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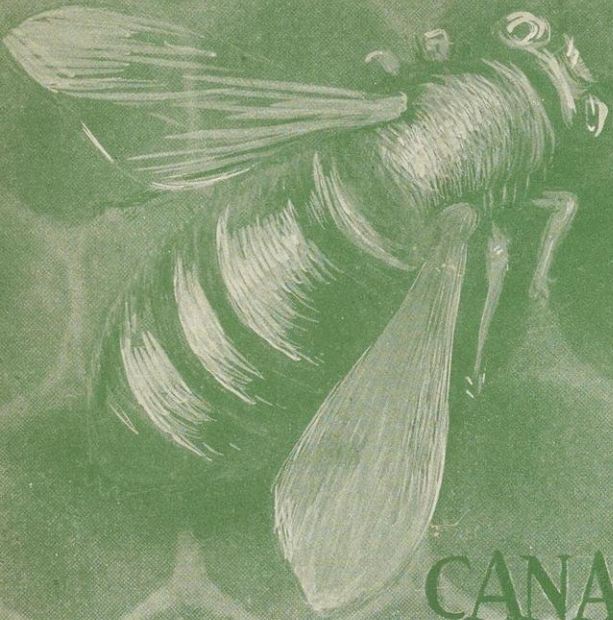
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Vol. 27, No. 2, February, 1919
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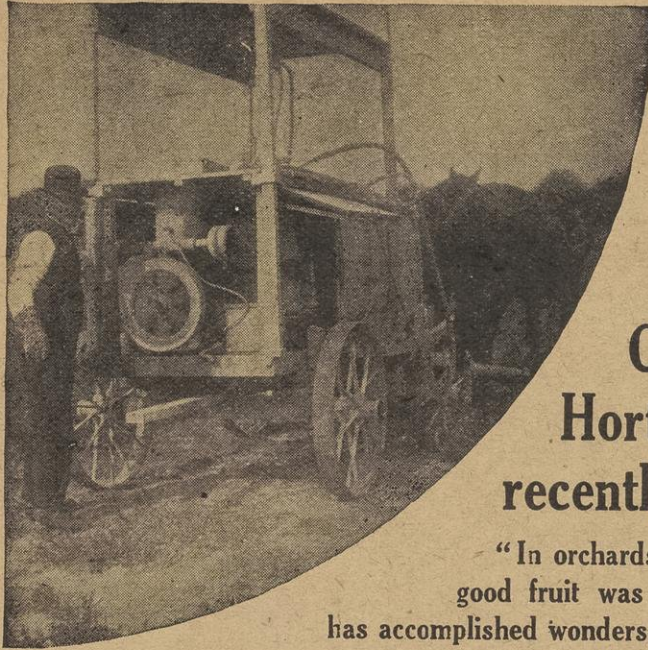
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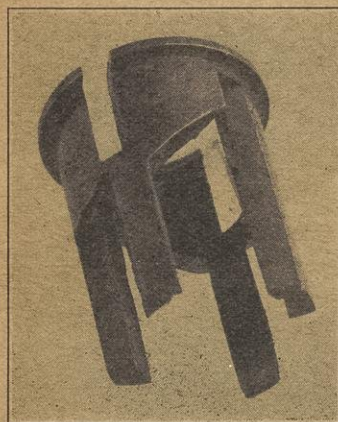
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The Canadian Horticulturist

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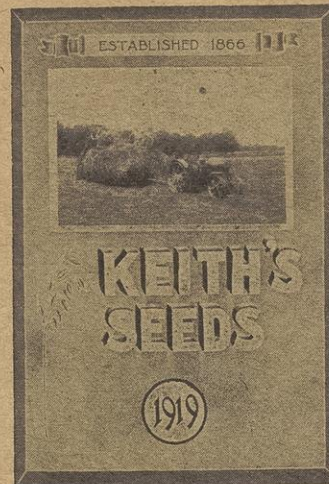
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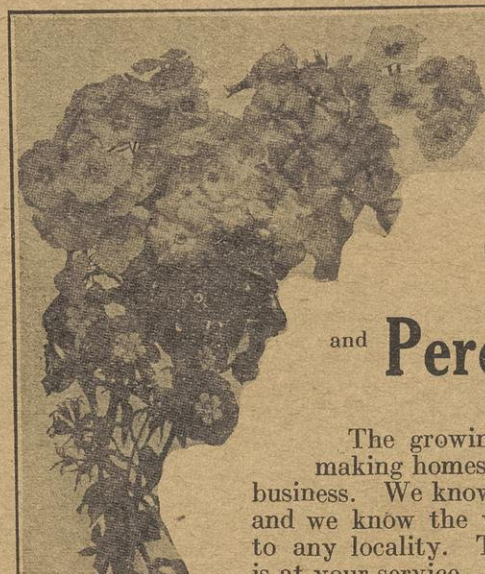
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The Canadian Horticulturist and Beekeeper

(See Pages 31-38)

(See Pages 31-38)

Vol. 27

TORONTO, FEBRUARY, 1919

No. 2

Spray Recommendations to Ontario Fruit Growers For 1919

L. Caesar, Provincial Entomologist, Guelph

BEFORE dealing directly with spray recommendations for 1919 it may be worth while to ask fruit-growers a question and to draw their attention to some important matters connected with spraying. The question is: Will each fruit-grower have everything ready for the work this year when the spraying season opens? Good business principles or methods are required in fruit growing, and one of the most important of these is to plan one's work ahead so that there may be no delays.

