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THE
CANADIAN HORTICULTURIST &

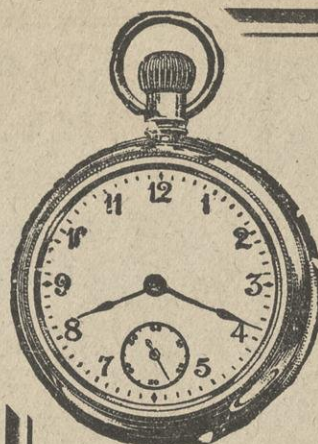
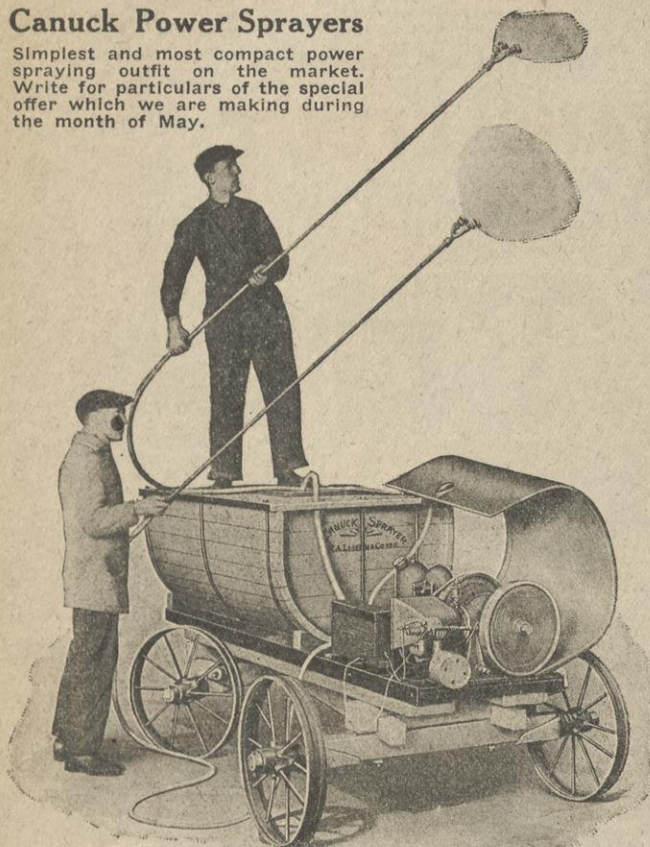
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VOLUME 24, No. 5
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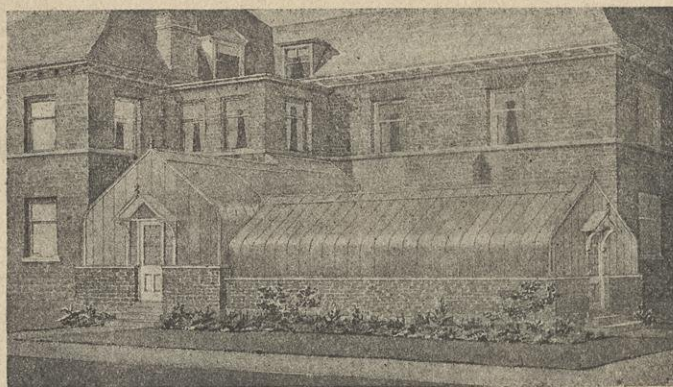
State Medical Society reports 26 cases of arsenical poisoning from fly destroyers in 1915 in only 11 states; in 1914 there were 46 cases in 14 states.

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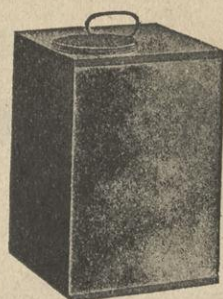
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The Canadian Horticulturist and Beekeeper

Vol. 26, 4

PETERBORO, MAY, 1916

No. 5

Factors of Success in Strawberry Growing*

F. L. Gable, Dominion Fruit Inspector, Toronto

WHAT soil is most suitable for strawberries? No fruit, plant or weed will thrive on as many different soils as the strawberry, but which soil is best? It is generally admitted sandy loam will produce the greatest crops of berries, provided it is well manured and cultivated, although a great many berries are grown on heavy lands successfully. The strawberry requires an abundance of moisture although damp soggy soil on low land is absolutely useless for growing them. Safe advice to give an inexperienced grower with only ordinary farm land to choose from would be to use the spot where the greatest variety of farm crops do the best. The nearer it approaches what is considered good garden soil the better.

Do not plant strawberries on ground not previously cultivated for two years as it is apt to be infested by cut-worms, white grubs or other harmful pests. It is also apt to be full of weeds and grass seed. The best land is that which has been in a hoe crop the previous year, (corn is not so good), it being both free from insects and weeds.

To prepare that ground. It is best to plow in a good coating of manure before planting. This can be applied especially heavy if well rotted. It is also advisable to broadcast agricultural lime at the rate of one-half ton per acre. Your ground should be well cultivated as early as possible in the spring. The earlier you get your plants set the better, as strawberries thrive in cool, moist weather and cannot stand much heat and drought.

The digging of plants and their selection should be done carefully. Only good healthy plants should be used. These should have the dead leaves pulled off and the plants should be well trimmed. In buying plants make sure that they are trimmed ready for planting and do not allow the wind or sun on plants. They should be covered with a wet bag or cloth and the plants kept thoroughly wet until planted. The rows should be three and a half to four

feet apart and the plants set from eighteen inches to thirty inches apart according to the variety. The spade is useful to use in planting, as by a little experimenting you will find you can make a good wedge-shaped opening and by spreading the roots out in this opening and tramping the plant in well with the crown just above the earth you will find your plants will grow nicely.

As soon as your plants are set, cultivation and hoeing should begin. Continue it each week throughout the summer. Do not allow weeds to get a start. The blossoms should be picked off. Do not allow runners until after July 1st, when they should be allowed to run, but placed in the row each way from the mother plant. If properly placed you will soon get a matted row.

Strawberries are troubled somewhat

with fungus diseases which may reduce your crop unless controlled. This is easily done by spraying well in the spring, after growth begins, as well as two or three times when they start growing again after picking.

Another point in strawberry growing which is often neglected, although it pays the best of all, is mulching with straw or very coarse manure. About four good loads of straw to the acre applied just after the ground is frozen and raked off between rows in the spring after the plants start growing, will not only protect your plants through the winter, but will hold them back in the spring safe from late frosts. By raking this off in the row it helps to keep the moisture during the summer drought, when moisture is a necessity. It also helps to prevent having sandy berries.



A well-loaded Duchess apple tree in the orchard at the Central Experimental Farm, Ottawa.

*Extract from an address delivered before the members of the Norfolk Fruit Growers' Association.



Rev. Father Leopold, Past President of the Quebec Fruit Growers' Society, among the cherry trees which bloom at the Oka Agricultural Institute, Oka, Que.

Two Fruit Pests to Watch For*

G. E. Sanders, Entomological Division, Annapolis Royal, N.S.

LAST year I warned the fruit growers of Nova Scotia of a widespread outbreak of Canker worm, which would damage many orchards in the spring of 1916—that warning was based on the reports of our brown tail moth inspectors. This year, reports from the same men say that the infestation is increasing, and that a great amount of damage will be done this spring. Some few owners have already applied tanglefoot bands. Where these bands were not applied very thorough spraying in 1916 is all that can now be depended upon to control Canker Worm. If you saw any number of light grey moths about the trunks of your trees last November you can depend upon it that they will eat more or less of the leaves from your trees this spring, and cause you some loss.

In regard to spraying for Canker Worm, we, of course, all know what a hard insect it is to poison. When more than half grown it apparently thrives on arsenic, so in order to control it we must have the leaves thoroughly coated with poison when it emerges from the egg and begins feeding, for it is then comparatively easy to kill. Most of the Canker Worms emerge about five days before the blossoms show pink, so if your orchard is infested put on the pink bud or second spray a couple of days earlier than usual, or else retard your semi-dormant or first spray until the leaf is as large as a twenty-five cent piece, using in both sprays a larger quantity of poison than usual.

The present outbreak is wide, covering the whole Annapolis Valley, and in

a general way only the orchards that have been heavily sprayed for the past two years are in any way free from them.

Tussock Moth.

We are now on the eve of another outbreak also of Tussock Moths. Inspection has shown this outbreak to be widespread, probably heavier in the West end of the Annapolis Valley than in the east. The Tussock Moth was particularly bad in the east end of the valley in 1906; the next outbreak in 1912 did not affect the valley so much. This present outbreak will damage a few orchards in 1916, but will not reach its height until 1917. In one orchard this year I found a large amount of fruit disfigured by the feeding of the larvae. The injury might, at first glance, be mistaken for that of the Fruit Worm, but the feeding is done later and does not heal out so perfectly. The apple is seldom deformed, the edge of the eaten areas are irregular, often extending irregularly over half of the apple.

The eggs of the Tussock Moth were deposited by the female about August 30, about 150 eggs in a cluster, on the old pupa case, and covered with a frosting or froth to protect them. They may be found on any part of the tree, usually on the fruit spurs of the apple. The young larvae will emerge during the last week of June and feed for two or three weeks on apple leaves, later feeding on the fruit to a certain extent. In order to control Tussock Moth we must put poison into our last summer spray, or that going on during the last week of June. If the eggs of the Tussock Moth are in any way numerous in an

orchard, it would pay to put in a larger quantity of poison than usual in the last spray.

Dusting Fruit Trees

D. Johnson, Dominion Fruit Commissioner, Ottawa

I was much impressed with the address delivered on "Dusting Fruit Trees" by Professor Reddick of Cornell Agricultural College, before the New York Fruit Growers' Association this year. Professor Reddick stated that after five years experimenting with the dusting of fruit trees for scab and insects affecting the fruit and foliage, he was convinced that as good results could be obtained, as by spraying the trees with liquid sprays. The expense of treating an orchard in this way is about equal to that of the common method of spraying. Two men and one horse can dust thirty acres a day of full grown Baldwin trees. In this way a great saving of time is effected, besides getting the poison on the tree at just the proper time.

Dusting machines can be attached to an ordinary spray pump engine and are offered by many manufacturers at prices ranging from \$25 to \$120. Up to the present I understand that they have not been able to produce a dust that would be of sufficient strength to destroy San Jose scale or Oyster Shell scale, but Professor Reddick intimated that he hoped to obtain a dust which would be equal to such demands.

The material used in dusting is, I understand, composed of sulphur, arsenate of lead and gypsum, which is ground into a fine dust that will pass through a two hundred mesh sieve. This mixture is blown out through a pipe and floats away like smoke through the air, and if applied on the wind side of a tree will thoroughly cover it.

It was the general impression among the fruit growers at the New York convention that the dusting of orchards may in time do away with the liquid spraying of trees, particularly in orchards not affected with scale. I would, however, advise the fruit growers of Canada that they stick to the old and thoroughly tried sprays, until our Canadian Experiment Stations have proved that dusting is satisfactory under all climatic conditions.

Color is the greatest need of the apple grower. In order to get this, you must prune so as to let the sun, which gives color, into all parts of the tree. The later cultivation is kept up the less color you will have.

One of the best ways to control insects on strawberries is by rotation of crops and clean cultivation.

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

How Blossoms Are Fertilized*

Prof. J. E. Hewitt, B.S.A., Guelph, Ont.

THE production of millions of dollars worth of fruit depends largely upon insect pollination, and no insect is so important in this work, according to A. A. Phillips, of the Bureau of Entomology, Wash., as the honey bee. It is a most conservative estimate to claim that the honey bee does more good to agriculture in its office as a cross pollinator than it does as a honey gatherer.

What is there to support this statement? The indirect evidence we see in abundance in the numerous and wonderful adaptations of flowers to prevent self-fertilization and to insure insect pollination. The direct evidence has been obtained by experiments carried on by the various experimental stations and is very conclusive.

Prof. Waite, of Washington, whose experiments were published in the Year Book of the United States Department of Agriculture, reports as follows:

"Out of 2,586 blossoms covered with gauze netting only three apples set fruit. Of these the Baldwin, Spitzenburg and Fameuse set some fruit. The Baldwin, which is often self fertilized, gave four times better results when cross-pollinated. Cross-pollinated apples were larger, more highly colored and better supplied with seed."

Results With Pears.

"The Anjou, Bartlett, Clapp's Favorite and Clairgeau were found to be completely self-sterile, while the Flemish Beauty, Seckle and Angouleme were found to be more or less self-fertile.

"Out of 153 blossoms covered of the Arkansas Lombard no fruit set, and out of 475 blossoms covered of the Wild Goose (*Prunus Americana*), no fruit set; out of 90 blossoms covered of the Japanese Plum Mearu no fruit set."

Prof. Waugh reports the following insects pollinating the plum: Honey bee, bumble bee, wasp and some short-tongued bees. Prof. Waugh confirmed Waite's work with the plum and draws the following conclusions from his experiments: The results indicate that the insect visits are of prime importance in the pollination of plums. Observation in the field shows that the common honey bees are nearly always the most active workers and the ones which by the character of their operations in the flower may be held chiefly responsible for distribution of pollen.

Mr. C. H. Hooper, in the Journal of the Royal Horticultural Society, March, 1912, reports that when insects were

excluded from gooseberries and red and white currants, practically no fruit was formed; from cherries a single fruit set; from plums a few set fruit; from apples out of 63 varieties only one set and matured fruit, viz.: Irish Peach; and from raspberries, fruit set but results were not so good as with flowers exposed.

Red Clover.

Darwin states that one hundred flower heads on plants protected by a net did not produce a single seed, while a hundred heads on plants growing outside, which were visited by bees, yielded 68 grains of seeds.

Darwin's experiments with white

clover proved that cross-pollination is necessary. Twenty covered heads yielded a single aborted seed, while ten unprotected heads visited by bees yielded 220 seeds.

In Bulletin 157 of the Kansas Agricultural Experimental Station it is stated that extensive experiments have shown that seed production is almost entirely prevented when insects are excluded from the blossoms.

In conclusion it may be said that bees are absolutely indispensable for the production of fruit and clover seed. With cross-pollination apples are more vigorous and more resistant to disease.

Practically no insects work except bees when apples are in blossom. Some varieties of apples are self-fertile, but even these have more and better fruit when bees are present.

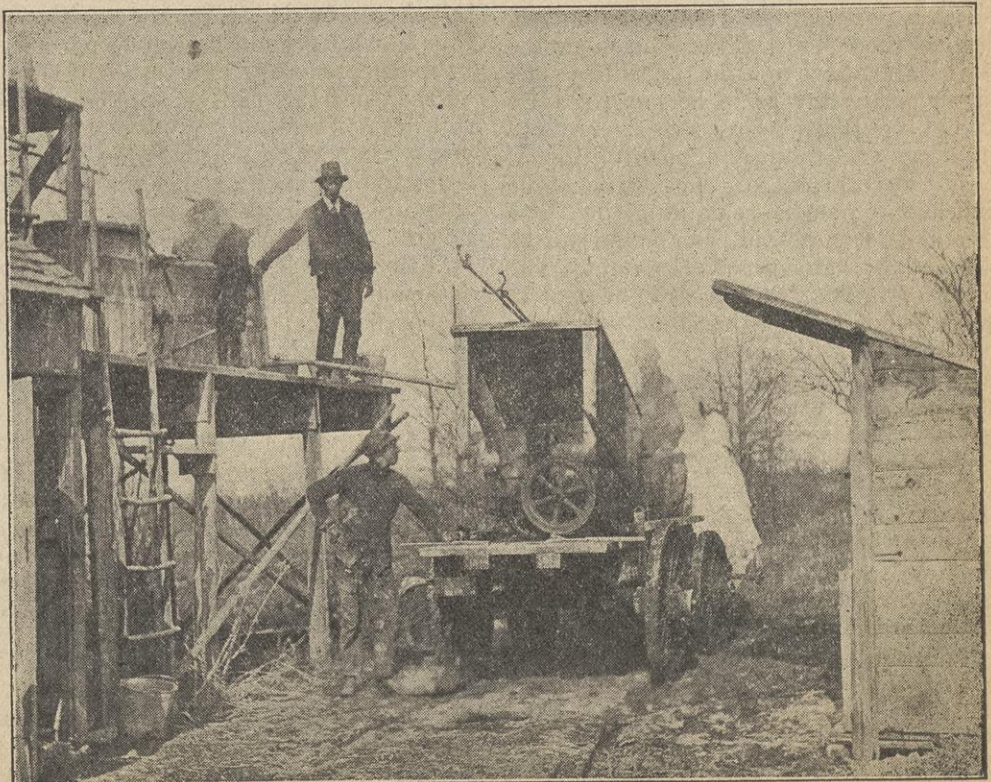
Lime in the Orchard

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

I AM often asked if I would advise lime for an orchard. My reply is, yes! for the purpose of starting a clover cover crop, if for nothing else. It is doubtful of what value lime is to increase our apple crops, but certainly many orchards will not produce clover without lime. The quantity per acre required will vary somewhat, and in many cases all the lime requirements may be made up by a judicious use of slag. I am convinced, by our experiments at Kentville, that lime in some form is essential in order to get a

growth of clover on many of our soils. The reason why vetch has given better results than clover is that vetch will thrive on soils which are quite acid, although liming is usually helpful to it. It has, therefore, a far wider range of adaptability than clover, which tends to disappear altogether when soils become exceedingly acid.

Lime, of itself, will not always give increased crops. On poor soils there is not the gain one might expect, for lime will not furnish the necessary nitrogen, potash and phosphoric acid.



Loading up with ammunition for the fight against the pests. Photo taken in the Niagara District, Ont.

* Extract from an address given at a short course in beekeeping at the Guelph Agricultural College.

A Ruined Family Tree

By Herbert F. McDougal.

A WORN codling moth, with spray in his eye, climbed out to the tip of a limb, and wearily took in the damp landscape with a vision constructed and dim, and he mumbled and muttered under his breath, of latter-day happenings dire, when a man with a hose and a nozzle that worked could put out a pest like fire.

"That old apple tree, where I spent happy hours, will never again be the same, since that modern man with his poisonous spray and his knowledge of insects came; he has broken my home and has poisoned my eye, and the iron has entered my soul, and he's made it so hot for this old codling moth, that the said moth is hunting his hole.

