, and 6:30 in the afternoon. The first week they get a mash mixed in the following proportions: Two cups bread crumbs, two cups rolled oats, one cup hard boiled eggs and grit on the feed board once a day. The second day of this feeding, they are given one-quarter of a teaspoon of chick feed in the litter to 60 chicks after each feeding when they have cleaned up their mash. This amount of feed is just about right. They will go after the chick feed so energetically that they will throw the litter a foot or two and there is no surer sign that they are being overfed than when they do not take an interest in the chick feed. The first week they get no milk, but the several drinking fountains are always full of clean water.

A Start With Milk.

The second and third weeks the chicks have sour milk to drink in addition to the water. We give them two feeds a day of the same mash as the first week with the amount slightly increased, but with no chick feed following, two feeds of chick feed, one and a quarter to one and one-half ounces to 60 chickens, and two feedings of a wet mash, composed of 100 lbs. bran, 100 lbs. low grade flour, 100 lbs. corn meal, 100 lbs. beef scrap and 35 lbs. of bone meal. Fine white middlings can be substituted for the low grade flour, which is not now generally obtainable. At one feeding, the chicks are given all they will eat and in the third week the chicks are fed the same, except that they get all of the mash they will eat twice a day instead of once.

The fourth week we start to hopper feed the chickens and they have rolled oats in front of them all the time. These are not the table rolled oats, such as are used in their mashes the first three weeks, but horse oats or bruised oats. At noon they get a mash crumbly wet of corn meal, rolled oats, middlings and beef scrap, equal parts of each, or where skim milk is fed, one-half part of beef scrap will be sufficient. At night they get chick feed in the litter, all they will clean up. The fifth week this same system is followed, but at six weeks and thereafter they are hopper fed, except for a wet mash at noon. It will not be long before they will be neglecting the wet mash and from then on they are entirely hopper fed, with a choice of rolled oats and a mixture of cracked corn and wheat. Charcoal, fine grit and fine oyster shell are kept before the chicks at all times from the first week on.

If there is any one point that is more important than another it is that perfect cleanliness be preserved throughout. The litter must be clean and free from dust. We have found that alfalfa or clover leaves make an excellent litter. The drinking

dishes are washed and scalded regularly and the shingles on which the chicks are fed are never left on the floors longer than it is necessary for the feed to be eaten. If they have not a run of fresh green grass, they are given finely pulped mangels or sprouted oats. They take a lot of enjoyment scratching over the green sods which we cut and throw on the floor of the brooder house. And again let me say—it is absolute regularity and care in weighing rations that makes for successful feeding of small chicks.

Mash Mixture for Chicks

A satisfactory ration for feeding young chicks as tried out by the Ohio Experiment Station is a mash composed of two parts by weight of ground corn, three parts bran and one part fine meat scrap. Cracked corn is also used as a grain ration. The mash mixture is fed from a self feeder after the chicks are four weeks old; before this time it is given at three regular intervals daily.

For feeding chicks that came directly from the incubator equal parts by weight of the mash and boiled eggs has been found satisfactory. The eggs used are those tested out of the incubator after seven days incubation.

Sunflowers in the Yard

GROWING chickens are liable to be overcome by heat and unless there is plenty of shade provided in the poultry yard or range losses from this source may be large, hence the suggestion that we plant sunflowers. Sunflowers afford excellent shade through the whole summer and after they reach a height of 10 or 12 inches, they will not be destroyed by the chickens as neither the stalks nor the leaves are palatable. Before this the chickens would need to be fenced away from the patch or they would soon scratch up all the seed, which is decidedly palatable. A plan that we have followed is to plant a few patches of sunflowers covering a few square feet here and there through the poultry yard and over this we stretch wire netting. When the plants are well started they are

The Fruit & Produce Market

The Commission firms undernoted wish consignments of fruit and general produce. They will be pleased to have you write them for information, shipping stamps, etc., if you have fruit or vegetables for Sale.

H. J. ASH

44-46 Church St. - Toronto, Ont.

CONSIGNMENTS OF FRUIT AND
VEGETABLES SOLICITED

Shipping stamps furnished on request
Canada Food Board License Nos. 3-043,
3-044 and 3-517.

DAWSON-ELLIOTT CO.

32 West Market St., Toronto, Ont.
Wholesale Fruit and Produce Consignments Solicited.

Canada Food Board License No. 3-045,
Class II., Div. B., and 3-046, Class II.,
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HERBERT PETERS

88 Front St E., Toronto, Ont.

See advertisement on page x.

Canada Food Board License Nos. 3-007,
3-008 and 3-009.

SARNIA POULTRY FENCE



**Make
More Money!**

Buy a Real Poultry Fence

THERE is a growing demand for a lighter weight fence suitable for poultry yards, orchards, gardens and other farm purposes. There is also a demand for a heavier weight poultry fence than the so-called poultry netting. You may have had some experience with the light weight netting, and, if so, you know that it is a waste of time and money to put it up, besides it always has a loose, shiftless appearance. The Sarnia Fence overcomes these objectionable features. The extra strength of our fence enables us to stretch it to any desired tension. Stay wires and lateral wires in this fence are fastened securely by the famous Sarnia Knot, providing ample rigidity in the body of the fence and making it adjustable and suitable for various purposes about the farm. The Sarnia Fence is close enough to turn small fowl, yet strong enough to turn a large bull, thus affording perfect protection to your yards and grounds.