No one factor is more important in the securing of good, large, marketable fruit crops than spraying. Moreover, spraying must be done at a certain definite time, and if not done then, and well done, it is often almost useless. Hence the folly of not having everything ready. All spray materials should be ordered at once with definite instructions that they be shipped not later than the last week in March, or as soon as the danger of severe frosts is past. Frost does not ruin the arsenate of lead paste or lime-sulphur, but it is better not to allow either to be frozen if it can be avoided. In the case of arsenate of lead one may of course order the powder form, which is practically as good as the paste and cannot freeze.

All spray machinery and repairs should also be ordered and secured at once, and the whole spray outfit put into good working shape and tested a month or so before spraying begins. A

machine that leaks anywhere or that will not give the pressure it is capable of is not in good working condition.

A spray calendar is another thing that should be ordered early. Do not be content with an old calendar, but write to the Fruit Branch, Department of Agriculture, Toronto, for the latest edition. When it comes tack it up in a dry place, easy of access, and do not fail to consult it. The spray calendar is a concise statement of the best information we have to-day on the spraying of fruit trees and bush fruits. It has been carefully thought out and tested, and is kept as nearly up-to-date as possible. It is, of course, meant to apply only to Ontario conditions.

Spray Guns.

The spray gun has the disadvantage that it is inclined to cause burning, especially if the foliage is not vigorous; yet it is so much more convenient and economical to use that the advantages greatly outweigh the disadvantages. The fact that with it one man can do as many trees as two could do with the spray pole and nozzle shows how helpful it is. To avoid burning and to save material, discs with a small opening not larger than the head of a pin can be used and give good results. The hole, of course, soon wears larger, and then a new disc should be put in. It will also help not to stand close to the part of the tree being sprayed. Care must be taken, however, to see that the spray reaches right through the tree,

otherwise the inner side of the fruit, which is the part where the scab usually starts, will not be covered. Regulate the spray to suit the tree, or part of the tree, being sprayed, making it a fine mist for the parts nearest, and a coarse, narrower spray for the parts farther away. Try to do the tree thoroughly, and yet waste no more material than can be helped. This is best accomplished by working on some definite system, so that no part will be sprayed twice from the same side of the tree.

Spray Mixtures for 1919.

Each year we read of new spray mixtures which are said to be superior to the old ones. Last season three experimenters, including the writer, all working in different localities and practically independent of each other, tested the chief new mixtures advocated, and all are agreed that so far as they can judge there is no good reason for making any radical changes in our spray recommendations from those of 1918. Hence the writer recommends as follows: For the first spray use lime-sulphur in every case where there is any San Jose Scale, or where there is a considerable amount of Oyster-Shell Scale or Blister Mite. For San Jose Scale the strength should be 1 gal. to 7 gals. of water, and for Oyster-Shell Scale and Blister Mite the same strength except where the infestation is light, when 1 gal. to 10 gals. of water will suffice. Where any of these



Stages for 1st application.

Stage for 2nd application.

Stage for 3rd application.



This unsprayed tree shows the effect of peach curl. (Photo, W. E. Biggar.)

strong mixtures are used it is better to apply them before or not later than when the buds are bursting.

If there is no San Jose Scale and very little of either of the other two pests present, either lime-sulphur, 1 gal. to 20 gals. of water, or bordeaux mixture, consisting of 4 lbs. bluestone, 6 or 8 lbs. hydrated lime, and 40 gals. of water, may be used. Instead of 6 to 8 lbs. hydrated lime 4 to 6 lbs. fresh stone lime may be substituted. The hydrated lime is, however, much more convenient to use than the stone lime, because it does not need slaking and can be thrown directly into the spray tank after the water and dissolved bluestone have been placed in it. The engine should be started just before the lime is put in so that the two substances will be well mixed. If no engine is used turn the nozzles into the tank and pump the mixture back in upon itself for five or ten minutes. Do not forget that hydrated lime spoils if it is not kept tightly fastened in paper bags in a dry place.

Where the weaker lime-sulphur or the bordeaux mixture is used for this first spray it is wise not to apply it until shortly after the leaf buds have burst, so that the little leaflets may be covered and protected from the earliest attacks of apple scab.

No poison as a rule is required in this first application.