"Generations my family had lived in that tree, and had thrived on its generous fruit, and the man who evicted us moths from our homes is nothing much short of a brute. He has put a kink in our family line, and has brought to us nothing but woe; for we can't live on dope like he shot in my eye, and I reckon we'll all have to go.

"It is sad to consider the fate of a bug that has had an existence so gay; we were happy so long as men let us alone, but we can't stand this new-fangled spray. It is true that the man with a deed to that tree may think he was well in his right when he cranked up his sprayer and loaded his hose, and put a proud family to flight.

"But it's certainly hard on a well-meaning bug to have his existence cut short, just in order that apples may grow big and red and be of desirable sort. He has shot our traditions all full of rough holes, and he's certainly hard upon me; and, however it blossoms and bears ruddy fruit, to us it's a bum family tree."—Fruit Grower and Farmer.

We hear considerable about the ability of lime to liberate potash from the soil. Where soils have been fertilized generously with potash in recent years, the use of lime will add noticeably, for a time, to the quantities of potash which plants can take from the soil. This is due to the fact that lime enters into certain compounds replacing potash, which then passes into solution in the soil water, or is held in the soil in such a physical state as to be more readily available than before. It is obvious that an end to such a possibility will soon be reached, for there will not be sufficient potash remaining in these readily decomposable compounds to be liberated to any practical extent. The most of the potash in soils is present in such combinations that lime will have no practical decomposing effect upon it. It seems to me little can be hoped for in a practical way by attempting to set free potash for crops by liming.

The fact that large quantities of potash have, in recent years, been used in the Annapolis Valley, will materially help out in our present potash shortage, but the source of our potash supply in the future should be through the clover plant, with its deep feeding root system, which will do more to liberate potash than will the lime.

Many of our orchard lands are so deficient in humus and plant food that they will not grow cover crops even if lime is used. If such is the case, a system should be adopted to give to the

orchard sufficient stable manure to get a good clover crop started, after which there will be little difficulty in securing a good catch. From five tons of good stable manure to ten tons of poorer grades per acre should be sufficient, if properly applied, to give an excellent catch. If necessary, to this soil should be added about from two to four tons of ground limestone per acre. In some cases slag is all that will be required, and this can be applied at the rate of one thousand pounds every three years. It may be that it is best to give a good application at once, rather than spreading it in small quantities over several years. In other cases it may be that lime only is required. This can be determined by the vigour of growth in the orchard, and quality of the fruit previously produced.

Pear Blight starts in the spring of the year when the blossoms are open and that is the time it is carried, especially to apples. There is only one thing to do with pear blight, and that is to act quickly and keep on acting. To control it as few twigs as possible should be left for the insects to feed on. Early in the season every affected twig should be cut out. Be sure to disinfect your tools, because if you cut a diseased part and then cut a healthy part, you are almost sure to give it the disease.—Prof. L. Caesar, O. A. C., Guelph, Ont.

Essentials of Success

Seth J. T. Bush, Morton, N.Y.

One mistake very often made by persons who think they have "heard the call" to go into fruit raising comes through their undertaking a twenty-five or fifty acre orchard proposition with a five or ten acre capital. You can't sweep back the tide with a broom, and it is much better to operate on a small scale and do it thoroughly than to undertake something beyond your ability or means.

All land is not fruit land, and it is useless to try to grow fruit successfully unless you have the right kind of soil and other favorable conditions, and with these it is also useless unless you are prepared to spray, cultivate, prune and thin properly. All this costs money, and a great deal of it, and requires much labor, and that is not all the story. When you have done all the needed things to produce a fine crop of fruit, you will still fail of success if you do not properly grade and pack your fruit.

There never has been a time in the history of fruit growing when the absolute necessity for honest, uniform grading and packing was so apparent. We have got to leave the "culls" out of the package.

Every package of poor fruit that is allowed to go on the market reduces the price you are able to obtain for your good fruit. It is a mistaken idea for any man to think that when he succeeds in selling his inferior fruit, other than at the cider mill, evaporator or canning factory, that he is "just so much ahead."

We can and do raise enough high grade fruit in this country every year to supply all the demands, and each year the necessity of more markets and better distribution is more apparent. All inferior fruit should go into by-products, and none of it be packed in baskets and barrels, and thus go into consumption to the disgust of many and satisfaction of but few.

We are told that the peach contains a far greater percentage of sugar than the beet, and our scientific friends should tell us how to extract this sugar. The very finest material for setting prints in fabrics manufactured abroad is obtained from dried fruits. These matters call for careful investigation.

The grower must know when his fruit is ready to pick, and it must be picked when it is ready, not before or two or three days after, but just at the right time, or the returns will not be satisfactory, as the fruit will not carry properly, and there are so many peaches grown nowadays that people do not have to buy imperfect fruit. In any case, consumers will not pay fancy prices for it.

Preparations for Planting

Geo. Baldwin, F.R.H.S., Toronto, Ont.

BEFORE discussing the preparation of the garden for planting, let us pay a little attention to the lawn. If you have not already taken care of the renovating of the lawn, it is not too late yet. Get a sharp toothed rake and score the lawn from top to bottom, then thoroughly mix the following ingredients: One pound Kentucky blue grass, one pound white clover, one pound nitrate of soda (ground up fine), and about two shovelfuls of sifted soil (these quantities for a lawn twenty-five by thirty feet). Wait until the wind has subsided, then scatter the mixture on broadcast, raking it over again lightly. If there are no signs of rain, get the hose and give the ground a good soaking, then use the roller or pounder. Above all, keep the dandelion from blooming. Dig out the roots as much as possible.

Did you take the suggestion given in the April issue and raise your own plants? If not, get as many boxes of plants as you require to fill in bare spots in the perennial and other borders. Let me here give a word of caution as to handling these seedlings. Do not jerk them out of the boxes, but immerse the box, plants and all, in a pail of not too cold water for fifteen minutes, then slit the sides of the box, squeezing the ball of rootlets gently, take the plants out carefully and lay them down one by one where required. You will then not have to complain about the poor quality of the plants. Be sure to dibble the holes big enough, so that roots will be in a downward position, press the earth firmly about the roots, and finally give them some water. Do this in the evening if possible. This applies to vegetables as well as to flowers.

Feed the rose bushes with liquid manure from the time the bud appears till you can see the color of the bloom, and then stop. If they are bothered with green fly or aphids, and you cannot keep them down with the hose, use the prepared nicotine or whale-oil soap, following directions on the packages. Give the paeonies some support when blooms begin to get heavy. Do not allow more than about twelve or fourteen shoots of the phlox or delphinium to bloom, cutting off all others close to the ground. Be sparing with water on hollyhocks, as they are liable to rot or get brown spot on leaves. Pull out stray shoots of helianthus, which will persist in coming up where not wanted. Do not have too many blooms on asters, but thin out and let us have bigger asters this year. Try a few salpiglossis, they are just as cheap, and very

pleasing, and above all plant some gladioli in clumps as well as singles dotted here and there. If you are using a hot or cold frame, be very particular about moisture and air and give the seedlings lots of room.

May is the most critical month in the calendar, for if preparation and proper planting is not done, failure will be the result. Go at the work, therefore, diligently and cautiously. First of all, the garden having been manured, dug, and rough raked, get, for an ordinary sized garden four pounds slacked lime and two pounds powdered sulphur and mix them thoroughly. Scatter the mixture broadcast from top to bottom. Comb it into the soil with the rake. This being done and May the twenty-fourth having arrived, have ready the seed-box, boxes of plants, a hoe with feet and inches marked on the handle, a rake, dibble, line, can of water, and a one-inch board to stand on between the rows. You will then be ready to plant the cabbage. As an extra precaution against cut-worms, mix a teaspoonful of paris green, one pound of bran, enough water to make a paste, and scatter it here and there along the rows of both cabbage and cauliflower.

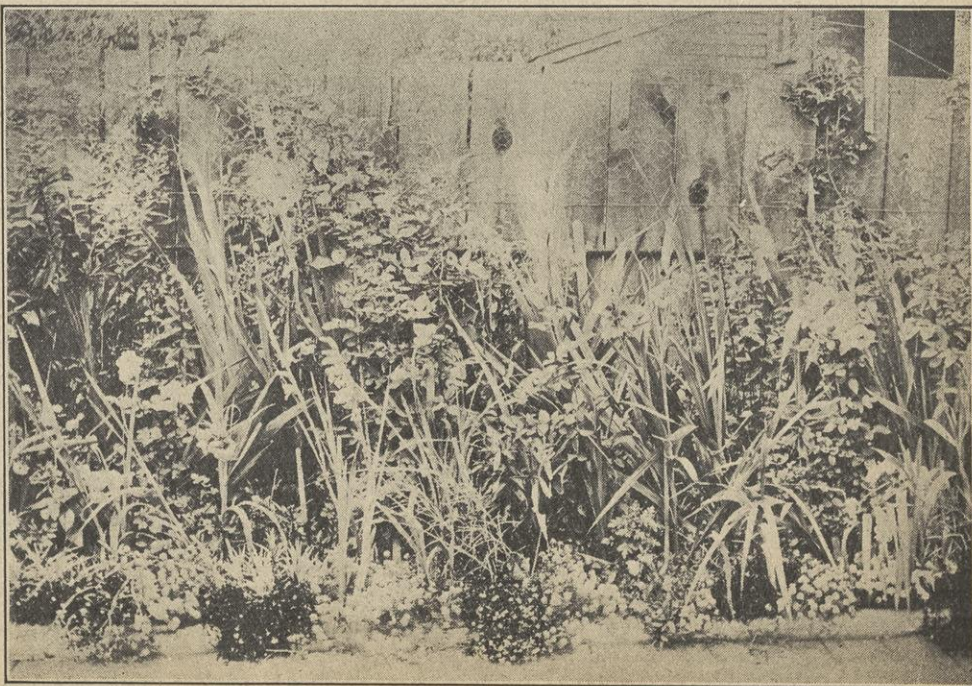
The celery trench was prepared two weeks ago. Keep the plants a little longer, till June 1st, then plant very carefully eight inches apart and rows eighteen inches apart, and let us see if we cannot have some No. 1 celery this year, paying particular attention to cultivating, watering, feeding, and

earthing up later on. For peas, make the drills with the corner of the hoe two inches deep, and use lots of seed, thinning out if they come too thick. With the beans make the drills two inches deep and the full width of the hoe, and stagger the beans zig-zag eight inches apart, firming the earth down hard on top.

In a small garden, where you are limited to a small space for potatoes, make the rows two feet apart, putting tubers fifteen inches apart, five inches deep in light soil and four inches in heavy. Use medium sized potatoes and cut into three or four pieces, leaving two eyes to each piece. Be ever on the alert for the potato-bug and don't let them get ahead of you. Use paris green as often as required. In a large plot of potatoes, where more room can be given, make rows thirty inches apart and tubers twelve inches.

In planting seeds of cucumber and squash, press the seeds in edgeways an inch deep, ten to a hill, and thin out to five, at the same time sow a few seeds of radish for the squash bug to feed on. Do not put water on the foliage. Sow carrots a half-inch deep and thickly, beets an inch deep and thickly, parsnips put a pinch of seed every six inches along the line a half-inch deep and thin out, leaving the strongest plants. Leeks are recommended to be grown with celery, earthing up at the same time.

Sow salsify a half-inch deep and thin it out to four inches apart. Onions require a good rich and sunny location.



Density in the Flower Border. The Possibilities of a Small Plot Demonstrated.



Sanseveria Laurentii in flower. Grown by H. Irwin, Westmount, Que.

Sow them half an inch deep if you have not started them in heat, feed with liquid manure once in ten days, the same as for celery; cultivate between freely, and let us have some good sized and mild onions this year, by attending to them frequently. Corn can be grown in hills or rows, the latter for preference. Earth them up the same as for potatoes, and drive a stake at each end of the row, with a wire for protection against wind. Cut asparagus with a knife below ground, never pull it. Sprinkle salt on the bed during the growing season.

Cut off the bloom of strawberries if they were only planted last fall and have a good crop next year. The following year take the runners and start a new bed, having it in good shape by the time the old one is past usefulness. Tomatoes plant every four feet along the south side of a north fence. Trim out all laterals but four, training these up fan-shaped either to stakes or netting. Do not let suckers come up from the roots and never water the foliage, thus avoiding the black spot on fruit.

Do not chase the birds out of your garden, especially the sparrows, as they destroy their weight in insects every week. Protect the peas, lettuce, and black currants from the sparrows by throwing a few crumbs regularly in another part of the garden, covering

peas and lettuce with fine gauze netting or cheese-cloth till they are well up. For currants tie some black thread about the bushes, with pieces of white paper dangling. Use white hellebore for red currant and grape caterpillars, and slug shot for cabbage worm. Don't kill bees, darning-needles, crickets, lady-bugs, spiders, frogs and toads, as they feed on harm-

ful insects, and should be encouraged.

Make a compost heap now, so that you will have some good stuff to dig into your garden next fall. Dig a hole the size required, putting layers of earth and manure to a foot or two above the ground, covering the whole with four or five inches of earth, on top of which grow vegetable marrows, or squash.

Luxuries for the Home Garden

Miss Harris, Brome Co., Que.

ASPARAGUS and mushrooms are counted among the almost prohibitively expensive luxuries for the home table. Their scarcity and the uniformly high prices demanded for them gives color to the prevailing idea that their culture is difficult and success possible only to the expert gardener and greenhouseman. True, neither asparagus nor mushrooms are grown in a day but anyone who has the patient forethought to cultivate biennials and perennials instead of spending all his labor on annuals which will show more immediate results, need not shrink from the starting of asparagus and mushroom beds.

"Patience is a virtue—
Get it if you can—
Often found in woman,
But seldom found in man."

And so, to women gardeners especially, I would say, by all means have a mushroom and an asparagus bed, cheat the greengrocer and have these luxuries plentiful on your table throughout the season; only patience, along with one or two other favorable conditions, are necessary to certain success.

The Asparagus Bed.

If you are better endowed than most, with the virtue just alluded to and wish your asparagus bed to cost as little as possible, you may plant the seed in spring or early summer. The bed should be dug deep, made very rich and the soil well worked until it is fine and light. Sow the seed thinly in shallow drills, about two or three feet apart, covering with an inch of soil. When the seedlings are a couple of weeks old thin them out so as to leave only the stronger ones standing not closer than two inches apart. Throughout the season the bed must be kept watered and well cultivated, the soil around the plants being stirred occasionally and no weeds allowed to grow. The following spring they may be transplanted two feet apart in permanent beds and will commence bearing in three or four years from planting.

An easier and quicker way is to purchase good roots from a reliable seeds-

man. By so doing you will save two years or more.

For the home garden a convenient size for an asparagus bed is five feet wide, so that the middle can be easily reached from either side, and of a length sufficient to plant the number of roots desired. Plant in three rows, one in the middle and one on each side of the bed, taking care that the side rows are at least a foot from the edge of the bed. Dig lengthwise trenches about eight inches deep and place the roots in them a foot apart, spreading out the roots of each plant and placing in such a way that the crown or top will be covered about three inches when the trench is filled in.

Keep the beds free from weeds. Do not allow the surface to bake.

When the plants are well started cultivate between the rows with a hand cultivator or hoe. Some growers give the bed an application of salt dug into the surface of the soil every year, one half pound to the square yard, which is very beneficial.

Remember that the better and deeper the soil of your asparagus bed is prepared beforehand and the more fertilizer you supply it, the more and better asparagus you will get, so do not neglect your bed this season because you do not expect to cut the tender shoots until next year or the year after.

Special knives can be bought for cutting asparagus but any sharp knife carefully used will serve. Thrust the knife down into the soil at an angle so as to sever the asparagus stalk two or three inches below the surface of the bed—never try to pull up the stalks.

If good, large roots are planted and properly cultivated, you should be able to cut a little asparagus the following spring, but a good crop will not be gathered until the bed is two or three years old.

"Do you know that your chickens come over into my garden?"

"I thought they must be doing that!"

"Why did you think so?"

"Because they never come back."

Annual Flowers in Association With Other Plants

John Gall, Inglewood, Ont.

TO the beginner in gardening, especially if his or her garden is of small size, there are few more useful flowers than hardy annuals, and few that will give such a bountiful return for a small outlay of time and money. Indeed, these annuals, which may be sown in the open garden, may be looked upon as a sort of sheet-anchor for the novice, to fill up blank spaces where perhaps some more ambitious gardening scheme has gone awry, or to fill the hiatus caused by the passing of spring-flowering perennials or bulbous plants. The gardener in a large establishment can rely upon pot plants or nursery stock to make good these gaps, but the beginner can seldom afford this, and still less frequently has the facilities for carrying it into effect.

Too often, bulbs, especially the May-flowering tulips, are a source of great worry to the amateur. Owing to their late flowering and subsequent ripening of the foliage, they cannot, with safety, be removed from beds or borders sufficiently early to admit of the planting of the ordinary bedding plants, and for this reason many forego the pleasure that these bulbs are capable of produc-

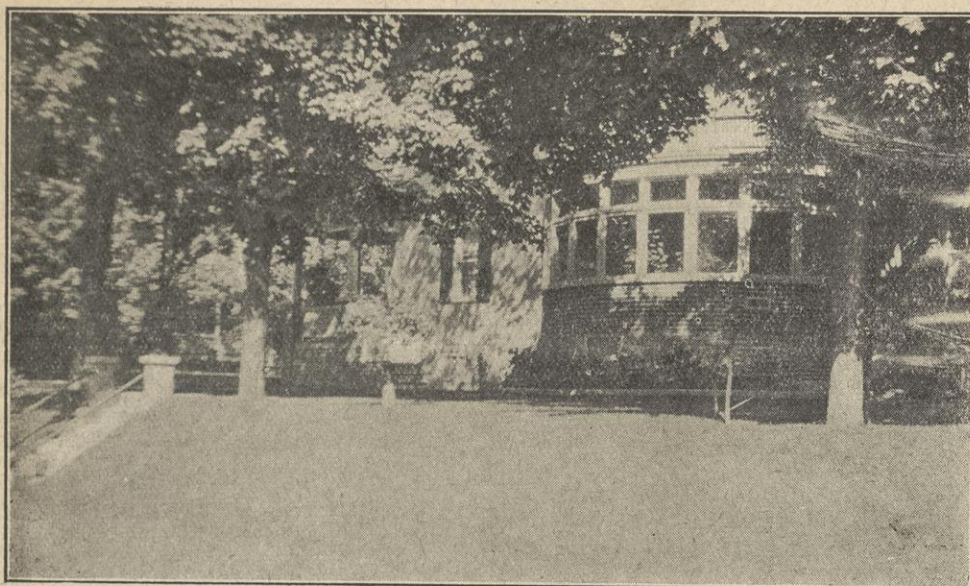
ing, and ban them from their gardens. This is a great mistake, and one that can easily be obviated if we would make use of hardy annuals. In early May, seeds of these can be sown between the bulbous plants, and by the time the latter have finished flowering, and the leaves have died down, the annuals will be well on the way towards the flowering stage, and the bulbs none the worse for the association. Even beds of daffodils may be successfully treated in this way, and if the bulbs are lifted in early fall, before they have made extensive root growth, and replanted at once, they will be in much better condition than if they were lifted this spring, before their foliage had properly ripened, to make way for the geraniums that are so often relied upon for the summer display. It is true that these bedding plants commence to flower almost as soon as they are planted, and that the annuals seldom commence before July, but the four weeks or so that the beds or border spaces are without blossom is not noticed in a garden of mixed flowers. It is mentioned to prevent possible disappointment to would-be growers of annuals.