SARNIA POULTRY FENCE

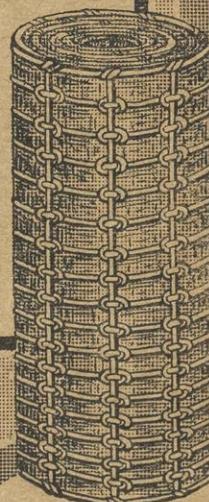
is easily constructed, requires less posts. You don't need a top or bottom board to keep it in place. Lasts many times longer than netting because its wires are larger, stronger, and the fence itself is attractive and durable. There is no buckling of wires. It is easily constructed over uneven ground; no sagging or bagging as in the case of the flimsy netting, and when it is once properly constructed it is there to stay. It gives you real fence satisfaction. Poultry farmers all over Canada testify to its value. It is the "Farmer's Friend" kind. Poultry in Canada has gone a long way toward keeping the home table supplied while the boys were "over there." Build the poultry business for permanency as a business. Sarnia Fence will do its part. Will you do yours? In your new drive for business, don't forget that poultry is a business, and that Sarnia Poultry Fence is necessary to your success.

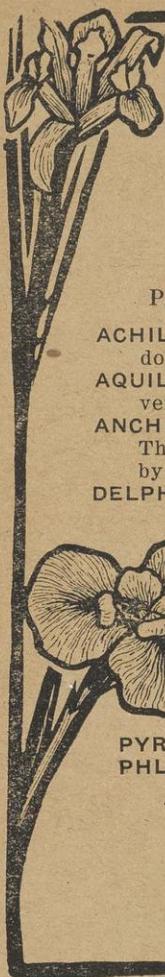
Sold and shipped direct from factory to farm, freight prepaid. Send for our descriptive literature about farm fencing, gates, lawn fencing and supplies. Prepaid freight prices are quoted in Old Ontario, New Ontario, Quebec, Maritime Provinces, four cents per rod extra. Our office at Winnipeg takes care of all Western Canada business. Shipments made F. O. B. Winnipeg. Order now. Have your fencing in hand early, and when you need it. Let's tell you what the Sarnia Poultry Fence will cost laid down at your railroad station in whatever quantity you may desire.

SARNIA FENCE COMPANY, Limited

Winnipeg, Manitoba

Sarnia, Ontario





Ferguson's Hardy Plant Specialties



May we suggest the following varieties of Hardy Plants to you—they are of our best:

ACHILLEA: Perry's White—a fine novelty, 3 ft. high, double White flowers.

AQUILEGIA: Long spread Hybrids, free flowering, very graceful.

ANCHUSA: Dropmore variety, extremely handsome. This variety was the subject of a beautiful painting by Miss Carlyle.

DELPHINIUM: Hybrid Moerheimi. The only good white.

GYPSOPHILA: Paniculata Double White. Invaluable for cutting, a great improvement over the single variety.

HELENIUM: Riverton Gem (New), a blaze of autumn glory.

HELENIUM: Riverton Beauty. A fine old variety of Helenium.

INCARVILLAE: Grandiflora, effective, rare plant.

PYRETHRUM: Hybridum, splendid for cutting.

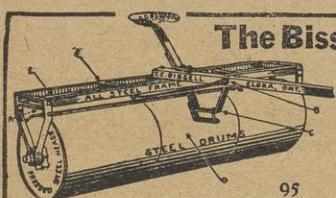
PHLOX: In many new and fine varieties named

AND HUNDREDS OF OTHER FINE VARIETIES.

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Montreal, Que. Nurseries, Lavaltrie, Que.

Everything that's good for the Garden.



The Bissell Steel Roller has a rigid steel frame —no wood whatever.

Large roller bearings and strong 2" axles insure durability and great strength. The Bissell is a 3-drum Roller of good weight, built to stand hard usage and give great service. Write Dept. N for free catalogue.

T. E. BISSELL CO., LTD., Elora, Ont.

95

We have doubled our factory capacity and are determined to supply our customers far and near. See advt. also* on page 154



Trade Mark Registered
The guarantee of quality

SOLUBLE SULPHUR

Makes SPRAYING Pay DIVIDENDS

It is cheaper and more economical.
It is safer and more reliable.
Soluble Sulphur increases the crops.
Soluble Sulphur improves the quality.
We have proved it to thousands.

LET US PROVE IT TO YOU

Our Catalogues, Spray Calendars and Descriptive Booklets are FREE

Everything For
Spraying or Dusting

Soluble Sulphur, Lime Sulphur, Raw Sulphur, Arsenate of Lead, Calcium Arsenate, Bordeaux, Dusting Sulphur, Dusting Mixtures, Dusting Machines (Hand or Power), Spraying Machines (Hand or Power), Spray Guns, Gasoline Engines, Accessories.

NIAGARA BRAND SPRAY COMPANY, LIMITED
Burlington Ontario

thinned to one or two to the square foot, so that they will develop large stalks and heads.

The sunflowers afford more than shade, which alone is enough to make them invaluable. Where the heads are large and well filled with seed they afford a poultry food in the fall which is especially rich and valuable at moulting time. Our plan in the fall is to break the stalks over and the hens then harvest the seed. Otherwise wild birds would do the most of the harvesting. Another point in favor of sunflowers in the poultry yard that might be mentioned is that a patch of sunflowers affords good shelter from hawks.

Windbreaks in B.C.

By Ben Hoy, B.S.A., Assistant Horticulturist and Inspector of Fruit Pests.

Windbreaks are not used to as large extent in British Columbia as the benefits derived from them in many districts warrant. Some of the chief benefits from windbreaks are as follows:

First: Protection by checking the mechanical force of the wind and preventing trees heavily loaded with fruit from breaking.

Second: In windy sections where the soil is fine the drifting of the topsoil and dust storms are greatly reduced.

Third: They make the orchard a more desirable place to work. Pruning on a cold raw windy day can be done more comfortably in a sheltered orchard. Spraying can be carried out more successfully in an orchard free from heavy wind. Men can work more days in the year in protected orchards than in unprotected ones.

Fourth: Checking the wind checks evaporation. This factor is very important in districts of light rainfall.

Five: Windbreaks are an excellent protection against winter killing. It is a noticeable fact that on a windy exposed area we find more winter killing than on protected areas.

Many object to windbreaks for their orchards on the ground that they rob the soil and waste too much land, that they make conditions for frost injury at blossoming time more favorable by preventing the movement of air. The men who object to windbreaks are usually those who have never tried them. The men who have well grown windbreaks in nearly every case consider the windbreaks one of their greatest

assets. The added danger from frost is more apparent than real. It is only on still nights when there is no wind that frost occurs and a windbreak can make no difference on such nights.

Niagara District Notes

F. G. H. PATTISON, WINONA, ONT.

THE last week of March was cold and stormy but April has proved a pleasant month and one favorable to both fruit and vegetable growers. The season is fairly forward and by this time (April 21st) a large amount of spraying with lime-sulphur has been done. The heavy rains of the past week, however, have rendered the ground temporarily too soft for heavy machinery.

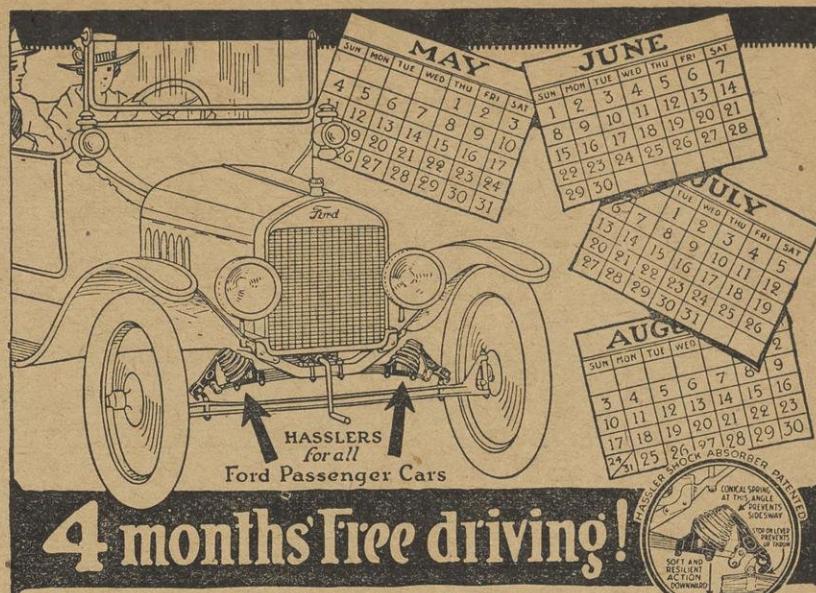
On well drained soil some early gardening has been done, and a few early potatoes have been planted. Pruning is well finished and trees, vines and bushes are in good condition for a crop. A keen demand for all sorts of fruit trees is reported from the local nurseries. Nursery stock is scarce and likely to be scarcer for the next year or two owing to the stoppage of the export of root stock from France. There is an excellent demand at the nurseries for most commercial varieties of apples, but the demand for Northern Spys seems to have slackened somewhat this season. Small fruits are in great demand, especially raspberries, strawberries and currants. Gooseberries are not being planted much owing to the difficulty of obtaining English varieties. There is a keen demand for sour cherry, peach, plum and pear trees, but hardly any demand for grape vines, owing chiefly to the uncertain prospects of the native wine industry.

Some tree planting has been done, mostly in the nature of filling, as the ground is rather wet to allow working it.

One of our leading fruit growers at Winona is doing some extensive tile draining this spring and the tile draining machine has already done some work there, but has been stopped for a time by the rains. Lawns are looking nice and green, and early spring flowers are out in bloom. Tulips also are far advanced.