Apart from those annuals which can be sown between the bulbs or spring-flowering perennials, there are many half-hardy sorts that may be raised in frame or greenhouse, and planted out between the permanent occupants during the latter part of May. In this category come, Stocks, China Asters, Nemesis, Verbenas, and Antirrhinums, all of which are capable of providing a glorious riot of color during the summer and until frost arrives.

There are just one or two simple cultural details that ought to be observed if success is to be assured with this association of annuals with perennials and bulbous plants. First of all, the soil needs some little preparation, especially if seeds are to be sown. I have always found it advisable to lightly point between the plants with a small fork, so as to get about two inches of fine, workable soil. Into this some superphosphate of lime, a large handful to a square yard, is well worked, as this provides food of a lasting character to the annuals just at their flowering period. Then, thin sowing is absolutely essential. Sturdy seedlings only are of any use for this kind of gardening, or,



This splendid method of interesting school children in the preservation of bird life is being followed with success by the "Garden Arts and Crafts" section of the Hamilton Horticultural Society. Some 200 boys in the manual training classes of the city schools competed in a bird house competition. Mrs. R. B. Potts, the secretary of the Hamilton Society, may be seen. The second man on Mrs. Potts' left is John A. Webber, the president of the society.



The Conservatory and a glimpse into the garden of the Misses Thompson, Peterboro', Ont. Although of modest dimensions the surroundings of this home are among the most attractive in the city.

indeed, for any other; hence one must impress upon the beginner the vital importance of space from the outset. A weak seedling can never make a strong plant; hence it is necessary to lay a good foundation. This thin sowing then, must be supplemented by a rigorous thinning of the seedlings at the outset of their existence. This is necessary even when annuals are being grown alone, but doubly so when in association with other plants.

It will not materially harm the bulbs or herbaceous plants if just a few, a

very few, of their largest leaves are removed to give the annuals more light and air during the early stages of their career. To bulb enthusiasts this will, I know, seem like rank heresy; but in gardening as in everything else, it is advisable at times to adopt a policy of give-and-take.

There are a good many hardy annuals suitable for this association, such as godetias, clarkias, candytuft, virginian stock, leptosiphon, nigella, Miss Jekyll, larkspurs, alyssum, mignonette, Shirley poppies, annual chrysanthemums, and pot marigolds.

Spring Work With House Plants

E. E. Kerrison, Calgary, Alberta

THE spring is a good time to repot our ferns. A good mixture of soil comprises three parts of fibrous loam, one part of sand, leaf soil and well-dried cow manure. Rub through a sieve, mix well together. Use clean pots with good drainage. Water once thoroughly after repotting, and then water sparingly for a time until the roots have started into the new soil.

Most people in the winter buy flowering plants in bloom or just coming into bloom, but when spring sets in they begin to start propagating cuttings of various kinds, or buy young plants that have just started. With plenty of fresh air and sunshine, they get quick results, and the cuttings soon develop into nice plants.

Some of the flowering plants grown here are primulas, cyclamen, begonias, cinerarias, geraniums, petunias, lilies, chrysanthemums, fuchsias, heliotrope, impatiens, etc. *Primula obconica* makes a nice house plant, as they bloom nearly all the year around. The new

improved variety, *Gigantea*, is a very strong grower and blooms much finer than the old variety, and can be had in several colors. The Chinese primula is still a favorite. The colors are very striking, especially the deep red. Cyclamen still stands one of the foremost of winter flowering plants. They bloom freely for several months. Some of the newest varieties are very striking, especially the *Butterfly*, which is beautifully fringed and waved. The foliage is also very attractive.

Cyclamen and *Primula obconica* in their young stages will grow well in a sandy loam. Spray foliage often, with careful watering at the root. Over-watering at this stage will turn the foliage yellow. When you have good developed plants and ready to be repotted into five or six inch pots, use a good stiff loam with a dust of bonemeal or dried cow manure. After pots are well filled with roots, they will take a liberal supply of water. Chinese primula require very much the same

treatment, except overhead watering. This variety is likely to damp off if water is allowed to settle in the crown.

Pick off all faded flowers and dead leaves. They not only spoil the look of your plants, but also help to create disease. Begonias, tuberous-rooted, are amongst the choicest flowering plants. They bloom in the summer season, single and double flowers of the richest colors. They can be grown from seed, but will need very careful treatment. It is better for the amateur to get one or two year old tubers. These can be easily started. A good plan is to let them sprout in damp moss before potting, as the bottom and top of the tubers are so much alike that you can hardly tell the difference. Be careful with watering until they have well started. For potting, use one part leaf soil, one part turfy loam, one part sand, and one part garden loam.

Some beautiful varieties can be had in the fibrous-rooted begonias. These are usually started from cuttings. The Christmas varieties are much admired. *Glorie de Lorraine* have been popular now for over twenty years. The *Cincinnati*, a new and improved variety, makes a handsome pot plant. It may be a little difficult to start these in their young stage, but you are well repaid later for your trouble.

Geraniums.

Geraniums are the most useful plants of any I know. They can be used in so many ways, as a pot plant, or for window boxes, flower beds, etc. A few good varieties worth growing are *S. A. Nutt*, double scarlet; *Universe*, single scarlet; *A. Riccard*, double scarlet; *Beaute Pottevine*, double pink; *Jean Viaud*, double pink; *Mrs. E. G. Hill*, single pink; *Wonder*, single scarlet. Fall-struck cuttings make the best plants for summer flowering.

Do not use soil too rich for geraniums. Old plants that have been carried through the winter in many cases get far too much water, with the result that they are now leggy and very unsightly looking plants. They should have been kept on the dry side in the winter time, as with lack of air and sunshine they make all sappy growth. The best thing now is to cut them hard back and let them break again. The tops can easily be rooted in a mixture of sand and soil.

Chrysanthemums.

Chrysanthemums can be started from cuttings. Some varieties that will make good pot plants for October flowering are: *Golden Glow*, double yellow; *October Frost*, double white; *Ladysmith*, single pink. For November and December flowering: *Nellie Pockett*, double white; *Cheltonic*, double yellow; *Kerslake*, double white; *Ivory*, double pink and white; *Emiline*, single pink; Ger-

Feeding the Bees

E. I. Farrington, Weymouth Heights, Mass.

FEEDING the bees in the spring or early summer, when it is certain to stimulate egg laying and brood rearing, is quite a different matter from feeding them in the fall in order to provide sufficient stores to last through the winter. A thick, heavy syrup is commonly given in the fall, preferably in October, but the syrup for use in the spring should be thin, one part of sugar to two parts of water. Two pounds daily are sufficient. It is much better to mix the sugar with warm water than to melt it, for then there will be no danger of burning it, and burned sugar is fatal to bees.

There are many devices on the market for the feeding of bees, but none is more satisfactory than an ordinary tin pan, costing ten or fifteen cents. The pan should be partly filled with excelsior, over which the syrup should be poured. Of course the pan must be placed over the frames, for entrance feeding, which tends to induce robbing, should be avoided. It is best to set an empty super on the hive.

Of late years many beekeepers have been substituting soft candy for sugar syrup, with excellent results. This candy is easily handled, can be kept a long time and is economical, as there is no waste. Various kinds are on the market, but the following recipe is recommended by a prominent beekeeper for the making of candy at home:

12 lbs. granulated sugar.

1 1-2 lbs. liquid glucose.

1 1-4 qts. water (five cupfuls.)

1-4 teaspoonful cream of tartar, added when the temperature reaches about 230 degrees F. or 110 degrees C.

Boil to 239 degrees F. or 114.4 degrees C.

Mold the candy into a paper plate, which may be inverted over the frames when the candy is fed.

In all cases the best granulated sugar must be used. It is cheaper and safer than honey, and if for any reason honey is fed, it should be diluted with an equal amount of water and boiled an hour.

Value of Feeding.

In many instances the bees have abundant stores left in the spring, and no feeding is necessary. Expert beekeepers practice it, however, often-times, in order to build up the colonies quickly, for thousands of young bees should be ready for work as soon as the honey flow appears, yet very early feeding may be detrimental, unless it is necessary in order to keep the bees from starving. It tends to induce the

bees to spread out over the combs, and if a sudden cold spell comes on, many of them are likely to perish.

The actual time for stimulative feeding depends upon the time of the honey flow, and varies in different localities. In some places it pays to feed as late as the last of June or the first week in July. About six weeks should be allowed for building up the colonies in this manner. When warm weather feeding is practiced, all the work in the hives should be done as quickly as possible, in order to prevent robbing, but that advice is not needed by experienced beekeepers. The late afternoon seems to be the best time for feeding.

Beekeeping is more complicated than many people suppose, and essential

points are often overlooked. One of them is the providing of water. Many times the insects are forced to go a long distance for the drink which they desire the first thing in the morning. Bad results sometimes follow, especially in sections where the street trees are sprayed with arsenical poisons to kill insect pests. The bees seek the dew on the leaves in the early morning, and thus become poisoned. They usually get back to the hives, but only to die there. The thoughtful beekeeper will have a pan of water with a shingle floating in it, close by the apiary, unless there is a natural water supply near by. Or he may arrange a barrel so that water will continually drip from a small opening near the bottom.

Sweet Clover Condemned

W. A. Chrysler, Chatham, Ont.

IT would be useless for beekeepers in our rich province of Ontario to spend their time in planting, and money in buying seeds of sweet clover and goldenrod, and expect any satisfactory returns. My experience has been (and it dates back thirty years or more) that a beekeeper's location cannot be improved artificially at a profit, without a change in the general farming in the vicinity. Sweet clover has been boomed in United States bee journals, and farmers have been called fools, etc., because they would not sow sweet clover. But let an article be sent

them for publication, condemning it, and it is immediately rejected. Muzzled Press?

Sweet clover has overrun my locality for many years, on roadsides, railroads, and farm lands, aggregating a large area, and from a beekeeper's standpoint, I would rather be without it. Sweet clover will occasionally produce some surplus honey, but the quality and flavor is such that it ruins the table honey trade wherever it goes, and should be sold only to the manufacturers of biscuits, and for similar purposes. Sweet clover, from its odor, when in



A corner of the apiary of A. Buckindale, Hawkestone, Ont.

bloom, attracts bees, whether it produces honey or not, the thinnest, probably, of all the honey-bearing plants growing in moist atmospheres, and northern latitudes. In hot and dry climates it may produce differently. Bee life in the working season is very short, owing to their hard work gathering honey, and from my observation with bees working on sweet clover, although brood rearing may be somewhat stimulated, the death rate is so high that colonies will become weaker rather than stronger.

Sweet clover honey for winter stores is not good. Why not let the bee journals refrain from dictating to farmers the crops they shall raise, and confine ourselves to our own pursuit. Beekeepers would certainly resent the advice given by a farmer who knows nothing about bees.

Sweet clover, in many localities, has become a terrible roadside nuisance, and is costing R. R. companies and municipalities hundreds of dollars each year to make their roadways passable and presentable.

No Golden Italians for the North

J. M. Munro, Slate River, New Ontario

During the past few years much has been said and written praising the Golden Italian bee. I insist that locality should be taken into account. While this breed may be practical and commendable in the south, I claim it impractical for the north. The most serious objection is, they don't endure our winters. Some are poor workers, and require to be superseded, while others are so vicious as to be dangerous to hives.

The Golden bees are nice to look at—so are soap bubbles—and that is about all I can say in their favor. But apiarists who keep bees for business, want more than things to look at.

The leather color or three band Italians, as a rule, are gentle, hardy and industrious, will not stampede or festoon when opening their hives, are disease resistant, and defend their stores against robbers and moths, and will breed true to line or strain. This can't be said about the Golden bees, as they either die or drift back to a dark color in a few years.

As proof of locality having a great influence on color and disposition, take Italy itself. In the south of Italy we find the Golden bees, while in the north of Italy we get the leather colored.

If we go south to Egypt, we get the Golden bees, the most vicious in the world, while if we go north into Austria we find the dark or gray Carniolan, a very gentle bee. Again, go south to Cyprus, and you find the pesky, irri-

table Golden bees, while if you go north to Germany you find the black bee.

The sooner that northern beekeepers abandon this Golden will-o'-the-wisp, the better it will be for their purse and peace of mind.

QUESTION BOX

Conducted by Prof. Morley Pettit, O.A.C., Guelph, Ont.

HIVE CONSTRUCTION.

As the Ham & Nott hive is now made it has a bee space both below and above the frames. With an extracting super on there will be half-inch space from bottom bars to top of the frames of brood chamber. Will the bees build comb in that space? Would it be better to plane off one-quarter inch on bottom of hive bodies and leave the frames flush with the bottom of the hive?

2. With no bee space under the frames the regular Ham & Nott floor only allows five-eighths inch space under the frames. Is that enough, or would they be better with a floor allowing seven-eighths inch space, especially for outdoor wintering? What depth does the floor board allow that you use personally?

3. Do you prefer spacing of frames one and one-half inches from centre to centre? Don't you think it is better one and three-eighths inches, leaving room for division board, and further, prevents burr comb?

4. Can you tell me where I could get bed staples for frames as recommended by you? Is there any staple made which is marked showing the right distance to drive it in the frame to give you a three-eighths inch spacing, saving the time of measuring? What is the cost of the bed staples per pound?

5. What is the best method of fastening foundation in the frames? With the groove quite a little foundation is wasted. I was thinking of having four wires in the frame, one near the top bar, and having a plain seven-eighths inch top bar, and in that way get the frame drawn out with comb right down to the bottom bar.

6. Which gives the best results, medium brood foundation, or light brood eight sheets to the pound, for either brood or extracting frames? Would it be better to use 9½ sheets in 10 frame body, leaving half a frame for drone comb, having it all together, as the bees are bound to have some. Would that be too much?

I do not advise having bee space both above and below the frames. I would have it all above or all below, one or the other, and have all hives the same. Wherever you get more than a three-eighths inch space between the top bar of one and the bottom bar of the next, the bees are sure to build comb if they get at all crowded. About 5-16 of an inch I consider about right for bee space.

I do not like less than about 7-8 inch space in the bottom for out-door wintering, but you could get that by putting in extra strips on the edges of the bottomboard during winter. I have my hives made with the frames flush with the top of the hive, having the bee space underneath. This gives an extra depth on the floor.

I prefer the spacing almost 1 1-2 inches from centre to centre. It gives better clustering space for bees in winter, and also more room in summer, helping to control swarming. The only time that I would like the space any less would be during the breeding up time of spring, when the weather is cool and bees need the brood as close together as they can get it, for protection.

Any city hardware store would supply you with the 7-8 inch bed staples. I cannot tell you the cost off hand, but if you do not know where else to get them, write the Rice Lewis Co., of Toronto. In order to get the staples driven in the right distance, take a piece of board the thickness of the projection you want to the staples. Cut a notch in the end with a saw, and in driving the staple lay this flat on the side of the top bar, then hammer the staple down as far as it will go. It will then project just the thickness of your gauge.

In regard to fastening foundation: All our frames are made plain, only they are only 5-8 inch deep, and the fourth wire you mention is placed just 1-4 inch below the bottom of the top bar. It is then supported at the middle by a smaller staple driven up into the lower side of the top bar. When this wire is embedded in the foundation, it supports the upper edge, keeping it from turning over, and avoids any necessity of the groove and wedge.

The light brood foundation, eight sheets to the pound, is satisfactory, and the plan of leaving out half of one sheet in a brood chamber is probably a good one.

SECTIONS REQUIRED.

What number of sections would you consider necessary to provide for one hundred colonies in a fair season? What percentage would you expect to be A 1 or first-class?—A. T. S.

I can give only the roughest kind of estimate as to the number of sections you would need for a hundred colony apiary. In the first place, I would not consider it wise to put sections on anything but the strong colonies and on the new swarms. In the apiary in question that might be any number from nothing up to fifty or seventy-five, so it is quite likely that five or six thousand sections would be an ample quantity to have on hand.

A QUESTION ABOUT QUEENS.

I bought two queens from an Ontario breeder and divided two of my strong colonies and gave the queens to the queenless halves. I noticed the bees that came with the queens were a decided yellow underneath, whilst my own were a dark brown on the abdomen. They were all the same color on the back, and until I got those from Ontario I was under the impression that mine were pure Italians. I feel rather uncertain now. Do you think my queens are alright or would you advise me to request from the new queens next summer? After the new queens had been in their hives a few days they were about the same color and appearance as my own.—W. J. Dixon, Shelburne, Man.

Unless you have been getting queens from a pure source recently, your bees are likely to have become mixed with other colonies in the neighborhood and will be no longer pure bred Italians. The mark of the pure bred Italians is the presence of three bands on the abdomen counting the one close to the thorax. These bands are yellow or leather colored.



A partial view of the Arkona yard of Mr. I. Langstroth, of Forest, Ont.

Outdoor Wintering in Manitoba

R. M. Muckle, Dept. of Agriculture, Winnipeg

THERE is an impression that is widely prevalent among Manitoba beekeepers that snow on hives, or outdoor wintering would result in a mortality not at all consistent with economic and profitable apiculture.