At a meeting of vegetable growers held at St. Catharines on April 2nd, it was decided to form a branch of the Ontario Vegetable Growers' Association. Officers were elected as follows: Honorary President, J. A. McSloy; President, Thos. Fee; Vice-President, C. H. Brown; Secretary, H. M. McElroy. The Provincial Vegetable Specialist, A. H. McLennan, was present, and gave an interesting lecture on onions. He also referred to the great benefits resulting from an organization of vegetable growers. Mr. Eborall, President of the Central Branch, O.V.G.A. and Mr. Robb, Vegetable Specialist at Vineland, also gave addresses. The object of the branch is to advance the interests of the vegetable industry in the St. Catharines district. On April 16th a second meeting of the branch was held, which was largely attended. President Thomas Fee outlined the objects of the organization. Mr. Robb went fully into the varieties of vegetables most suitable for the district, urging standardization of varieties and their selection from the standpoint of disease resistance. He urged the more extensive growing of asparagus, as it could be made very profitable on inexpensive land, if care in selection was exercised. Philip Wismer, of Jordan, gave an excellent address on the cultivation of small fruits, especially strawberries and raspberries.

It seems to be generally agreed by experimental stations, professors, etc., that



4 months Free driving!

FOUR whole months of driving at no expense to you for repairs or tires. Four whole months in which there will be no depreciation in your car. This is exactly what will happen when you equip your Ford Car or Ford One Ton Truck with Hassler Shock Absorbers. They mean a saving of at least 30%—in all of these costs—the equivalent of four months of driving. Hasslers accomplish these things so easily because they protect the vital parts of the machine from road shocks and vibrations. It doesn't seem like the same car—and you'll say that Hassler Shock Absorbers far more than pay for themselves in improving the riding qualities. They will convert your Ford into an easy-riding, comfortable car for any purpose—more satisfactory—more economical—a machine that will last two or three years longer. You can satisfy yourself regarding the value of Hasslers without risking a penny.



10-DAY TRIAL OFFER
Don't ride without Hasslers because someone tries to discourage you. They are a quality product—worth their price. The Hassler dealer in your vicinity will put them on for 10-days' trial. Your money refunded if you say so. Write for name of dealer and Trial Blank.

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HASSLER Shock Absorber

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The Hassler Guarantee:
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Prevent Wear and Tear on Axles and Harnesses

Imperial Mica Axle Grease

—coats axle spindles and hub linings with a glass-smooth coat of soft mica and grease that banishes friction between the metal surfaces. Makes loads easier to move up-hill or on level roads. Saves wagon wear and tear. Sold in sizes—1 lb. to barrels.

Imperial Eureka Harness Oil

—keeps leather like new—soft, strong and pliable. Sinks in and keeps water out. Prevents drying and cracking. Makes it last longer. Sold in convenient sizes.

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—makes it easy to keep harness and leather thoroughly oiled. Saves time and work.

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IMPERIAL OIL LIMITED
Power - Heat - Light - Lubrication
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FARMERS' BUSINESS

For the past 54 years, this Bank has given particular attention to the business of Farmers.

We have helped many over the rough places, and have aided many more to the highest plane of success.

We are prepared to extend you every aid within legitimate banking practice.

Come in at any time and talk over your affairs with us. You are always welcome.



15

THE MERCHANTS BANK

Head Office: Montreal. OF CANADA Established 1864.

with its 102 Branches in Ontario, 32 Branches in Quebec, 19 Branches in Manitoba, 21 Branches in Saskatchewan, 53 Branches in Alberta, and 8 Branches in British Columbia serves Rural Canada most effectively.

WRITE OR CALL AT NEAREST BRANCH.



McConnell's Free Plant and Tree Catalogue

tells you about the great Everbearing Strawberries. June bearing strawberries, raspberries, blackberries, currants, gooseberries, grapes, asparagus, rhubarb, fruit trees of all kinds, ornamentals, roses, seed potatoes, golden bantam sweet corn, etc. If interested write to-day for free copy.

H. L. McConnell & Son

Port Burwell, Ontario

BISSELL Double Action Harrows will thoroughly cultivate and pulverize any soil. One Harrow is Out Throw; the other is In Throw. They are simply constructed, rigid and durable. The Gangs are flexible and the Disk Plates are so designed that they "hang" right into the soil. Bissell Harrows are built in sizes and weights suitable for horse or tractor use. Write Dept. N for free catalogue. 98c

T. E. BISSELL CO., LTD., Elora, Ont.

We have doubled our factory capacity and are determined to supply our customers far and near. See advt. also on page 152

one of the greatest fertilizer needs of our garden soils is phosphorus, and that the best method of applying this to the soil is in the form of acid phosphate. This substance applied in connection with barnyard manure is very efficacious. Good results have been obtained also from its use with poultry manure at the rate of 100 pounds of acid phosphate to each ton of manure.

As a general rule it is not good practice to plow fertilizers into the soil, as such a method of application in the case of vegetables deposits the plant food too far below the roots of the growing crops. As a rule fertilizers render their greatest help during the early life of the crop; it is therefore better to broadcast the fertilizer on the surface of the soil and then work it thoroughly into the soil by careful harrowing.

Labor is not, so far, more plentiful this season than last in the fruit belt, and high wages are being paid for experienced married men, from \$55 to \$70 per month, including house, garden, and other privileges.

There is a general feeling amongst experienced produce men that prices of fruit, vegetables and other lines of produce are likely to rule high for a considerable period to come.

The outlook for 1919 for the canning industry is reported to be quite favorable. All stocks have been sold and the new season commences with practically no goods on hand. The Dominion Canners, for instance, are reported to have been buying back stock from dealers who had over-bought last year, in order to fill export orders now coming to hand in larger volume with the release of ocean shipping. Food prices are

PANSY

"Canadian Beauties"

(Award of Merit, Guelph Horticultural Society, 1918.)