In the February issue of *The Beekeeper* I stated that several hives were set aside for the purpose of experiment and deduction, two eight frame double storey Langstroth, and two single Langstroth hives. These hives were carefully packed, facing south, in a box made of shiplap, having one foot of dry oat chaff on the north side, one foot below and eight inches on the south. The two double hives had eighteen inches on top, and the two single, twenty-eight inches. Covers were removed from all but one single hive, heavy burlap being substituted. All doors were narrowed to three inches, and left open during the entire winter. The bees did not have a flight from November 10th until the first week of April.

One double hive died, and the other three came through the winter in excellent condition, having several frames of hatching brood when examined on April 10th. I attribute this loss to the candied honey, caused by the very condensed quality of last year's nectar; the sugaring process being accelerated by a vent which I inadvertently left in the straw on top when burrowing down to feel for heat or moisture.

Another hive was simply covered with about a foot of straw, with a board placed slanting over the entrance to prevent the door from becoming filled with ice or snow. It is my opinion that

this last colony survived more by good luck than by good management.

A few conclusions which are readily apparent to any practical bee-man may be drawn from the foregoing experiments. First, it is possible to winter bees outside in Manitoba. Second, that oat chaff is one of the best nonconductors and absorbents. Third, the double-walled hive is probably the best for Manitoba, or in lieu of the double-walled hive, fall and spring protection is of vital importance, as such protection stimulates brood rearing both in spring and fall. Fourth, bees outside consume almost twice as much honey, which argues eloquently in favor of cellar wintering, providing the conditions have been endorsed by the bees themselves, with results covering a number of seasons. It will be appreciated that experiments in any department where variable conditions of seasons, climate, rainfall, frost, etc., prevail, one season's experience should not be accepted as a basis for final conclusion.

An Experience with Hives

I. Langstroth, Forest, Ont.

The apiary shown in the accompanying illustration is situated in the peach orchard of Mr. Geo. Ott, the old, veteran beekeeper, and the inventor of the Geo. Ott bee hive, patented in 1870. I started this yard with 40 of the Ott hives, in 1905, but found them too deep for convenience for extracting. The hive body was 15 inches deep, so I made no more that depth, but cut the old ones down to 11 7-8 inches, so a 11 1-2 inch deep frame could be used, as I could not

get an extractor to take the deeper frames. I have now about an equal quantity of the cut-down Ott, and the regular L. hives. I am quite favorably impressed with the cut-down Ott hive. I have had better success with it in wintering, and I have succeeded in getting more honey with it than I have with the eight frame L. hives, side by side.

While I am speaking of the Ott hive, and my having cut it down to suit my requirements, I may mention that the Richardson hive came into existence the same way. It was originally an Ott hive. Mr. Richardson cut it down to a 10 inch frame. Otherwise it is the same as the one I have. Mr. Ott sold the patent right for his hive to Mr. Richardson, and I suppose Mr. Richardson, like myself, found it too deep for convenience, and was more drastic in reducing the depth. Mr. Ott is still in the land of the living and has a few bees. [Note.—Mr. Ott has died since this was written. See page 128.—Editor.]

I have kept bees over 30 years, but only the last eight years as a specialist. Taking one year with another, I have been fairly successful, averaging a little over 80 lbs. for the last eight years, as they have each year averaged anywhere from 35 lbs. to 122 lbs. I have nearly 200 colonies, and do all my own work, including culling out and making my hives. I also make a lot of hives for other beekeepers within a radius of 50 miles. I use a 1 1-2 h.p. Gilson engine, and a saw-table I made myself. Thus you see I keep down expenses by making my own supplies.

Spring Management

F. W. L. Sladen, Experimental Farm, Ottawa

Watch should be kept for the appearance of foul brood, and steps to deal with it should be taken promptly. Treat by shaking the bees into a clean hive fitted with starters of foundation, removing the combs and all infected matter to where the bees cannot reach them; also, in the case of European foul brood, re-queen with a young Italian. The combs may be melted in boiling water over a fire and the wax extracted in a wax press. The hives may be disinfected by scorching the inside with the flames from a painter's lamp. Remember that both kinds of foul brood are chiefly spread by the bees stealing infected honey from colonies that have become weak or have died from disease.

Be sure to have on hand before the busy season a sufficient supply of spare hives (the 10-frame Langstroth hive is recommended), supers, frames, comb foundation, and honey containers to meet all possible requirements.

Legislation for Beekeepers

Morley Pettit

AT the annual convention of the Ontario Beekeepers' Association last November, a committee was appointed to wait on the Department of Agriculture, asking for a revision of the Foul Brood Act, making it illegal for any owner or possessor of diseased colonies of bees to remove them from the premises where they were situated, and also removing the word "knowingly" from the clause of the act referring to the selling, bartering or giving away of diseased colonies or infected appliances. The act has now been revised by the Ontario Legislature, striking out the word "knowingly," but not making the other change. The section in question (No. 5) reads as follows:—

"Any owner or possessor of diseased colonies of bees, or of any infected appliances for beekeeping, who sells or barter or gives away such diseased colonies or infected appliances shall incur a penalty of not less than \$50 or more than \$100, or he may be imprisoned for any term not exceeding two months."

It is well to call the attention of all beekeepers to Section 6 also, which states that: "Any person whose bees have been destroyed or treated for Foul Brood, who sells or offers for sale any bees, hives or appurtenances of any kind, after such destruction or treatment, and before being authorized by the Inspector so to do, shall incur a penalty of not less than \$20 and not more than \$50, or he may be imprisoned for a term not exceeding two months."

While this penalty has not been exacted, we have found it necessary to stop the sale of bees in some cases under this clause, and it is to be hoped that a continuance of this practice will not make it necessary to exact the extreme penalty of the law.

A further amendment of the Foul Brood Act, referring to the importation of bees into the Province, was sought as follows:—

"11a.—(1) Every person, before importing bees on combs into Ontario, shall make application to the Minister of Agriculture for a permit so to do.

"(2) The application shall be in writing, and shall be accompanied by a certificate of inspection of the proper official of the Province or country from which the importation is to be made, to the effect that the apiary or apiaries from which the bees on combs are to be imported have been thoroughly inspected not more than one month previous, and are believed to be free from injurious bee diseases.

"(3) Every person who imports or offers for entry into Ontario any consignment of bees on combs without first having obtained such permit shall be guilty of an offence and shall incur a penalty of not less than \$25 and not more than \$50.

"(4) A transportation company, common carrier or other person shall not accept for transportation into Ontario, nor deliver to any consignee in Ontario, any consignment of bees on combs which is not accompanied by a permit from the Minister for the importation of the consignment, and no such transportation company, common carrier or other person shall be liable for damages to the consignee or the consignor for refusing to receive, transport, or deliver such consignment when not accompanied by the permit."

When this came up for consideration before a Committee of the Legislature, the Leader of the Opposition called attention to the fact that Sub-section 2 embodied a very important principle, a principle as to which there was some doubt as to how far the Province could go. Under these circumstances he did not think it should be passed without careful consideration. This view was taken by some of the other lawyers, and consequently this amendment was struck out.

In addition to these amendments to the Foul Brood Act, the minimum fine for spraying fruit trees in full bloom was increased from \$1.00 to \$5.00.

Death of Mr. Geo. Ott

Isaac Langstroth, Arkona, Ont.

The death occurred recently of the old pioneer beekeeper of Lambton County, Geo. Ott, of Arkona. Mr. Ott was the inventor of the Ott hive, patented Jan. 3, 1870. The hive was 15 inches deep, and was later cut down by Mr. Richardson, to a 10 inches deep frame, and called the Richardson hive.

Mr. Ott was born in 1826, and so was in his 90th year. He retained all his faculties until he had a paralytic stroke three days before his death. He was quite an enthusiast on bees in his younger days, and was one of the first to demonstrate at fall fairs with bees, and at the same time sell his patent hive. He had about 30 hives of bees to the last.

Plans for the Next Convention

Morley Pettit

The Executive Committee of the Ontario Beekeepers' Association met on Monday, April 10th, to arrange for the program of the annual convention to be held next November. The object in making these arrangements so early in the season is that persons who are to take part in the program may have an opportunity to study and experiment on their subject during the summer. The following sketch of program was drafted:—

Two addresses by Mr. C. P. Dadant, of Hamilton, Illinois; address by F. W. L. Sladen, Central Experimental Farm, Ottawa, on some line of investigation which he is following up. Address on "Special Appliances in the Apiary," including a discussion of motor cars, trucks, trailers, etc., in apiary work, by E. T. Bainard, of Lambeth. A paper on "Comb Honey Production," by S. B. Bisbee, Beamsville; on "Saving Beeswax in the Apiary," by W. A. Chrysler, Chatham; on "Simple Methods of Rearing and Introducing Queens," by John Newton, Thamesford; on "Experiences of a Woman Beekeeper," by Miss L. Livesay, Rt. 2, Cainsville; on "How to Get Good Combs Built," by H. G. Sibbald; on "The District Representative and How He can Help the Beekeeper," by H. S. Duff, B.S.A., District Representative for Grey County; on "The Exhibit of Appliances," by W. J. Craig, Brantford; on "Advertising and Selling Honey," by G. A. Deadman, Brussels, and question drawers to be conducted by Messrs. Dunn, Evans, Armstrong and McKinnon.

The secretary was instructed to correspond with these parties and arrange a program accordingly. We have not the consent of these members, and no doubt there will be considerable changing of the subjects,

etc., in the meantime; but all members interested will be able to devote special study to any of these subjects and be prepared to join heartily in the discussions at the convention.

British Columbia Problems

W. J. Sheppard

The honey crop in the Kootenays, B. C., is affected by the fact that dozens of colonies may be found on the point of starvation in June, a time of year when it would be least expected to find bees in this state. Some colonies have been so hard pressed for food that the bees have been actually reduced to eating the brood, or rather sucking the juices from it, in order to keep themselves alive, this being a last resource. A sure outward sign of this condition is when portions of white immature brood are found on the alighting board, having been brought out of the hive by the bees. The reason, of course, is that we often get long spells of wet weather, with low temperature, during May and June, when very little nectar is available and the bees are unable to leave the hives to get what there is, starvation being the result. Colonies quickly run down in strength in this way and cannot possibly recover at this season of the year in time to store surplus honey when the honey flow arrives, about the end of June or the beginning of July.

The only way to get over the difficulty is to feed. Any money expended on sugar under such circumstances will be repaid a hundredfold. Sugar syrup can be given, but I should like to see tried a moist brown sugar, not a coarse sugar like Demarara, but a sugar with a fine grain. It will, I think, be found better than syrup because the bees cannot very well liquefy it fast enough to store it in the combs, so that it is all used for brood food, there being thus little danger of any of it being intermixed with the honey crop later on. But even if any of it was stored it would be darker in color than syrup made from white granulated sugar, and therefore more easily recognized, and any super combs containing it could be removed before the honey flow commences.

Honey Dew From Poplars.

"A further difficulty we have to contend with is dysentery in winter, caused by the bees storing either honey dew or fruit juice in the fall. In 1914 the poplars or cottonwoods were much affected with aphids, and the bees in some cases collected quite a quantity of honey dew from them. Last year there was not much honey dew, but the bees gathered a lot of juice from damaged fruit, especially from raspberries and plums. In some places I noticed them on the fruit of the wild salmon or thimbleberry. The fruit is, first of all, punctured by wasps, which were very numerous last year, before being attacked by the bees. As the bees generally store this late in the season, it is scarcely possible then, or advisable, to take the combs out of the hive and run them through the extractor and get rid of it that way. I would suggest, when packing the bees for the winter, giving them a three pound cake of candy, made according to the directions in the Beekeepers' Calendar. This will last them for some time, perhaps into February, when they are generally able to get out for a cleansing flight, after which they will take no harm."

Mr. H. C. Clemons, who advertises in The Canadian Horticulturist and Beekeeper, has changed his address from Boyd, Kentucky, to Williamstown, R. F. D. 3, Ky.

Beekeeping in the North

C. Norgate, Dryden, New Ontario

Would you like to know how bees wintered in this part of Ontario? I put 20 hives in a cellar under my house and brought out 15 strong hives. The cellar was too cold most of the winter.

Mr. Wiggle put 14 under his house in a good cellar and brought out 10. Mr. Taylor put four hives upstairs in a bedroom and brought them all out alive. We are only small beekeepers yet, but hope to be bigger.

I started two years ago with two hives, which I ran for comb honey. I took 210 pounds of honey from these two hives and increased to seven that summer. In the fall I dug a hole in a sandy bank about six feet deep and put the seven hives in the bottom. Then I put logs on the top of hives, then about one foot of dry shavings, then filled up the hole with sand. I put the bees in on the 21st of October and dug them out on the 14th of April, so they did not have a fly for six months. When I took them out there were six good, strong colonies; one had died through starvation. I intended to winter the same way this year, but the ground froze too quickly. Last summer I took 800 pounds of honey from the six hives, spring count, and increased to 20, which I put in the cellar last fall, and have brought out 15 good colonies this spring.

I am trying an experiment this spring in shipping bees in pound packages from W. D. Achord, Alabama, U.S.A. I have five one-pound packages and one two-pound package with queens coming on April 20. I intend to take one of the one-pound packages and the one two-pound package and one of my best colonies of bees, and try them against each other. Perhaps you would like to know the result of this experiment next fall?

The Late Mr. Elliott

John Moore, Parkhill, Ont.

In the death of Mr. William Elliott, of Adelaide Village, Ont., Middlesex county loses one of its best beekeepers. A man of more than ordinary intelligence, of keen and close observation, and by nature and temperament well adapted to handle bees, his two bee yards in many respects were models for the beekeeping craft.

Mr. Elliott reared his own queens from the best Italian stock, and had the latest equipment, and everything had to be tested by practical experience before being finally adopted. This thoroughness, combined with years of practical experience, made him an authority.

The immense throng that gathered at his funeral showed the respect and esteem in which he was held. Four ministers, representing three different denominations, took part in the funeral service. His only son, Fred, will have charge of the two bee yards.

Effect of Hive on Swarming

W. J. Sheppard, Nelson, B.C.

The style of hive we use has a considerable influence on swarm prevention, and consequently the amount of honey obtained. A striking illustration of this occurred in the Columbia valley last year. From two colonies of pure Italian bees in a Root Buckeye hive, neither of which swarmed, 130 pounds of honey was taken, and enough left for the bees to winter on. This was a record yield last year, as it was a poor season, when many got no honey at all, and had to feed into the bargain.

The Root Buckeye hive has a double wall

brood chamber, the ordinary single wall bodies such as we use, being placed above, as supers. Bees will winter better in a hive of this description than in the single wall body with the deep telescope roof, in winters as severe as we have just experienced. The rise and fall of the temperature in a single wall brood chamber must be much greater than in a double wall. The hot sun in the daytime is liable to raise the temperature so much that it becomes unbearable to the bees and forces them to swarm.

With a double wall brood chamber the bees would build up more rapidly in spring and not be so likely to desert the supers in cold nights during the honey flow in order to keep the brood warm below. The objection to the double wall is the greater expense, and its increased weight and cumbersomeness makes it more laborious work to lift and move about.

Condition of Bees in Ontario

By Morley Pettit, Provincial Apiarist,
Guelph, Ontario

Up to April 20th, about 700 persons, keeping 20,000 colonies of bees, reported a winter loss of about 13%. The loss was largely due to starving, owing partly to an insufficient supply of stores on account of the high price of sugar, and partly to a mild spell in January, which caused the bees to rear brood and draw heavily on their stores. The few warm days early in April gave the bees a splendid cleansing flight, and their general condition now is reported as very good. Few really heavy losses have been reported from extensive beekeepers. More report forms than ever have been returned marked "Not a beekeeper." These are mostly from the smaller beekeepers, who are finding that specialization pays best. It is an indication that the industry is getting on a better business basis from year to year.

Clover prospects seem good throughout the province. The latter part of the season of 1915 being wet, gave the new seeding an excellent start, and the scarcity of farm labor has increased the acreage seeded down. On the whole, present indications are for a good season, and beekeepers are even more optimistic than usual.

The Summer Course in Beekeeping

Judging by the correspondence to hand, the interest in the summer course on beekeeping is going to be keen. This course will be held June 12-17, and will consist of instruction, demonstration and practice in the apiary as far as possible. Such special subjects as wintering, swarm control, bee diseases, queen-rearing, requeening and the like, will be taken up in turn, and instead of lecturing and illustrating by means of lantern slides as is necessary in the winter course, the work will be done in the apiary, where the actual objects and conditions can be demonstrated. Besides the provincial apiarist, instruction will be given by some experienced Ontario beekeepers, and some of the college instructors. Mr. Frank Pellett, State Apiary Inspector of Iowa, has consented to spend a few days of the short course week in attendance, and assist in the instructing. He will also give one or two evening lectures while here. There are no fees charged in connection with this course, the only expense being that for railroad fare and board while here.

The Wellington County Beekeepers' Association is arranging to hold a Field Day at

the College some day during the summer course week. All beekeepers are cordially invited to attend this field day, if they find it impossible to take in the whole week.

Improvements on the Ott Hive

Morley Pettit, O.A.C., Guelph, Ont.

The announcement of the death of Mr. Geo. Ott, of Arkona, reminds me that the Ott hive was the first hive with which I had experience. My father, the late S. T. Pettit, of Belmont, Ontario, made his start in beekeeping in 1873 with this hive. If I am not mistaken, the frame was about 14 $\frac{1}{4}$ inches long and 13 $\frac{1}{8}$ inches deep. There were eight of them in a brood-chamber, and it made a splendid hive for wintering, but was too deep for comb honey production. It was rather an awkward comb in an extractor, especially when reversible extractors were brought into use. Mr. S. T. Pettit reduced the frame to 9 inches deep, and enlarged the brood-chamber to take 12 frames, giving about 10-frame Langstroth capacity. The deep frames were then used in 12-frame supers, and when you got one of those full of honey you had 100 lbs., and something worth extracting. In a good honey flow it was splendid to see a strong colony fill one of those supers in a few days.

My father had an extractor which was bought for a 2-frame reversible, specially made for these big combs. It was found to be too slow, and the baskets were taken out, leaving a square frame in the reel, just the right size to hang one comb upright on each side, making a 4-frame non-reversible extractor; but as the interior space was clear these combs could be reversed by hand, without lifting out, and this made the reversing quite rapid, although not automatic. With two active helpers and well filled combs, I have taken from the hives and extracted 3,000 lbs. in a day with this extractor. They were rather unwieldy, however, and were not so satisfactory in a light flow, so they have all been reduced to the Langstroth depth, and two of my apiaries are now equipped with these hives, which might be called Pettit hives. No effort was made to sell them. They have not become widely used, as is the case with the Richardson hive, but my personal preference is for these short, handy frames.

At the time of going to press the members of the committee of the Toronto Beekeepers' Association, in charge of the arrangements for the annual Field Day, on May 24th, had not completed the programme beyond deciding to hold the gathering at Bolton, Ont., instead of on the Kingston Road as first proposed. Information was being awaited from possible out-of-town speakers. Those interested will be able to obtain programmes from the secretary, or from the president, Chas. E. Hopper, 126 Simcoe St., Toronto. In the list of officers published last month the name of the first vice-president should have been given as Geo. Morrison.

My bees did well last season until about August 25th, when a frost came, killing the buckwheat and injuring other bloom. From 40 colonies, spring count, we extracted 4,287 lbs. of honey. It was all sold at home as the local demand seems great. We put away 48 colonies, good and strong, and with plenty of stores, giving them about 45 to 50 lbs. of capped honey each; wintering outdoors, packed in cut straw on summer stands in individual packing cases with a good windbreak on three sides of the apiary and lots of trees.—Jas. McPherson, Dundalk, Ont.

Co-Operation in the Niagara District*

J. R. Hastings, Winona, Ont.

IT seems to be the prevailing opinion among the fruit growers of the Niagara Peninsula that it has become advisable, if not absolutely necessary to do something—to take some step calculated to bring a measure of relief to the fruit grower and to place the fruit-growing industry on a more satisfactory basis. The question as to whether or not cooperation offers the much-needed relief, and whether co-operation on an extended scale can be put in successful operation in the Niagara Peninsula is being much discussed.

We have in the Niagara Peninsula a number of organizations supposed to be working along cooperative lines. Some of them have not been very successful, through no fault of cooperation, however, but rather for the lack of cooperation as well as for other reasons. A few have met with a fair degree of success—are bringing to their members results as satisfactory as can be expected under present conditions and methods of marketing and these give promise of greater strength and usefulness. We may here ask if cooperation on a very limited scale and under the most adverse conditions imaginable brings to its members better results than the average fruit grower is receiving is it not reasonable to suppose that on a more extended scale, with greatly increased strength and with the adverse conditions largely eliminated, it will bring added benefits and satisfaction to its members?

Every man who has given the matter intelligent consideration admits that better results, financial and otherwise, come from successful cooperative endeavor than from individual effort. I am speaking now of the average individual, not the man who raises far above the average quantity of fruit. We have fruit growers who can market their fruit crops to the best advantage, perhaps as well or better than a cooperative, but it ends there. It is the rank and file of the fruit growers we are considering, the submerged nine-tenths, the fruit growing industry as a whole.

The money end should not be the only consideration. Well ordered cooperation will bring to its devotees benefits that cannot be measured in dollars and cents. The man whose mental make-up renders it impossible for him to average up all the results and remain steadfast and loyal to his organization will never become a good co-operator, and it is doubtful if he should be allowed to enlist under the banner of co-operation. He is one of the misfits of the fruit growing business—he will be constantly tempted by the extra cent or nickle per basket that will be dangled before his eyes, probably by some interest antagonistic to cooperation.

Benefits of Cooperation.

What claims then do I make for co-operation? I have in mind, of course, a properly organized company, every detail thoroughly systematized and hammered into shape and efficiently managed. Whoever heard of such a concern going to the wall? Such organizations do not fail—they live and flourish, or, having served the purposes for which they were created, pass gracefully and orderly out of existence.

Successful cooperation will relieve the fruit grower of the task of marketing his fruit and enable him to give more attention to other details to which he is better qualified to attend.

An address delivered at the last annual convention of the Ontario Fruit Growers' Association.

It will give him the best prices for his product that under all the circumstances he is entitled to receive and higher average prices than he could otherwise get.

It will furnish his supplies of practically all kinds at lower prices than he could get in any other way.

It will not act as a panacea for all his fruit growing ills, nor will it enable him to eat the bread of idleness, but if he is possessed of a sound mind and healthy body it will stimulate his interest in his work and render less irksome some of its tasks and by so doing will make him a more contented and satisfied man—a better citizen, therefore a more useful member of society.

No—it will not of itself take him to Heaven, but will go a long way towards keeping him out of the other place. Order is Heaven's first law, also one of the cardinal principles of cooperation, hence the fruit grower who attains order is already on his way to better things.

In some communities, I understand that the man who does not belong to a co-operative organization is not looked upon with much favor by the other church members, and the banks view him with an eye of suspicion.

There is not a single detail in the fruit grower's business experience which may not be benefited by cooperative effort. It has been said that the training of a child should begin before it is born, and so with co-operation. It should begin its work before the potential orchardist plants his trees, and I do not know of any reason why it should not aid him in the selection of his land. I imagine an organization handling annually a million or more dollars worth of fruit would be a better judge as to the varieties to set out and the land best adapted to the different varieties than the average real estate man or nursery representative.

Well ordered cooperation would have thoroughly qualified men, part of whose duties it would be to give advice and guidance in all matters, such as planting, pruning, spraying, cultivation, picking and packing. The organization would act as a clearing house for all details affecting the business welfare of the individual members.

And now we ask—is it possible to put such an organization in successful operation in the Niagara Peninsula? In my judgment it is practicable. The western end of the peninsula at least offers an ideal field for the venture but, let me say, that no attempt should be made to put such an organization in operation until every detail has been put in perfect shape and the whole structure made ready for the work to be done. This will be no easy task and will require the active assistance and support of those men who have had many years experience in the marketing of the fruits of the district, as well as all other branches of the industry. There are many problems to solve—many situations to meet—which are peculiar to our particular district and its products and which will have to be dealt with in a special way since there are no experiences that I know of which will be a sure guide for us.

We will have to work out our own salvation. It can be done if the fruit growers feel that they are ready for it. The main thing is to have a fruit growers' organization, an organization controlled by the growers, with the fruit growers in charge of their own business.

Two plans of organization have been con-

sidered—one patterned after the California Fruit Growers' Exchange and a number of others already in operation both in the United States and Canada. The California Exchange is, as you know, simply the selling agency for a great many local concerns scattered over hundreds of miles of territory—handling the products of these local organizations in car lots to the large centres and mostly on consignment. While this plan might in a measure succeed in the Niagara Peninsula it is not the one best suited to our needs.

I ran across an article some little time ago which referred to an organization which had decided to discard the Central Selling Agency as an unnecessary and useless appendix, and I think, if adopted by our district, we would soon have on our hands a very bad case of appendicitis.

The nature of our business requires that there must be close connection, a much closer cooperation than in those cases where only car lots are handled and which, to a considerable extent, go to the large centres, much on consignment.

I would not, for the present at least, suggest one organization for the whole Niagara Peninsula. It might be better to consider two organizations—one for the Western end and another for the Eastern—and I do not know of any reason why a third could not be organized to include the district from Hamilton to Toronto, and the three work in harmony.

I have been asked if a growers' organization, controlling practically all the fruit of the district, should become a reality, what about the dealers who at present are our largest distributors? What about the commission men?

Our dealers, some of whom are large growers, should become members of the growers' organization and some of them, and all those who are growers, should be asked to maintain their present selling organizations and continue to act as distributors operating, however, in strict co-operation with the growers' company. In that event the dealers would get their fruit from the organization instead of from the individual grower, and I know of no good reason why an arrangement along these lines, satisfactory to all interested, could not be put into effect.

We have some excellent men in the commission business whose services in handling fruit in the large centres could not well be dispensed with. However, the relation at present existing as between grower or shipper and commission man would be somewhat altered, and in the course of time this branch of the business would come directly within the control of the growers' organization.

Some time, when the horizon of the farmer and fruit grower extends itself, when co-operation has spread abroad over the land, there will be in each large centre in the Dominion a Produce Exchange under the control of the producers' organization where farm products of all kinds will be handled. When the fruit growers' organization has once got well on its way, when the heaven of cooperation shall have begun to exert its power and influence, the dealer, the commission man, each interest will, without sacrifice, fit into some useful niche in the new order of things.

Enclosed you will find \$2.00 for my subscription to The Canadian Horticulturist up to September, 1918. I always give my copies of The Canadian Horticulturist away, as even after they are a year old they are always useful.—Signed: W. R. Puckey, Coal Creek Mines, B.C.

Apples in Boxes and Barrels*

C. W. Baxter, Dominion Fruit Division, Ottawa

THOSE who have visited the Prairie markets, especially in Western Saskatchewan and Alberta, will have noticed the small proportion of apples offered for sale in barrels. In many towns and small cities, we could not find a single barrel of apples. In answer to inquiries as to why these conditions prevailed we were told that it was because of the past misdeeds of the few eastern shippers who had practiced "Boot-legging" or "stove-piping." Again we were told that if Ontario growers want to sell their apples on these markets they must pack them all in boxes, and not being satisfied with this answer we continued our inquiries and concluded that the reason was largely a question of prohibitive freight rates. However, Ontario growers are not likely to worry over these markets. They realize that British Columbia can very well take care of them.

The trade channels through which most of the boxed apples have been sold in the markets, on both sides of the International Boundary from Saskatchewan and Minnesota East are the hotels, fruit stores, fruit stands, apartment houses and private homes. The hotels, restaurants and fruit stands use practically nine-tenths of the total. Why do they prefer to pay a higher price for apples in boxes rather than in barrels? Taken in the order named, some of the reasons may be, "that the hotels and restaurants prefer them because the fruit is of uniform size and quality, if they want apples for baking or pastry they can get them uniformly large, if for serving for fresh fruit, uniformly medium to nearly medium size. Caterers have the individual cost of serving the public figured out to a fine point and uniformity in size helps them to carry this out in practice. Fruit stores and fruit stands prefer them

because of the uniform size, color and quality. The fact that the number of apples contained in the package is marked on the outside is considered a decided advantage and aids the dealer in determining whether the apples will be sold at five cents each, two for five cents, or three for ten cents. The profits on apples sold in this way usually range from one hundred per cent. to three hundred per cent. seldom less than one hundred. To increase the consumption of apples by handling greater quantities at smaller profits is never considered. The proportion used by consumers in apartment houses has been limited, in private homes very limited.

Has the eastern Canadian apple grower been getting his share of this business? We find the answer in the large quantities of apples imported into eastern Canada annually. Does the eastern Canadian grower grow apples of sufficiently high quality to warrant his going after this trade? The quality is unexcelled. Is this trade worth catering to? I think it is; but if you intend to cater to this class of trade, you cannot afford to lose sight of the fact that the commercial standard for apples in boxes has been placed at a very high point and unless this standard is reached and maintained, there is no advantage in packing in boxes. The Inspection and Sale Act does not require a higher standard for apples in boxes than it does in barrels, but the standard has been set commercially. Wrapping apples of low grades in paper and putting them in boxes, as some of our eastern growers have done, will never gain this trade. The disappointment to the purchaser is a detriment to the whole industry.

There is an established trade for apples packed in boxes, though it is limited. Every grower should be in a position to take advantage of this trade should the opportunity offer.

*A paper read at the recent annual convention of the Ontario Fruit Growers' Association.

Douglas Gardens OAKVILLE, ONT.

Antirrhinum (Snapdragon), including silver pinks, each 10 cts.; 10, 60 cts.

Asters (China), six sorts, including upright white and shell pink, 10 for 25 cts.; 100, \$1.25.

Begonias, Fibrous-rooted, 3 for 40 cts.; 10, \$1.00.

Geraniums, 5 sorts, each 10 cts.; 10, \$1. do. Strong plants, 10 for \$1.25 per express.

Pansies, Mixed colors, each 5 cts.; 10, 40 cts.

Salvia, Bonfire, each 10 cts.; 10, 75 cts.

Stocks, 10 weeks, each 5 cts.; 10, 25 cts.

Dahlias, 10 sorts, strong plants, each 15 cts.; 10, \$1.25.

Gladiolus, America, 3 for 25 cts.

Gladiolus, Mrs. Francis King, 3 for 20 cts.; 10, 60 cts.

Gladiolus, Peace, 3 for 55 cts.

Gladiolus, Spring Song, 3 for 25 cts.; 10, 70 cts.

Gladiolus, Unnamed, light colors, 10, 35 cts.; 25, 75c.

Gladiolus, Unnamed, red, 10, 30 cts.; 25, 65c.

Planting List sent on request.

JOHN CAVERS

AYLMER SPRAYERS
have won Medals
and are used by
seven Governments

USE THE AYLMER SPRAYER

Aylmer Sprayer
Outfit D

Fig. 176

Pump complete, 10 ft. hose with couplings attached, 2 Friend Nozzles, 1 Brass Stop Cock, 1 Y. 1 long Iron Extension Rod, without barrel, \$20.00. Lined Bamboo Extension Rod in place of iron, \$2.00 extra; with barrel, \$4.00 extra. Shipped prepaid to any station in Ontario.



Fruit growers use Aylmer Sprayers because they give RESULTS. Aylmer Sprayers have the force to drive the mixture into crevices of bark and buds and make it penetrate the hiding places of the destructive little insects. No time wasted on repairs during the Spraying Season if you get a Sprayer that DOES NOT GET OUT OF ORDER. Any man who has had the exasperating experience of having to stop on account of loose "packing" on the pistons, will be glad to own an Aylmer Sprayer. It is the only Sprayer constructed without troublesome "packing." In the Aylmer, the pistons are made tight by three bronze expanding rings, the same as the pistons in automobile engines. This Sprayer is easy to pump and there is no pressure leakage; every ounce of pressure being turned into spray work. Agitators prevent clogging; nozzles are up-to-date; throw full distance and with full power from a stream to a spray. Every part designed to give perfect service. Prices low. FREE GUIDE TO SPRAY MIXTURES sent on request.

Aylmer Pump and Scale Co. Ltd.
WATER ST., AYLMEER, ONT.

Give Your Horses A SPRING HAIR CUT



for the warm weather

When the heavy coat that holds the wet sweat and dirt is removed they get more good from their feed, are healthier and work better. They are more easily kept clean, and their improved appearance greatly adds to their selling price. It also pays to clip the flanks and udders of your cows—you get clean milk. Clip them with the

Stewart Ball-Bearing Machine

It turns easier, clips faster and closer and stays sharp longer than any other. Gears are cut from solid steel bar. They are enclosed, protected and run in oil; little friction, little wear. Has six feet of new style, easy running flexible shaft and the celebrated Stewart single tension clipping head, highest grade. Price complete \$9.25. CHICAGO FLEXIBLE SHAFT CO. 612 N. LaSalle, Chicago, Ill.



THREE BANDED ITALIAN QUEENS

Bred from imported mothers. Guarantee that all queens will reach you in good condition and to be purely mated. April 1 to May 1.

Prices.	1	6	12
Untested	\$.75	\$ 4.25	\$ 8.00
Select Untested	.90	5.00	9.00
Tested	1.25	7.00	13.00
Select Tested	2.00	11.00	20.00

L. L. FOREHAND - Fort Deposit, Ala.

WE STILL MAKE FOUNDATION FOR SALE

We will buy your wax or make it into the best grade of foundation at low rates.

W. A. CHRYSLER & SON
Rt. No. 5, Chatham, Ont.

PRODUCTIVE BEEKEEPING

is the title of a new book of 326 pages by Mr. Frank C. Pellett, State Apiarist of Iowa.

As the name of this book indicates it is especially adapted to the needs of the practical beekeeper. Not a discussion of scientific principles, but of practical methods.

Sources of Nectar, Wintering, Marketing, and Laws that Concern the Beekeeper, are titles of chapters of special interest.

Regular price \$1.50 postage extra.

We offer this latest book with the American Bee Journal one year, both for \$2.00, Canadian postage 15 cents extra.

134 illustrations, attractive cloth binding.

AMERICAN BEE JOURNAL, Hamilton, Illinois

NOTICE TO CANADIAN BEEKEEPERS

We are making a specialty of the pound package trade. Our improvement on the package, making it larger and lighter and giving it more ventilation, enables us to guarantee its safe arrival. We will ship from our yards in Alabama during April, May and June, packages and queens at the following prices:

Pound package without queen, \$1.25—with queen, \$2.00; 2-pound package with queen, \$2.65—without queen, \$1.90; 3-pound package with queen, \$3.50—without queen, \$2.75. Queens, untested—one for \$1.00, six for \$4.50, 12 for \$8.50. Select, tested, \$2.00; breeders, \$3.00.

Our stock of 3 band Italians have stood the test for 20 years; there is none better. We guarantee them to be free from disease. Pure mating and no inbreeding. Your money refunded if not satisfied. We sold the A. I. Root Co. two carloads, and will sell them this season. Our aim is to carry a surplus of stock so as to fill all orders by return mail. 5 per cent. discount on all orders before March 15th.

Reference—American Exchange Bank of Apalachicola, Fla., and the A. I. Root Co.

After March 15th our address will be Fitzpatrick, Ala.

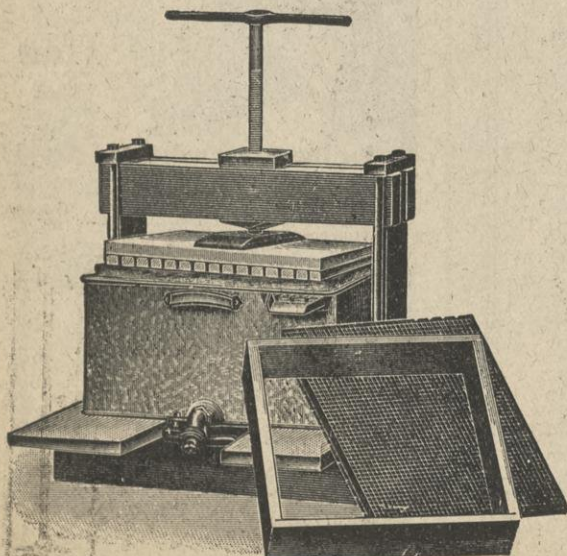
MARCHANT BROS., SUMATRA, FLA.