If you wish to enjoy Pansies of great Perfection in form, coloring and size, we offer you, under the above title, a choice product. Every flower is a queen; every plant a picture to behold. It is a blending of every imaginable color and combination of color. Per packet 50c Pansy, "Royal City," mixture. Packet 25c Aquilegia, lovely long spurred Columbines. Packet 25c Iceland Poppies, "Pearls of Dawn" (Perennials), beautiful bright shades, very choice. Packet 25c Delphinium—"Majestic Giants" from a choice collection of named varieties. Packet 25c

WM. McSKIMMING, Pansy Specialist
233 ELIZABETH ST., GUELPH, ONT.

Every planting season you stake land, fertilizer, time, work, and the cost of the seed on the good faith of your Seedsmen.

EWING'S SEEDS

Every season for Forty-five years

have justified this good faith.

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Ewing's "Improved Hanson" Lettuce

A "crisp heading" variety that is very hardy and will stand extremes of weather. Head is large, hard, tender and crisp, with blanched centre; wholly free from bitterness, and remains long in excellent condition.

1/4 lb. 90c; oz. 30c; pkt. 10c.
Sent postage paid—cash with order.

not likely to come down for some time and the prospects are that between the staple home demand and the growing export trade, substantial profits will be earned.

Reports from Beamsville say that Township Scale Inspector Betler states that he has found a big decrease in the amount of San Jose Scale the past two seasons. The ice storm in the winter of 1918 wiped out a great number of this pest, the heavy coating on the branches and twigs smothering the hatching scale. There is almost a complete absence, too, of the Cherry Black Knot, which six years ago threatened the extermination of the Montmorency and Early Richmond varieties. The fruit growers of the Beamsville section greatly appreciate the good services of Prof. Caesar in the eradication of the various insect and fungus pests. The Professor has been on the job steadily for the last 10 years, and his vigilance has been unceasing on behalf of the growers.

A scarcity of fruit farm help exists and there is likely to be another big demand for farmerettes this season.

A report from Grimsby Beach says that the fruit growers of that section are busily engaged in spraying and getting ready for the coming season, appearances being very favorable for a good crop.

A report from the vicinity of Hamilton says that a peach crop such as has not been seen in the Niagara fruit belt for years is predicted by fruit growers of the district, after observation of the budding trees during the past few weeks. This does not mean that the crop will be an unusually heavy one, but the buds indicate that the fruit will be of very fine quality, and well worth the picking, so that growers assert that as much fruit will be gathered from the orchards this year as there ever was.

The annual meeting of the Vineland Co-Operative Company was held at Vineland a short time ago. There was a large attendance and a very satisfactory report was presented for the past year.

The scarcity of canned goods is one of the problems confronting the grocery trade. For the past few months there has been heavy buying of both canned fruits and vegetables for export. In fact, canned fruits are so scarce among wholesalers that many lines are completely off the market. Vegetables have not been shipped to the same extent, although prices show very sharp advances in the past fortnight. Quotations on canned corn, for instance, almost place it in the luxury class. Tomatoes, too, are higher, although not so much as corn.

Weights and Barrels

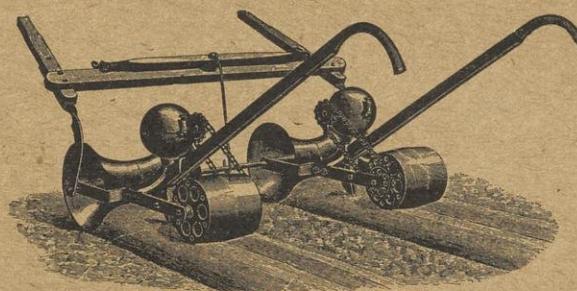
G. E. McIntosh, Fruit Division, Ottawa.

Under present tariffs Ontario apples in barrels are accepted by the carriers at an estimated gross weight of 165 lbs. and Nova Scotia barrels at 150 lbs. With the adoption of the new standard barrel, and its probable use throughout Canada the coming season, an estimated weight fair to both shipper and carrier should be decided upon, before the shipping season begins.

Quite a number of the new barrels were used both in Ontario and Nova Scotia the past season, and it is possible some records of gross and net weights of the different varieties of apples were kept by shippers using this barrel. If any growers have this information the Fruit Division would be pleased to receive it.

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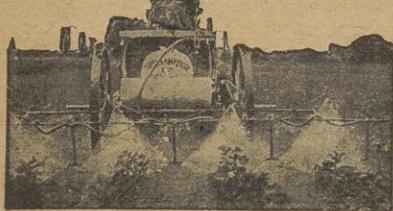
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Annapolis Valley, N.S.

Eunice Buchanan, Berwick, N.S.

The demand for young fruit trees has been greater than usual. The majority of people want early apples, such as Duchess and Crimson Beauty, while others want those that will bear early like Wagener's, Gravensteins, Early Williams and Blenheimers seem to be going out of fashion.

Much pruning has been done, and numbers of dead branches cut out. The weather has been favorable for the work, although the first half of April was damp, with raw east winds.