THE SIBBALD WAX PRESS

Cheap, Strong and Efficient

NOW is the time to render that pile of old combs into nice cakes of yellow wax. The SIBBALD PRESS is just the machine for the job, it will soon pay for itself in the extra wax obtained. Wax taken in payment or in exchange for goods of any kind.

Two sizes—19 in., \$9.50;
13 in., \$6.00.



The HAM & NOTT COMPANY, Ltd., Brantford, Ont.

The barrel we have had with us always in eastern Canada. If eastern apple growers were asked to choose one package only, ninety-nine per cent. would choose the barrel. We have made some improvements in our methods of packing and grading in barrels during the past few years, but the progress has been slow. Our apples are given the preference over our competitors to the south of us in the European markets, and on reading the comments of our competitors, as to the reason for this preference, we find that they give considerable credit to our legislation, the Inspection and Sale Act. If we are to maintain this preference we must improve our methods of packing and grading. Fruit legislation and apple packing laws are live topics in the United States. Apples from the state of Maine have been forging to the front. Virginia, too, has made progress, and during the past year, New York State with her four million barrels, through her apple packing laws has made rapid progress. In fact, we are told that the growers in that state were able to sell their apples in markets where, previous to this year, they were debarred because of the unreliable methods of packing and grading. Now, there may not be any cause for alarm; but as progressive apple growers, you cannot afford to lose sight of what your competitors are doing; you must not only hold the markets you now have, but reach out for wider markets.

In what way can we improve our methods of packing in barrels?

By improved methods of production, spraying, thinning, pruning, etc.

By more careful packing and pressing. Over-pressing is one of our greatest evils in barrel packing.

By more careful picking and handling of our apples.

By more careful grading.

By having fewer low grades and when we have them to put them where they belong, through the evaporator, the cider mill and the vinegar factory. We have had our lesson this year in packing cider apples."

The question of packages for apples, like that of all other fruit, is largely a question of markets. Every grower should, as far as possible, be in a position to avail himself of any advantage in marketing, by being prepared to pack his fruit in any legal package which that market demands.

How Not to Cooperate

If you hear of a local company about to be organized, go and meet with them and pretend to help them, and by doing so persuade them to engage an agent of one of the speculators as their manager. This man should be intelligent enough to handle the affairs in such a manner that the co-operative members will be discouraged. Another effective plan is to advertise that you have made a tremendous price for your produce. This is always safe because no one can disprove it, and if it came to a show down you could always withhold your bad account sales, and put in all your good ones.

It will quickly be seen that you have a big advantage over the Co-operative Company because they have to pay out on the price they publish, while you simply have to say yours is so much. There is another good feature of this method; it may be that something is necessary to reassure your creditors, and by the above trick you accomplish that and hit the co-operators at the same time. If all of these suggestions do not work, then devise some other way, and when you have found one that will work, give us your plans so that we can instruct other growers like you.

Comb Foundation

A Limited quantity for quick sale, while it lasts. Section, per lb., 60c. Light brood for shallow frames, 55c. Will accept wax in exchange.

A. E. HOSHAL, Beamsville, Ont.

NORTHERN BRED ITALIAN QUEENS

Friends, have you E. F. Brood? If so, I have many letters saying that they are great resisters of E.F.B. I have hundreds of queens in Canada. Three band strain bred to right brightness to resist best. Unt. \$1.00, choice Sel. Tested \$1.50. Plans how to "Introduce Queen and Increase," 25c. List Free.

E. E. MOTT, Glenwood, Mich.

BEES FOR SALE

Italian Bees, lb., \$2.25; 5 lbs., \$10.50; 1-L Frame, \$2.00; 2 Fr. Nuc., \$3.00; All with Queens. Italian Queens, 75c each; 6 for \$4.00. Complete Catalogue Free. Listing Beginner's Outfit.

THE DEROY TAYLOR CO.

Box C., NEWARK, N.Y., U.S.A.

FINE QUEENS AND BEES

We have made arrangements with two of the best beekeepers in the south to furnish our northern trade with early bees and queens at a very low price. Bees \$1.50 lb., 2 frame nuclei with untested queen \$2.60. Bees shipped direct from the southern yards.

GEO. W. BROWN & CO.,
Lynnhurst Apiaries, Wilson, Wis.



QUEENS

REARED IN CANADA

From the BEST
Italian Stock

\$1.00 Each;

Six for \$5.00

P. TEMPLE

438 Gladstone Ave.

TORONTO, ONT.

Bees by the Pound, Nuclei or Colonies

We are still booking orders. Northern or southern bred, and bred for business. Hard to excel.

Let us quote you prices on large or small quantities. Our prices are right. We guarantee safe delivery or money refunded.

BEE SUPPLIES.

Sole Agents for Root's Famous Goods. Also Canadian made goods.

Anything from 1/4" cement coated nail to a Power Extracting Outfit.

All kinds of Bee Literature. Ask for Catalogue.

Address—

THE ROOT CANADIAN HOUSE,
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ASK

our sales office nearest you for prices and terms on fertilizers adapted to your soil and crops

Send for Canada Booklet-Free

The American Agricultural Chemical Co.

New York, Boston,
Buffalo, Detroit



Southern Headquarters

FOR

Italian Bees and Queens



Swarms in packages, 1 lb. bees \$1.50, 2 lbs. bees \$2.50; 50 or more packages 12 1/2c. less each. If queens are wanted with the above add price of her to the above. Three band Italian untested queens 75c each; tested \$1.25 each. No reduction for quantity of queens on April and May deliveries. No disease. Safe arrival and pure mating I guarantee. We can supply and satisfy you. We spare no labor nor money to produce the best for you is why we cannot make a lower price. We have long since passed the experimental stage in this business. We will care for your interest.

W. D. ACHORD

FITZPATRICK

ALA., U. S. A.

"Queen Breeder and Pioneer Successful shipper of bees in packages."

To Canadian Beekeepers

WE are making a specialty of shipping bees and queens into CANADA this season. Situated, as we are, only a short distance from the Canadian line, we practically eliminate the loss by shipping and save to the purchaser the high express rate he is compelled to pay to southern beekeepers.

We are breeding from bees and queens that produced a surplus of 300 pounds per colony in a 24-day honey flow, and that are unexcelled for prolificness, gentleness and honey gathering.

Last season we did a very nice business with Canadian beekeepers. Several of them have ordered from us again this season, reporting to us that they were well pleased and that in their opinion our stock was the best on the market. WE HAVE PLEASED AND SATISFIED OTHERS, AND WE CAN SURELY SATISFY AND PLEASE YOU. We fill all orders promptly or at such time as the purchaser may desire, and guarantee safe delivery on all shipments into Canada and entire satisfaction to you in every respect. Our aim is to give the purchaser the best stock on the market at the time he wants it. We ask you to give us a trial and let us prove to you that everything we claim for our bees is true.

Island Bred Italian Queens.

	1	6	12
Untested	\$1.50	\$7.50	\$12.00
Tested	2.00	10.50	18.00
Sel. Tested	3.00	15.00	24.00
Tested Breeding Queens, each.	\$5.00 and \$10.00		

Prices on bees by the pound, F.O.B. Canton, Shipment begins May 10.

	1	6	12
1/2 lb.	\$1.50	\$7.50	\$12.00
1 lb.	2.00	10.50	18.00
2 lbs.	3.00	15.00	27.50
3 lbs.	4.00	21.00	36.00
5 lbs.	5.50	27.50	50.00

(These prices are Without Queens.)

Prices on Nucleus and Full Colonies, without queens. Shipping now.

1 Frame Nucleus	\$2.00	2 Frame Nuclei	\$3.00	3 Frame Nuclei	\$4.00
5 Frame Nuclei	5.00	8 Frame Colony	8.50	10 Frame Colony	10.00

The J. E. Marchant Bee & Honey Co.
CANTON, OHIO

QUEENS OF QUALITY

The genuine "QUALITY" kind of dark Italians. Unt., 75c each, \$8.00 per doz. Circular free.

J. I. BANKS, DOWELLTOWN, TENN.



Italian Queens Three-Banded

Ready April 1, of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey gatherers. Untested, \$1.00; 3, \$2.75; 6, \$5.00; 12, \$9.00. Tested, \$1.25; 6, \$6.50; 12, \$12.50. Send for my free circular and price list, and see the natural conditions under which my queens are raised. Will book orders now.

JOHN G. MILLER, Corpus Christi, Texas.
Corner C St., and Coleman Ave.

FOR SALE

Leather Colored Italian Queens

A few choice breeding queens at \$10.00 each, spring delivery. I guarantee these queens to be as good as any imported queen, barring none. If purchaser is not satisfied after one year's trial return queen and I will refund the \$10.00.

Warranted purely mated queens \$1.00 each or \$10.00 dozen. Untested, after July 1st, 75c each or \$9.00 a doz.

A few choice cols. of Italian bees in 9 frame hives at \$10.00 per col.

Tested Queens \$1.50 each.

JOHN A. MCKINNON
St. Eugene - - - Ontario

Three Banded and Golden Italian Queens

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

Selected untested—1 for \$1.25; 6 for \$7.00; 12 for \$14.00.

W. R. STIRLING

Queen Breeder. RIDGETOWN, ONT.

Send for Price List. Cash with Order.

The Apple Situation at the Coast*

R. C. Abbott, Coast Market Commissioner, Victoria, B.C.

A statement in regard to the apple situation in the city of Vancouver last season may be of interest. The market was in favor of the British Columbia grown product.

British Columbia grown apples of 1914 were on sale in Vancouver up to May 1st. The varieties consisted of Yellow Newtowns, Spitzenburg, Ben Davis, Hall's Jettettes, Red Cheek, Pippins, Grimes' Golden, Baldwin and Spys. Most of these varieties showed waste. The Baldwins from the Okanagan Valley held up well.

From the time the early apples first arrived on the market till the end of the year our supply was equal to the demand, as far as quantity was concerned, yet at times somewhat short on certain sizes and grades. The early apple market was supplied almost entirely with British Columbia apples, there having been only a few boxes of inferior

quality brought in from Wenatchee.

During the latter part of September and the early part of October the demand favored the No. 1 grade, but on account of the high prices it suddenly changed to the No. 3 grade and crated stock, and held strongly to this class of apple right up to the first week in December, when it suddenly changed again to the better grades.

The pack and grade of British Columbia apples last season was well up to standard, which will work to the benefit of our growers in the future. Notwithstanding this there are a few facts we feel we must comment upon. Wholesalers complain that in buying a car of apples they do not know what they are going to get as to sizes, etc. This is a very important fact, and shipping organizations would do well to furnish their brokers with a (detailed) manifest showing the number of boxes of each size contained in the car and any other information necessary. Large sizes of dessert apples are poor sellers on these markets, yet jobbers

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

Before the Calyx Closes

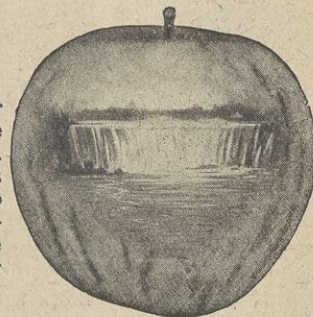
Just as the blossoms fall, a day may mean many barrels of apples destroyed by codling moth. The moth requires poison.

SWIFT'S BRAND ARSENATE OF LEAD IS THE BEST.

Control your apple scab at the same time. That needs a fungicide, and the most efficient is

SOLUBLE SULPHUR

Mix Arsenate of Lead and Soluble Sulphur for the second and third spray. A drum of Soluble Sulphur makes 4,000 gallons of Summer Spray. A barrel of Lime Sulphur Solution only makes 1,600 gallons. With Soluble Sulphur there is no loss from leakage, no empty barrels to return—less freight—less muss—no clogged nozzles. Be ready for the falling blossoms. Send to-day for prices on Sprays and Sprayers.



The Niagara Brand Spray Co. BURLINGTON, ONT.

Everything for Spraying—Soluble Sulphur, Lime Sulphur, Arsenate of Lead, Dust Sprays and Dusters, Hand and Power Pumps, and Accessories.

BEEKEEPERS!



Jones' Weed Process Comb Foundation, Wax worked into Foundation, Italian Bees in Pound Packages, Improved Model Hives, and a full line of Bee Supplies. Catalogue free.

Write us if you have any BEES-WAX to offer.

F. W. JONES

BEDFORD, QUE.

Practical Gardening Tools

TOOLS like these will do all of the necessary work (except plowing and harrowing) economically, whether for home, farm or market gardens. You can plant certain crops close and straight, and work them close and safely, with wheel hoes. You save ground, save heavy investment for tools at the start and yet do the best kind of work with profitable results.

IRON AGE Hand Seed Drills and Wheel Hoes

Will sow, cultivate, ridge, furrow, etc. better than you can with any old fashioned tools and ten times quicker. Pushed ahead a step at a time, these tools can be worked by women, or grown boys or girls. We show here a few only but we make 38 styles and combinations from which to choose. Prices, \$3.00 to \$14.50. There are also many attachments for special work.

Ask your dealer to show them and write us for booklet "Gardening With Modern Tools." Also, for horse hoes, harrows and cultivators, sprayers, etc.

The Bateman-Wilkinson Co., Ltd. 462 Symington Ave. Toronto, Ontario.



No. 6 Com. Drill
& Wheel Hoe



No. 1 Double and
Single Wh. Hoe



No. 27 Disk
Cultivator



No. 20 Wheel
Hoe



No. 22 Wheel
Hoe



No. 100
Wheel
Cultivator

can always handle a certain proportion in each car.

A very important matter is the establishment of a standard for the No. 3 grade by selling organizations themselves. The wide scope used in putting up this grade certainly works against the growers and is confusing to the consumer. For one organization ships in "Orchard run" stock graded No. 3, and another takes out the No. 1's and No. 2's and ships in the balance as No. 3 grade, while still another shipper will send in, under No. 3 grade, that which is no better than hog feed, yet all these to the consumer and also to the trade are simply "Grade No. 3."

A noticeable feature of our apples last season was their poor keeping quality, caused by the abnormal climatic conditions last season, which caused nearly all kinds of fruit to mature at least twelve days sooner than other years.

Viewing the apple situation right through the season we believe it was the most satisfactory year that our growers have ever experienced on this market, both as to price and the quantity sold. Further, I believe had our people been able to supply the grades and varieties requested at times by the commission houses the imported apples could have been entirely cut out.

The demand for British Columbia apples is proved by the fact that a car of fancy apples from Cashmere, Washington, brought in early in September and distributed along wholesale row was not cleaned up till late in November. The price of American apples declining in November, the Vancouver jobbers, anticipating a rapid rise in prices after the first of the year, placed the greater portion of imported apples brought in during November and December in storage to be brought out after the British Columbia



Keith's Seeds Are Superior

To demonstrate their superiority we will send the following six packets of seeds, together with our

GOLDEN JUBILEE CATALOGUE,

Post free for 20c.

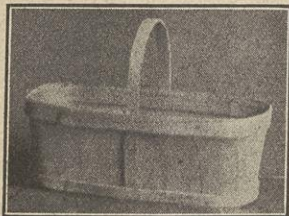
Keith's Selected White Tip Radish.
Keith's Big Boston Lettuce.
Keith's Selected Hollow Crown Parsnips.
Keith's Victoria Asters.
Keith's Finest Mixed Pansies.
Keith's Large-Flowering Sweet Peas.

GEO. KEITH & SONS

124 KING ST. EAST

Toronto, Ont.

Peerless Climax Fruit Baskets AND BERRY BOXES



Heaviest, Strongest and Best

In the market. Especially suitable for long distance shipping.

Protect your requirements by ordering **EARLY**

**Canada
Wood Products Co.**
ST. THOMAS, ONT.

Start a Backyard Garden This Spring

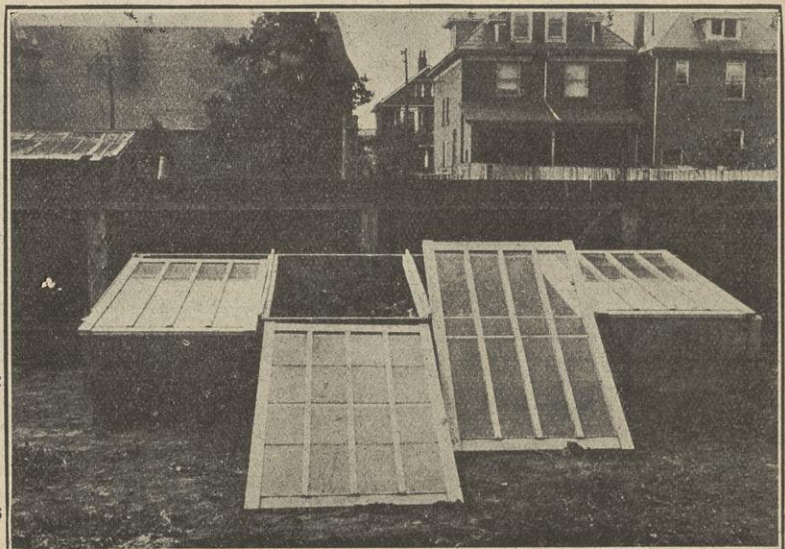
WHY not decide now to have a garden this spring, and prepare your hot beds at once. In another couple of weeks you should have your seeds such as onions, tomatoes, beets, lettuce, cabbage, and of course a number of varieties of flowers for the flower garden all planted.

Hot
Bed
Sash

3 ft.
x
6 ft.
10 inch
glass.

Price
\$1.15

In
Clear
Red
Cypress
Unglazed



Hot
Bed
Sash

8 inch
glass

Price
\$1.20

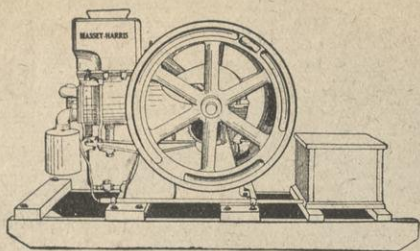
In
Clear
Red
Cypress
Unglazed

BATTS LIMITED

MANUFACTURERS ALSO OF GREENHOUSE BARS AND SASH

366-415 PACIFIC AVENUE

WEST TORONTO



A Reliable and Economical Source of Power

A MASSEY-HARRIS ENGINE mounted on Skids can be moved around to any place where you need help in the way of power.