Oyster-shell bark lice seem prevalent in most orchards, and to combat this we have tried a dormant spray with soluble oil. The number of people who are selling their farms and buying others is very marked, and auctions are numerous.

If good wages are offered, men do not seem hard to get. For a capable man the pay runs from \$45.00 to \$55.00 a month with house. Some men are paid as much as \$60 and a house. Day laborers get from \$2.00 to \$2.75 without board. The price of beans has a tendency to rise, as people are holding them for higher prices.

Items of Interest

Sir Robert Borden, according to news paper despatches, had a practical illustration during his stay in London of the cost of living. On Regent Street some fine apples in a fruit store attracted his attention and appetite. But when he found they were selling for \$1 a pound he decided to leave his appetite for this luscious fruit unsatisfied until his return to Canada. This price was abnormal, but apples of the poorest quality could not be purchased for less than 25 cents per pound.

The Canada Food Board is still urging the cultivation of home and vacant lot gardens. It points out that the food shortage still exists, and that with the peace treaty still unsigned, and with the European demands for staple foods still keen, an immediate drop in prices does not seem likely.

The customs returns still show that incredibly large quantities of vegetables are being imported into the Dominion every year. In a statement just issued by the Canadian trade commission, attention is drawn to the following value of imports of vegetables from the United States in the fiscal year ending March, 1918:—

Green apples, \$1,500,000; berries, all sorts, \$685,000; cherries, \$107,000; garden and field seeds, \$638,000; potatoes, \$811,000; tomatoes, canned, \$694,000; tomatoes, fresh, \$530,000; canned vegetables, general, \$457,000; beans, \$2,590,000; peas, \$216,000; other dried fruits, \$650,000; peaches \$496,000.

In the April issue of The Canadian Horticulturist there was published on page 99, an illustration showing trees in an orchard, a row of which had been given an application of fertilizer, and a row of which had not received such treatment. The experiment was credited to an Ohio orchard, and the bulletin as Ohio State Bulletin 153. We are advised that this illustration should have been credited to the Pennsylvania State Agricultural Experiment Station, State College, Centre Co., Penn. The bulletin is the Pennsylvania State College Bulletin 153.



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 MENTION
 The Canadian Horticulturist

Vegetable Judging Tables*

A. T. Logsdale, B.S.A., Ottawa.

JUDGING exhibition stuff by the use of a score card is liable to lead one into trouble if followed too rigidly. However, a judge who employs a score card of some form or other is not likely to go far astray, provided he knows something about the crop that he is judging. To me this matter seems to be one in which a number of opposed but equally valuable opinions may be maintained.

We are, perhaps, inclined to make our stipulations to exhibitors too steep. We have not obtained by any means perfect packages, still we often see the dimensions of the package very carefully given. To my mind it would be better to state a minimum and maximum number of specimens. Let the exhibitor employ any package he chooses, but maintain that it must be a practical commercial package. As we rely on the judge to pick out, in his opinion, the best exhibit of fruit or vegetable, it might not be a bad idea to further burden him by considering the value of the packages employed.

Another point is that of allotting prizes somewhat in proportion to the number of entries in a class. This is becoming quite a popular method with poultrymen and the

* Extract from a paper read at the last annual convention of the Ontario Vegetable Growers' Association.