You will be surprised to find the many uses to which it can be put and the small cost as compared with manual labor, not only around the farm but in the dairy and kitchen, where it does so much to lighten the work of the women on the farm.

And perhaps the most interesting part of it is that an Engine costs nothing in "salary" or "keep" when not running.

Our Catalogue "Farm Power" gives many suggestions for Saving Labor.



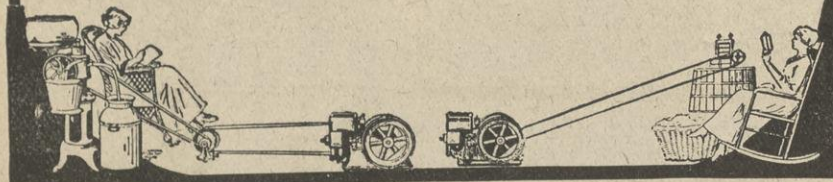
MASSEY-HARRIS CO., Limited.

Head Offices—Toronto, Canada.

— Branches at —

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

— Agencies Everywhere —



PEERLESS LAWN FENCING

Enhances Property Values

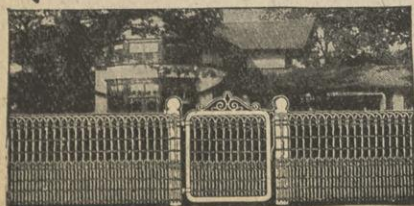
A BEAUTIFUL lawn fence gives any piece of property that symmetrical, pleasing, orderly appearance that not only affords its owner a keen sense of pleasure and satisfaction while occupying the premises, but when offered for sale, it brings a better price. It's an investment—not an expense.

Peerless Ornamental Fencing

is made of strong, stiff, galvanized wire that will not sag. In addition to galvanizing, every strand is given a coating of zinc enamel paint, thus forming the best possible insurance against rust. Peerless Ornamental Fence is made in several styles. It's easy to erect and holds its shape for years.

Send for free catalog. If interested, ask about our farm and poultry fencing. Agents nearly everywhere. Agents wanted in open territory.

The Banwell-Hoxie Wire Fence Co., Ltd.
Winnipeg, Man. Hamilton, Ont.



stock is cleaned up.

The heavy months for imports were January, February, March, October and November. Two interesting facts in regard to the imports are, that out of the total of 118,240 boxes brought in, 66,111 boxes were received during the first three months of the year and 18,170 boxes were on hand at the end of the year.

Recent Publications

Copies of the following publications have reached The Canadian Horticulturist during the past few weeks: "Varieties of Apples in Ohio," being Bulletin 290, issued by the Ohio Agricultural Experiment Station, Wooster, Ohio; Bulletin 244, from the Maine Agricultural Experiment Station, Orono, Maine, on "Blueberry Insects in Maine"; Bulletin No. 43, entitled "The Principal Parasites of the Peach." This bulletin deals also with the care and management of peach orchards. It is being issued by the Georgia State Board of Entomology, Atlanta, Ga. "Insects Attacking Cabbage and Allied Crops in Connecticut" is the title of Bulletin 190 from the Agricultural Experiment Station, New Haven, Conn. "Common Diseases of Beans" are dealt with in Circular 50 of the New Jersey Agricultural Experiment Station, New Brunswick, N.J.

The University of Illinois Agricultural Experiment Station, Urbana, Ill., is distributing Bulletin 185, entitled "Field Experiments in Spraying Apple Orchards." This bulletin contains a number of spray tables for fruit growers. "Fertilizing Lawn and Garden Soils" is the title of Circular 24, issued by the Iowa State College of Agriculture, Ames, Iowa.

FOR SALE

Black Raspberry plants, Cumberland and Corinth varieties, good strong plants. Order early, as stock is limited.

P. P. Carruthers, Manager F. P. Macklem Farm, Lake Road, Grimsby. Phone 137

NEW AND RARE SEEDS

Unique collection. Hundreds of varieties adapted for the Canadian climate. Perennial and perfectly hardy. Own saving. Catalogue free.

Perry's Hardy Plant Farm
ENFIELD, MIDDLESEX, ENG.

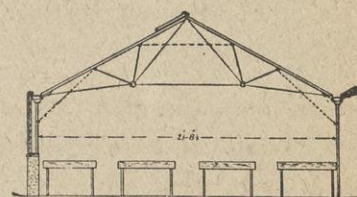
SANDER & SONS

ST. ALBANS, ENGLAND

ORCHID GROWERS. The Finest

Stock in the World

Catalogue on Application

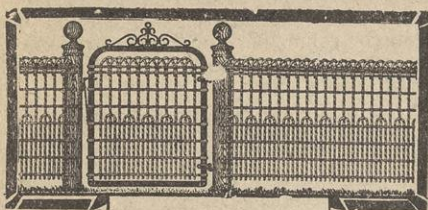


This is a New Model for 1915, the result of fifteen years' experience in Greenhouse construction for Canada.

Dotted lines show location of wind-ties that positively prevents vibration of the sash. Supplied in widths up to 25 feet 2 1/4 inches from post to post.

KING CONSTRUCTION CO.,
40 Dovercourt Road Toronto.

Make the Back Yard a Garden This Year



Why Fight Against Nature?

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Get Dyer's Lawn Fence

Let in the sunshine, pure air, and make nature smile.

Get his special prices now.

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The BEST Seeds

Make the BEST Garden

Be sure to get Steele Briggs' quality flower and vegetable seeds, bulbs, perennial plants, shrubs, and roses. All the newest varieties.

Our Catalogue tells about them.

Steele Briggs Seed Co.

LIMITED

TORONTO, ONTARIO

Every citizen can render service in the production of foodstuffs. Even in the heart of populous cities something can frequently be done. Cellars and roofs have been utilized for this purpose in New York. Every ounce of needed produce grown is so much added to the wealth of the country. If some part of the energy of every householder in Canada were bent upon producing something eatable, no matter how small, thousands of tons of valuable produce would be forthcoming, all of which, whether consumed in the household or not, would help to make available for use in other ways an equal quantity, and would aid in modifying the cost of living. Last year considerable progress was made in the appropriation of seemingly waste land in towns and cities to useful purposes. Considerable success was achieved, and this year it is not to be doubted the experiment will be extended with greater results. In fact, in many centres plans made last fall or during the winter are already being carried out.

Germany has laid down utilization of the land as one of her first principles. Every inch of land, according to the Teutonic proclamation, that is not used is so much of the country's resources wasted. France has adopted a regulation to the effect that every bit of space must be used for production: failing this being done by the owner the state is to take possession. Britain has given orders that golf courses and all meadow land are to be used for grazing purposes, and that previous pastures are to be put down in crops. Private parks are also being wooded out and the land devoted to practical agriculture. A campaign is being conducted, having for its object the utilization of backyard gardens and all manner of vacant land. Thus the chief belligerents are setting the world an example in production and thrift that Canada would be wise to profit by as widely as possible, and that municipalities and public bodies should do their utmost to encourage.

Scores of reports of the operations carried on in the season of 1915 by small householders speak of produce being grown worth from twenty-five to fifty dollars, every dollar of which meant so much added to the wealth of the country as well as saved in the cost of living. Financial profit is not the only gain forthcoming. Lessons of industry and thrift are inculcated and the whole household, from the oldest to the youngest, come under the influence of those qualities. They also have the gratification of eating fresh vegetables, the enjoyment of which is tremendously enhanced by the proud knowledge that they are home grown. What the families cannot eat themselves they have the pleasure of giving or selling to their neighbors, or sending to some charity. It is hard to imagine any greater or more enduring satisfaction than a household in modest circumstances can experience than that to be derived as the reward of loving industry in a backyard garden.

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Vegetable Seeds,
Flower Seeds,
Lawn Grass,
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Flowering Shrubs,
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It describes more than 1,500 of the best varieties of
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and hardy plants suitable for all parts of Canada.

Scores of varieties of
Asters, Pansies, Petunias, Phlox, Sweet Peas, Climbing and Dwarf Roses, Dahlias, Gladiolus, Paeonies, and Phlox Plants, Etc., for beautifying the home grounds.

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Prizes New York State Fair, Canadian National Exhibition, Berlin Horticultural Society and many other places.

All colors, early and late varieties, \$1.00 per hundred by express, \$1.15 per hundred by mail. Charges prepaid on over 300.

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Reducing Waste in the Orchard

Instead of letting apples rot and waste or disposing of them as culls and "seconds," why not give your trees and bushes a little systematic spraying and so get "first grade" prices for your fruit. All the foremost fruit authorities agree that the

Spramotor
It isn't a SPRAMOTOR unless we made it

by reason of its improved construction, does the work of spraying as no other machine can. The Spramotor won first prize in the Canadian Government Spraying contest at Grimsby, Ontario against eleven other makes. By actual Government tests in 19 orchards it reduced the

percentage of loss in fruit over 80 per cent. Used on potatoes a Spramotor has increased a yield of almost nothing to 400 bushels an acre. Think how quickly such a saving or even a small fraction of such a saving would pay for your Spramotor. The Spramotor

is operated by hand, horse or gasoline engine; it can be had for as low as \$6 up to \$400. Send for and read our valuable and interesting book on crop diseases—mailed free.

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Flowering Bulbs

GLADIOLUS

These are most effective in the flower garden, the colors are magnificent and they are easily grown. Prices are here—we offer:

Choice Mixed—10 for 30c, 25 for 65c, \$2.00 for 100.
Groff's Hybrid Seedling Mixed—10 for 40c, 25 for 75c, \$2.50 for 100.

Bruce's White and Light Shades—10 for 50c, 25 for \$1.00, \$3.50 for 100.

Childs Mixed—10 for 60c, 25 for \$1.25, \$4.50 for 100.

Bruce's Superb Mixed—Made up by ourselves from all varieties—the best, 10 for 60c, 25 for \$1.35, \$5.00 for 100.

Named Varieties—Any color (see catalogue), 7c to 25c each.

If to be mailed add Postage at rate of 10c for 10, 20c for 25, and 50c for 100.

DAHLIAS

Splendid Named Sorts—All colors—20c each, 3 for 55c, \$2.00 for 1 dozen.

Ordinary Varieties—Mixed 10c each, 3 for 30c, \$1.00 for 1 dozen.

If to be mailed add Postage at rate of 5c each, 50c dozen. Where there are Express Offices, Express is cheaper than Mail for lots of over 6 Dahlias or over 50 Gladioli.

FREE Our handsomely illustrated 128-page catalogue of Vegetable, Flower and Farm Seeds, Bulbs, Plants, Poultry Supplies, Garden Implements, etc. Write for it.

JOHN A. BRUCE & CO., Limited
Established 1850, HAMILTON, ONT.



Niagara District Notes

By F. G. H. Pattison, Winona

Spring in this district has opened nicely. Fruit trees, vines, and berry bushes have come through the winter well and give promise of a good crop. The land has settled, and some spraying has been done, chiefly of peach trees. A great deal of commercial lime-sulphur is being used, although some of the large growers are using the old home-boiled. Soluble sulphur is also being used.

From accounts in some sections the San Jose Scale is pretty bad this spring. In the neighborhood of Hamilton it is very bad in some parts, having attacked the ornamental shrubs and trees in many of the private grounds. A number of people seem to be still ignorant that the scale attacks quite a number of ornamental shrubs and some shade trees, notably the mountain ash. It also attacks some kinds of roses. The spread of the scale in the grounds and door-yards of the cities and towns in Southern Ontario is a serious matter, and one which demands prompt action on the part of city and town councils.

Towards the end of March a meeting of the directors of the Niagara Peninsula Fruit Growers' Association was held at St. Catharines, at which it was decided to advertise heavily during the present season, the work to be placed in the hands of a committee called the Niagara Peninsula Publicity Association. The following persons were elected directors of the committee: J. B. Fairbairn, Beamsville, chairman; C. E. Fisher, secretary; Wm. Stewart, F. A. J. Sheppard, W. Gayman, and F. M. Clement.

It was decided that the campaign this season will be more intensive than last, and a system will be adopted whereby the actual contributors to the advertising fund will receive the chief benefits.

Spraying and grape tying are going to cost fruit growers more than usual this season. To give only two items: Grape twine, which sold last spring for 10 cents a pound, has increased to 25 cents; and bluestone, which sold at 15 cents, has increased to 30 cents per lb.

The outlook for better selling prices for the tender fruits is better than for the past two years. Money is plentiful with the classes of people in the cities who buy largely of fruit when they have the money, and with an active and well-conducted advertising campaign for Niagara district fruit, the volume of sales should be larger and better prices should be obtained. One mistake made last season was starting the prices of several kinds of tender fruits too low, and it is to be hoped that this mistake will not be repeated again this season.

There are several reasons why good wine has almost never been made in this country. To begin with, it is a question whether we have the right kind of grapes. Next, it requires great care and knowledge to be exercised at each stage of the making. Finally, it must be kept from 10 to 20 years in casks of a particular kind of wood, at an exactly even temperature, which should not vary more than five degrees. All this before it is bottled and put upon the market.

This involves a large amount of capital, a long waiting for any returns, and a class of expert help not to be had in this country. Moreover, owing to the tendency of the people here towards prohibition, no one in their senses would invest money in a plant capable of turning out a first-class article of light wine. Grape growers here will have to look to unfermented grape juice production, and not to light wines, for an extension of their industry.

Grape juice, although very insipid to any-

More Potato Profits

MACHINERY may make all the difference between profit and no profit in growing potatoes. Get the right ones. We make complete lines of planting, weeding, cultivating, spraying, ridging and digging tools, all of which we guarantee. 30 years of factory and farm experience back of them. We'd like to tell you about all

IRON AGE

potato machines but have room here for one only. **Potato Planters** put one piece in every space and only one. Isn't it better to plant right to make every foot of ground count and none of the rest of the work wasted? Saves one or two bushels of seed on every acre. Sold with or without fertilizer distributor. Other potato machines are *Riding and Walking Cultivators*, *Four and Six Row Sprayers* (also one with low nozzles to reach underside of leaves), *Potato Diggers and Ridgers*. Also makers of famous *Wilkinson Plows*.

Ask your dealer to show them but write us for separate book for each line. Sent **Free** to all who state in which they are interested. How many acres are you going to plant?

The Bateman-Wilkinson Co., Ltd., 465 Symington Ave. Toronto, Ont.
We also make *Garden Tools* for practical farmers and *Sprayers* of every kind.



100 Per Cent Planter

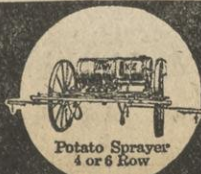


Wilkinson Plows

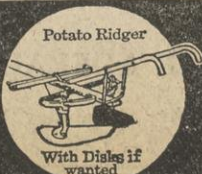
and Repairs



Riding Cultivator



Potato Sprayer 4 or 6 Row



Potato Ridger

With Disks if wanted



Potato Digger

With Engine if wanted

Dahlias, Gladiolus and Perennial Phlox

15 choice Dahlias, all different, postpaid\$1.15
 50 choice large flowering Gladiolus, postpaid 1.15
 12 Perennial Phlox, new, large flowering, postpaid 1.15
 5 Dahlias, 12 choice Gladiolus, 5 Per. Phlox, postpaid 1.15
 Sask., Maritime Provinces, Alberta and British Columbia, postage 5c. extra.

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The Satisfaction and Profits of Gardening

are just in proportion to the quality of the seeds you plant! If you are ambitious to produce prize-winning vegetables and record crops—or if you simply aim to keep your table supplied with the best—be sure to get

Ewing's Reliable Seeds

Forty-five years of success in amateur and market gardens have proved Ewing's to be sure in germination, vigorous in growth, true to name, and of choicest strains.

Our new 1916 Catalogue, with its handsome 4-color cover, is bigger and finer than ever. Write for a copy at once, (it's free) and if your dealer hasn't Ewing's Seeds, order from us direct.

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The Handiest Spraying Outfit

NOTHING else on the market meets the needs of the farmer or gardener so completely. It is constructed entirely of metal, ensuring long service. All parts of the pump in contact with the liquid are made of brass. The

OK CANADIAN

ONE-MAN SPRAYER—Wheelbarrow Type

is certainly a gem of an outfit. For spraying field crops, the pump is worked automatically by the wheel and will thoroughly coat two rows on each trip. The nozzles are adjustable for wide or narrow rows and high or low vines. It has a 10-gallon tank, and will handle any liquid spraying mixture. This outfit can be instantly adjusted for spraying trees, shrubbery, hedges, etc., by hand pumping. It can also be used for window washing, buggy washing, white-washing and fire protection. You will certainly appreciate the value of this compact little machine. Write for literature, information on spraying mixtures, etc. Mail the coupon to-day.

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Machinery
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LAST CALL

You want strawberries this year. This is the last call—send for our booklet to-day. Grow the best—it tells how.

JAS. E. JOHNSON & BROS.
Simcoe, Ontario

**Just As a Clock**

If he didn't have an *alarm* in his make-up he'd be the best three dollar *clock* that ever kept track of the day on any farm.

As it is, he's two good *clocks* in one—a reliable alarm to get up by, a punctual timekeeper to serve in parlor,

dining room, or kitchen. He goes quietly about his work—you hear him only when he calls.

Handle him with reasonable care, — he'll last for years.

7 inches tall. Price \$3.00 at your dealer's. If your dealer hasn't him, send a money order to his makers and he'll come direct by parcel post, all charges prepaid.

Western Clock Co.

La Salle, Ill., U.S.A.

Makers of *Westclox*

one accustomed to drink good wine, is a pleasant enough summer drink, and seems to suit the public taste in large sections of the United States, while it is making considerable strides in public favor here. It can be much more easily made than wine, and can be put on the market at once without any "watchful waiting."

A report from Grimsby says: "The orchards have come through the winter in excellent condition, and prospects are good for a fine showing of buds. Very few new orchards will be seen in the district, orders for nursery stock this spring being mainly for filling in or extending."

The acreage of tomatoes will probably get back to the old average again, on account of the cleaning out of the stocks in the factory warehouses. The majority of the canning factories have made contracts for tomatoes in this section.