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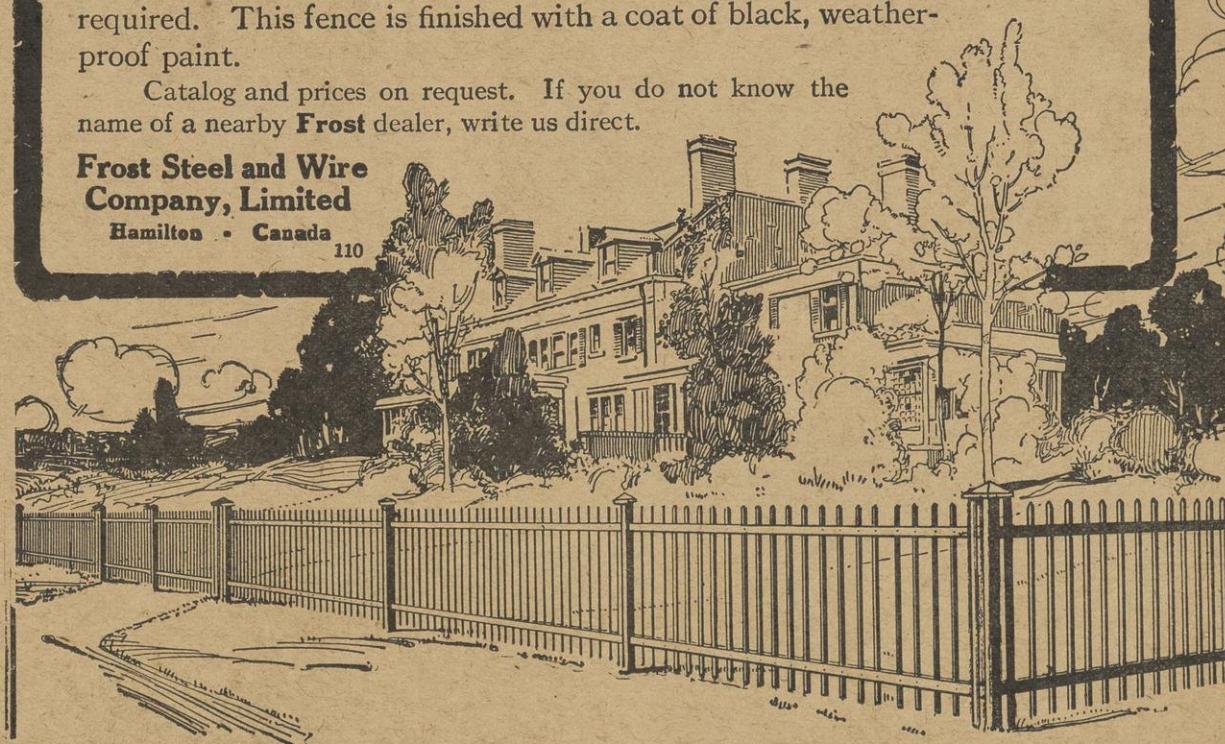
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infection is spreading. A class where there is a large number of entries is exhibiting a more important commodity or variety than a class where the entries are noticeably few. May I give an instance. There were almost thirty entries of competitors in the onion competition and three in melons in a recent show. There were the same number of prizes allotted to each class. In the onion competition there were several competitors who were just outside the prize list, but who were exhibiting a first-class commodity. In the class for melons there were prizes to spare and I think some were earned too easily. Then again the prizes might be graded somewhat proportionately and as a class increased in size, the first prize made more valuable. I make a suggestion that may be very greatly improved upon, but I suggest it merely to start discussion if possible. Could not a schedule be drawn up something in the following manner: For a class of three entries, one prize; a class of four or five entries, two prizes; six to nine entries, three prizes; ten to fifteen entries, four prizes; sixteen to twenty entries, five prizes, and so on to a maximum of say eight prizes. The prizes might then be graded, taking as a basis the money value of the prizes given in the O. V. G. A. competition. Where only one prize is to be competed for it should be of a value of \$5.00; where two they should be \$6.00 and \$4.00; three prizes, \$7.00, \$5.00 and \$3.00; four prizes, \$8.00, \$6.00, \$5.00 and \$3.00, and five prizes, \$10.00, \$8.00, \$6.00, \$5.00 and \$3.00. Had such a schedule been employed at one show and the number of prizes in proportion to the number of entries there would have been more prizes given for practically the same amount of money. The money saved in a small class would have been available for prizes in a large class. A schedule of this nature could be drawn up and printed and on the same card a point of valuation score card also submitted. The judge, when receiving one of these cards, would be able, by looking carefully over the score card, to ascertain fairly readily the essential object of the competition and where the greatest number of points were to be awarded. Then by counting the number of entries in the competition and referring the number to the schedule of his score card he would know the nature and number of prizes he could award.

By a sliding scale of prizes and a sliding valuation in the prizes according to the number of entries in a class this trait of exhibiting to secure prizes rather than exhibiting to test the quality of one's own product, would receive a severe check.

Re-packing fruit is a common practice among dealers, and in many cases has reflected upon the original packer if his name appeared on the package. The Inspection and Sales Act now requires that when it is necessary to re-pack fruit, either in a closed or open package, the person re-packing—if he is not the original packer—must completely remove all original marks and conform to the requirements of Section 320 of the Act, as though he were the original packer, and as such is responsible for the grading.—C. W. Baxter, Dominion Fruit Commissioner, Ottawa.

Owing to the shortage of labor, the British Columbia Department of Agriculture for two years past has conducted classes in fruit packing among school children with excellent results. The government met all the expenses involved. Quite a large number of city girls who received training in these classes were used last fall in the fruit districts as fruit packers.

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The Canadian Horticulturist, Peterboro, Ontario

Blight Resistant Potatoes

W. T. Macoun, Dominion Horticulturist, Ottawa

DURING the past thirty years nearly 800 varieties of potatoes have been grown at the Central Experimental Farm, Ottawa. Seedlings have also been raised, from which blight-resistant varieties might be selected. In the early years the number of varieties grown each year was very large but gradually the poorest yielding sorts, those which were poorest in quality and those most subject to late blight, were discarded. Beginning in 1905 the varieties, of which the plants were least affected by blight, were kept separate from

the others and not sprayed with Bordeaux mixture. Fifty-three varieties were eventually brought together in this way as apparently most resistant to blight. Of these 53, however, there were ten which were more outstanding than the others, the majority having been rather badly affected in years when the blight was severe. These ten varieties were: King Edward, Dalmeny Beauty, Factor, Hard to Beat, Highlander, Duchess of Cornwall, White Giant, Dr. Maerker, Sirdar, Holborn Abundance. Of these, all but the White Giant were Brit-

ish or European varieties where special attention has been paid to blight-resistant sorts.

For various reasons all of these varieties have been discontinued except the Factor and the Holborn Abundance; the latter variety, however, is not grown at the Central Farm but at one of the Branch Stations. It is rather rough in appearance for a good commercial variety.

Before the Act went into force, which prohibited the importation of potatoes into Canada, a large number of other varieties including some of the most blight-resistant originated in Great Britain were imported, and among these the Dalmeny Regent, Dalmeny Hero, Table Talk and Brydon are among the most promising. The drawback

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H. PETERS
88 Front St. East, Toronto



References: The Canadian Bank of Commerce (Market Branch) and Commercial Agencies.

to many British varieties said to be most resistant is that they are not productive enough when grown in Canada.

Both the Dakota Red and Maggie Murphy potatoes have withstood blight better than most in some places and have become very popular on this account, but they are inferior in quality and are not always immune.

In conclusion it may be said that the most blight-resistant varieties are mainly among the latest sorts, and the latest sorts are in many districts where the potatoes are grown, rather poor in quality. Much attention has been given to blight-resistant varieties by the Department of Agriculture of the United States both by breeding and otherwise, but, as in Canada, severe late blight only occurs occasionally and it takes a long time to get definite results.

Shipping Immature Fruit

C. W. Baxter, Dominion Fruit Commissioner, Ottawa.

During the past few years there has been a market increase in the quantity of fruit shipped which was immature. I refer specially to grapes and plums. So marked has this been in the case of grapes, that consumers turned from the Canadian product to imported fruit from California. Some of the excellent varieties from this state come on our markets about the time the Canadian crop is being offered. Some shippers have had the mistaken idea that it is an advantage financially to have their grapes on the market very early in the season. This, of course, would hold good provided the fruit was properly matured.

In dealing with this matter at the last Dominion Conference of Fruit Growers called to discuss the proposed amendments, it was pointed out that it was desirable, for some purposes, to ship certain kinds of fruit at a stage which might be called immature, and provision has been made in the Inspection and Sale Act for this by the insertion of a clause which provides that the package must be plainly marked with the words "immature fruit" before it is taken from the premises where it is packed.

Immature fruit is described in the Act as "not ripe enough for dessert purposes and which will not attain such condition after being picked." This is not to be interpreted to mean that fruit is to be at its best for what is commonly known as dessert purposes, but it is intended to eliminate fruit which is so immature that it never becomes edible as it usually shrivels and dries up. In many cases the flesh becomes tough and the fruit cannot be used for the purpose for which it is commonly purchased.

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Selected Yellow Globe Danvers Onion (black seed)	pkt. 10c, oz. 40c. 1/4 lb. \$1.25, lb. \$4.50.
Select Large Red Wethersfield Onion (black seed)	pkt. 10c, oz. 40c. 1/4 lb. \$1.20, lb. \$4.00, 5 lbs. \$17.50.
Yellow Dutch Onion Setts (choice)	lb. 35c, 5 lbs. \$1.70
Shallot Multiplier Onions (for green onions)	lb. 30c, 5 lbs. \$1.40
Chantenay Red Table Carrot	pkt. 10c, oz. 30c, 4 oz. 90c, lb. \$2.75
Danish Ballhead Cabbage	pkt. 10c, oz. \$1.40, 4 oz. \$4.00
Perfection Cucumber (for table or pickles)	pkt. 10c, oz. 25c, 4 oz. 75c
XXX Pink Skin Tomato (continuous cropper)	pkt. 15c, oz. 75c
Rennie's Mammoth Squash (biggest that grows)	pkt. 25c
XXX Solid Head Lettuce	pkt. 10c, oz. 40c, 4 oz. \$1.20
XXX Guernsey Parsnip, fine smooth roots	pkt. 10c, oz. 30c, 4 oz. 85c
Detroit Dark Red Table Beet (round)	pkt. 10c, oz. 25c, 4 oz. 85c
Rust Proof Dwarf Black Wax Butter Beans	1/4 lb. 20c, lb. 65c, 5 lbs. \$3.00
Early White Cory Sweet Table Corn	1/4 lb. 20c, lb. 50c, 5 lbs. \$2.25
XXX Scarlet Oval Radish (mild, crisp)	pkt. 10c, oz. 25c, 4 oz. 75c

Flowers

Little Marvel Garden Bush Peas, very early	pkt. 10c, 4 oz. 20c, lb. 50c
Early Branching Asters, Crimson, Pink, White or Mixed	pkt. 10c
Mammoth Fringed Cosmos, mixed colors	pkt. 10c
XXX Mammoth Verbenas, superb mixture of colors	pkt. 10c
XXX Spencer Giant Sweet Peas, all shades, mixed	pkt. 15c, oz. 35c
Sweet Scented Nicotine (Tobacco Plant) mixed colors	pkt. 10c
Summer Cypress, lovely summer hedge,	pkt. 10c
XXX Climbing Nasturtium, all colors	pkt. 10c, oz. 30c, 4 oz. 90c
Giant XXX Comet Asters, mixed, all colors	pkt. 10c
XXX Defiance Sweet Mignonette	pkt. 10c, 1/2 oz. 60c, oz. \$1.00
XXX Mammoth Zinnias, mixed colors	pkt. 10c
XXX Fringed Phlox, mixed colors	pkt. 10c
XXX Prize Ruffled Petunias—Giant, mixture	pkt. 25c
Alyssum—Carpet of Snow	pkt. 10c, 1/2 oz. 35c
XXX Mammoth Hollyhock, mixed colors	pkt. 20c
Poppy—Flanders Field	pkt. 15c, 2 pkts. for 25c

A copy of our Tool Catalogue will give you full particulars on Garden Tools, Fertilizers, etc. Write for one to-day.

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