Reports from Lambton county indicate the promise of a good crop of fruit there. Peaches have wintered well and have a fine show of buds. Rabbits and mice, however, have done injury to young trees. The apple crop in Lambton county is expected to be large this year, and arrangements are being made for the manufacture of barrels, so as to have them stored ready before the busy season arrives.

There is a boom on in co-operation there. Lambton county has a Beekeepers' Association, a Fruit and Vegetable Growers' Association, composed of 13 local associations, and holding an exhibition every year; and a Lambton County Co-operative Association, representing nearly 50 Farmers' Clubs throughout the county.

Prof. Caesar, of the O.A.C., Guelph, has been at Vineland recently on a trip of inspection. The San Jose Scale is stated to be more prevalent there than ever this season. Spraying commenced in that locality some days ago. William Betler is acting as inspector, overseeing the fumigation of nursery stock before shipment at Vineland.

The Poultry Yard

F. C. Elford, Experimental Farm, Ottawa

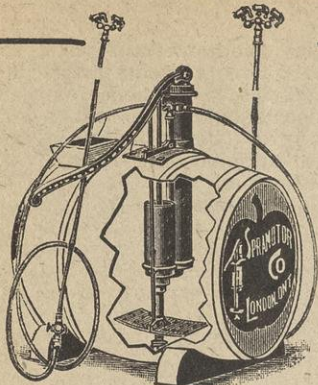
All brooders should provide a varied temperature. Underneath the hover should

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FRESH—PURE
RELIABLE

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FREE Write us giving some idea of your spraying needs and we will forward, absolutely free, a copy of our valuable illustrated work on Crop Diseases, also full particulars of a

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best suited to your requirements. We make SPRAMOTORS from \$6.00 up. Write us to-day. Made in Canada. No duty to pay.

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Control complete. Prevents drought losses. Reduces labor bills. Increases profit. Special Portable Line for \$11.75. Send for new Bulletin.

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Thousands of farmers have responded to the call of this fertile country and are being made comfortable and rich. Here, right at the door of Old Ontario, a home awaits you.

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

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HON. G. HOWARD FERGUSON,
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SMALL FRUIT PLANTS



GOOSEBERRIES — Josselyn, Red Jacket, Downing, Pearl, Houghton. **CURRENTS** — Perfection, Ruby, Cherry, White Grape, Lee's Profile, Champion, Black Naples, Black Victoria, Boskoop Giant. **RASPBERRIES** — Herbert, Plum Farmer, St. Regis, Cuthbert, Marlboro, Golden Queen, Brinckle's Orange, etc., etc. Write for Catalogue.

WM. FLEMING, Nurseryman
496-4th Ave. W., OWEN SOUND, ONT.

Cheap Copper Sulphate

can no longer be had but growers of Potatoes, Grapes and Vegetables who have used Sulfoicide for the past 5 or 6 years say that they prefer it to Bordeaux mixture as it is cheaper and easier to use and equally effective. 1 gallon makes 200 gallons of Spray. Write today for booklet.

B. G. Pratt Company

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STEELE BRIGGS

PROVED THE BEST BY EVERY TEST

"CANADA'S GREATEST SEED HOUSE"

FOR SALE EVERYWHERE IN CANADA

SEEDS

Spraying Pays

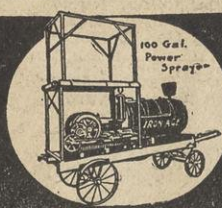
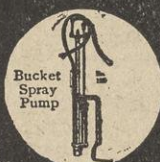
SAVES your crop from loss, helps tree and plant to produce better and larger crops, prevents spread of disease, insures a longer life for trees and a longer growing time for vines each year: Blight hit potatoes in many states in 1915—many million bushels lost. Spraying would have saved them.

IRON AGE Sprayers

Include bucket, barrel, power and potato sprayers in many sizes and variety of equipment to suit each man's needs. We want to show you what each one is, how they are made and what they will do. Ask your dealer to show you these tools and write us for booklet describing all of them fully. We also have a spraying guide which we are glad to send.

The Bateman-Wilkinson Co., L't'd, 464 Symington Ave. Toronto, Ontario.

Also Potato Machinery, Garden Tools, Fertilizer Distributors, etc:



Good Prices Always For Your Fruit and Vegetables

OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto Market, we have established branch warehouses with competent men in charge at Sudbury, North Bay, Cobalt, Cochrane and Porcupine. In time of congestion on the Toronto market we have a ready outlet through these branches. We never have to sacrifice your interests.



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

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FARMS—All kinds, all sizes, for sale, fruit stock, grain and dairy farms. Let me know what you are looking for. H. W. Dawson, Brampton, Ont.

CALIFORNIA FARMS FOR SALE. Write for list. E. R. Waite, Shawnee, Oklahoma.

SEEDS.

YOU WANT "Reliable Seeds," get our Seed Price List and Save Money. Morgan's Supply House, London.

PLANT AND NURSERY STOCK.

FOR SALE—Large plants of strikingly beautiful Delphinium, double flowers, pink and blue mixed, 3 for 50c. E. P. Smart, 64 King St., Brockville, Ont.

BEZZO'S FAMOUS PRIZE ASTERS, \$1.00 per hundred. See advertisement on page 138.

PLANTS FOR SALE—Ornamental shrubs, hedging and perennials. Strong, thrifty plants at moderate prices. Prompt shipment. W. O. Burgess, Niagara-on-the-Lake, Ont.

FOR SALE—Choice assortment of flowering perennial plants and vines. List and prices sent on application to E. P. Smart, 64 King Street, Brockville, Ont.

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SAVE MONEY—Get our Spraying and Garden Supply Catalog. Morgan's Supply House, London.

SPRAYERS for every need: Bucket, Knapsack, Barrel, Traction and Gas Engine machines. D. E. Watson, Uxbridge, Ont.

BEES.

CARNIOLAN, GOLDEN AND THREE Banded ITALIANS. Bees by the pound, Nuclei. Ready to go April 1st. Write for price list. C. B. Bankston, Buffalo, Leon Co., Texas.

BEES—Per pound, \$2.15; per frame, \$2.35; queen, \$1.00. Address Aurora Apiary, Aurora, Ont.

CHOICE ITALIAN BEES, Langstroth hives, no disease. Chris. Grimoldby, Owen Sound Ont.

MAPLEWOOD HONEY BEE FARM—Quality queens \$1.00. Special price in quantities. George H. Rea, Reynoldsville, Pa.

150 HIVES OF BEES FOR SALE—Never had foul brood in our yards. Wm. Bueglass, R3, Bright, Ont.

ITALIAN BEES FOR SALE—Nine dollars per colony, including one comb Honey Super. Miss Gerrie, Ingersoll, Ont.

BEST THREE Banded QUEENS at lowest prices, after June 1. Also Bees by the pound. Satisfaction guaranteed. Send for circular. J. H. Haughey, Berrien Springs, Mich.

LET US send you price list and descriptive circular of our bees and queens, and if you will tell us what size and how many packages you may want we will tell what the Express will amount to. R. V. & M. C. Stearns, Brady, Texas.

WANTED—Honey Extractor, four frames. State condition, make and price. W. W. Nancekivell, Ingersoll, Ont.

GOLDEN and leather colored Italians, 32 years' experience as honey producer and queen breeder. Prices—Select untested 1 queen \$1.00; 6, \$4.00; 12, \$7.25. Tested—1, \$1.50; 12, \$15.00. Make P.O. Orders payable to Fertilla. Money returned for any queens not satisfactory. B. J. Cole, Fertilla, Riverside Co., Calif.

GRAY CAUCASIANS—Early breeders, great honey-gatherers; cap beautifully white; great comb-builders; very prolific; gentle; hardy; good winterers. Untested, \$1; select untested, \$1.25; tested, \$1.50; select tested, \$2.00. H. W. Fulmer, Box 12, Andalusia, Pa.

BEES and QUEENS from my New Jersey Apiary. Price list free. J. H. M. Cook, 70 Cortland St., New York City.

BEES FOR SALE—W. S. Walton, Scarboro Jctn, Ont.

ITALIAN BEES AND QUEENS as advertised on page 133. Catalogue free. Deroy Taylor Co., Newark, N.Y.

BEE SUPPLIES.

BEEKEEPERS—Please write for our Catalog. Morgan's Supply House, London.

1,000 GUMMED HONEY LABELS, two colors, any wording, for \$1.30. Catalogue free. Eastern Label Co., Clintonville, Conn.

FOR SALE—Three hundred pounds Weed Process Comb Foundation, any weight. R. F. Holtermann, Brantford, Ont.

A DAUGHTER of one of Dr. Miller's best honey queens, and the Beekeeper's Review for 1916 for only \$2.00. A daughter of one of the very best honey-getting queens selected from 1,100 colonies worked for extracted honey, from the yards of E. D. Townsend & Sons, and the Review for 1916 for only \$1.75. The queens will be mailed in June direct from our breeders in the South. A rare buy. Beekeepers' Review, North Star, Mich., U.S.A.



Deep Seedbeds Properly Prepared

—That's what you get when you use the deep-cutting, double-turning, leveling and compacting

"Acme" Pulverizing Harrow

"The coulters do the work"—you should see them mix the soil, cut clods, weeds and trash and make the whole into a firm yet mellow seedbed several inches deep. The "Acme" is simple, durable and easy to pull. Sizes 3 ft. to 17 1/2 ft. wide. Thousands in use. Send for booklet now.



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be warm. Another compartment should be provided where the temperature is a little lower, and the colony house or the brooder house floor should have even a still lower temperature. This gives a chance for the chicks to accommodate themselves to the temperature they wish.

Moderate Heat Required.

It is not necessary to have the cold compartment of the brooder very warm. When chicks are well supplied with heat underneath the hover, they can do with a fairly cold temperature in the run. In fact, strong, hardy chicks a week old will thrive even if allowed on frozen ground for a little while during the day.

Constant care is essential in that the chicks are not allowed to forget where the heat is. On this account the extension of the yard should be gradual.

The brooder should be set level. This insures an even distribution of heat beneath the hover.

It is best to have the runway from the hover compartment on a level with the floor of the house. There is then not so much danger of the chicks being unable to get back to the heat before chilling.

Chicks require a variety of food the same as anything else. That is, a change now and again is appreciated by them.

Fine grit should be fed the chicks right from the start. When the chicks are two weeks old, they can be given grit the size of a grain of wheat.

Finely cracked grains are the best to feed for the first few days, but it is astonishing how quickly chicks can take whole wheat.

An occasional feed of scalded milk or boiled rice will help bowel trouble. Be sure to watch the young chicks for head lice. If they are not doing well, and you cannot locate the trouble, look for head lice.

Milk at all times makes good feed for chicks. If it is supplied, other animal foods are not so essential.

Provide Animal Food.

Animal food of some kind will have to be supplied; if it is not in the shape of milk, it can be given in table scraps or beef scraps. Ground green bone is also good if fed in limited quantities, and if it is not decomposed.

If chicks get weak on their legs, it is a sign that either the feed or the conditions are wrong. Change both. Give more bone-forming food, more green food and more exercise. Get the chicks off the hard floor. Give them fresh soil or green grass to run on.

If chicks crowd in the brooder, it is a sign that there is too little heat. Give more of it at once.

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The cream of the strawberry world. Only a few thousand each of the following choice varieties to offer. Order early.

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Large stock of vegetable and bedding plants at lowest prices. Tomato, celery, cabbage, cauliflower, geraniums, petunias, coleus, cannas, verbenas, salvia, asters, pansies, stocks, etc. Write for prices and varieties.

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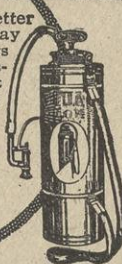
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Production and Thrift

“TO win the war with the decisiveness which will ensure lasting peace, the Empire will require to put forth its full collective power in men and in money. From this viewpoint it is our true policy to augment our financial strength by multiplying our productive exertions and by exercising rigid economy, which reduces to the minimum all expenditures upon luxuries and non-essentials. Only in this way shall we be able to make good the loss caused by the withdrawal of so many of our workers from industrial activities, repair the wastage of the war, and find the funds for its continuance. It cannot be too frequently or too earnestly impressed upon our people that the heaviest burdens of the conflict still lie before us, and that industry and thrift are, for those who remain at home, supreme patriotic duties upon whose faithful fulfilment our success, and consequently our national safety, may ultimately depend.”—SIR THOMAS WHITE, Minister of Finance.

PRODUCE MORE, SAVE MORE.
MAKE LABOUR EFFICIENT.
SAVE MATERIALS FROM WASTE.
SPEND MONEY WISELY.

LET US PRODUCE AND SAVE—

The war is now turning on a contest of all forces and resources—men, munitions, food, money. The call to all is to produce more and more. It may be necessary to work harder. The place of those who enlist must be taken by those at home, men and women, old and young. The more we produce the more we can save. Produce more on the farms and in the gardens. Save more and help to win the war.

LET US NOT WASTE OUR LABOUR—

In this war-time all labour should be directly productive or should be assisting in production. Make it as efficient as possible. If your labour is on something that can be postponed, put it off till after the war and make your labour tell now. Making war is the first business of all Canadians. Efficiency in labour is as important as efficiency in fighting.

LET US NOT WASTE MATERIALS—

Begin at home. The larger portion of salaries and wages is spent on the home—food, fuel, light, clothing. Are any of these things being wasted? \$20.00 a year saved from waste in every home in Canada will more than pay the interest on a war debt of \$500,000,000.

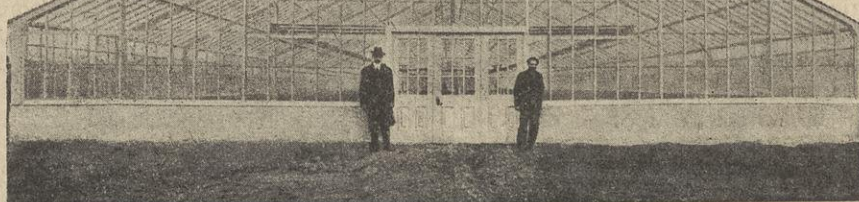
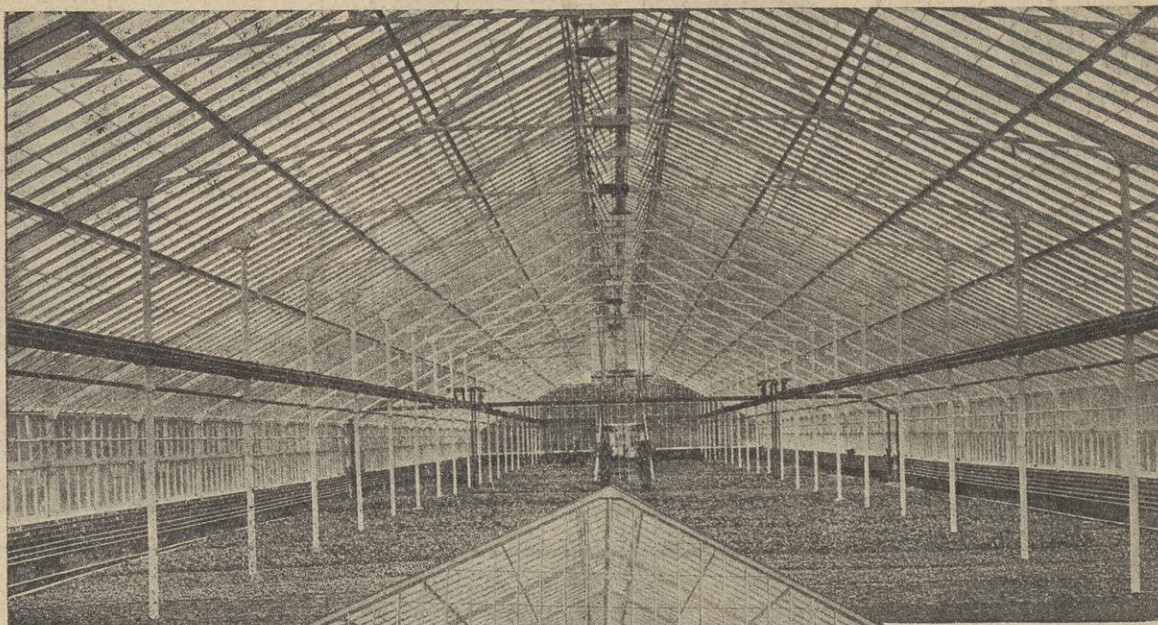
LET US SPEND OUR MONEY WISELY—

Are you spending your money to the best advantage? What do you think of extravagance in war time? Tens of thousands of Canadians are daily risking their lives for us at home. Is it not our duty to be careful and economical? Canadian dollars are an important part of the war equipment. Make them tell. Have a War Savings Account. Buy a War Bond.

THE GOVERNMENT OF CANADA

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The famed "Mously" greenhouse, 51 by 300, erected by us at Weston, Ontario.

The First of Its Kind in Canada

THIS is the first house erected in Canada, with the 12 feet 6 inches spacing between rafters instead of the old 8 feet 4 inches.

It reduces the number of rafter posts and columns by nearly a third. Although there is a marked increase in the lightness, constructed as it is, the most exacting tests prove it to actually be a more rigidly framed house than our old construction.

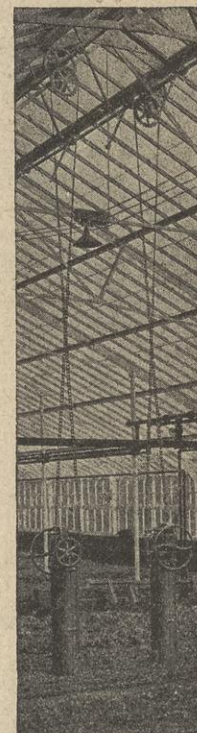
The house has many distinct features throughout, the superiority of which you will at once recognize.

It's location is only a short run from Toronto. If you can't go to see it, let us bring it to you by sending you half a dozen fully described photographs of it

In the next issue we will show some of the details. Watch out for them.



Concrete foundations. Wrought iron posts. Steel rafters. Double gusset splice plates. Angles eave with drip gutter. Close working side ventilator apparatus.



Counterbalanced gear. Runs up practically as easy as it runs down. Hand lever locked. The first of its kind in Canada.

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