The Second Spray.

For the second spray, the one just before the blossoms burst, use either bordeaux mixture or lime-sulphur as the fungicide. In a bad season when it is hard to control apple scab, bordeaux, chiefly because of its not washing off so rapidly, will control the scab better than lime-sulphur. The latter, however, will usually give excellent results,

and is a little more convenient. The bordeaux should be of the above mentioned strength, 4 lbs. bluestone, 6 to 8 lbs. hydrated lime, and 40 gals. of water; and the lime-sulphur should be about 1 gal. to 35 gals. of water.

As an insecticide arsenate of lead from 2 to 3 lbs. of the paste form, or 1 to 1½ lbs. of the powder form to 40 gals. is still recommended with lime-sulphur as being safer and on the whole more satisfactory than arsenate of lime. In the writer's own experiments last year arsenate of lime proved equally as safe with lime-sulphur as arsenate of lead, but just recently he has been informed of a careful sprayer who had very disastrous results from it compared with arsenate of lead. One of the great troubles with arsenate of lime is that some brands are not nearly so safe as others, and it is not easy to tell without actual field tests which are the safe brands. The addition to it of hydrated lime tends to increase the safety. With bordeaux use either arsenate of lead as above or arsenate of lime, the latter at the strength of ¾ to 1 lb. of the powder form, or twice this of the paste form.

For the third spray, the one immediately after the blossoms have nearly all fallen, do not use bordeaux, as it russets the fruit too much. Use instead lime-sulphur, 1 gal. in 40 gals. of water, and add as a poison 2 lbs. of the paste form of arsenate of lead, or 1 lb. of the powder form.

These three applications, if well and promptly done, are usually sufficient in Ontario. For any extra sprayings consult the Spray Calendar. Consult it also for all spraying for peaches, plums, apples, pears, grapes, currants and gooseberries.

Time For An Improvement

G. H. Vroom, Chief Fruit Inspector,
Middleton, N.S.

"Now that the war is over, it seems fitting that we in Canada should look about and try to discover some of the reasons for the unstable condition of the fruit industry. Probably the first thing that suggests itself to the mind is 'The War,' and for argument's sake we will admit that this is true. When the war broke out our able-bodied men enlisted and left the farm with insufficient help to carry on all branches of the work; the orchard was the first thing neglected. Several reasons can be given for this, the ever increasing cost of producing fruit, wages were high, fertilizer and spray material advanced in price, transportation rates increased, then came the embargo and the European market was closed, and the outlook from a Nova Scotia standpoint looked very discouraging. With these and other difficulties, which were more imaginary than real, staring fruitgrowers in the face, the

faint-hearted were led to discontinue proper cultivation, fertilizing, pruning and spraying, and the result is apparent when we drive through the fruit sections and see hundreds of acres of orchard growing up with grass and weeds, with a large percentage of trees either dead or in a sickly condition, and this is particularly true regarding the old orchards which with care would produce good crops of first class fruit for many years. These conditions apply to small fruits as well as apples. I think it would be well within the limit if I should say that these things have been responsible for a decrease of forty per cent in fruit production in Canada.

"Now that the situation has improved, it seems to me that we should get away from all this vexation of spirit and tuck ship and go around the other way. Where orchards have become useless, cut them down and utilize the land for growing other crops, or plant new trees on the same ground; grow twice as much small fruit, and in this way increase the consumption by giving consumers cheaper fruit. Evaporators and canning factories offer good opportunities for the disposition of the surplus crop, and now that the European markets are available this should stimulate the fruit industry.

"I would suggest that it would be a move in the right direction if fruit-growers and those interested in canneries, evaporators, transportation and other problems, would meet in conventions in the different provinces and have the whole situation discussed by men posted on all these different subjects. All this could be done during the winter months, and be ready for action when the spring opens. To my mind, one of the most important things in connection with the fruit industry in Canada is the production of fruit of higher quality, discarding undesirable varieties, raising the standard of our grading and packing, and putting our fruit on the market in a more attractive package.

A Heavy Fertility Loss

Allowing manure to remain in piles in the open after it has been hauled to the field is a wasteful practice in the light of fertility tests. For twenty-one years a comparison of manure handled in this manner with that taken directly from the stable and spread on sod land at the rate of eight tons to the acre has been made at the Ohio Experiment Station, to determine the advantage of conserving the fertility in manure.

When the stall manure is spread on the ground at the time it is hauled, there is a gain per acre of 4.1 bushels of corn, 1.3 bushels of wheat and 490 pounds of hay in the crops following as compared with tests when the manure is allowed to remain in piles for several months.

The Winter Window Garden

Henry J. Moore, Niagara Falls, Ont.

THOSE who during October or November were fortunate in obtaining bulbs for forcing purposes will now be able to make attractive displays in the windows. To those who have not previously grown these indoors the following information may be helpful. Sometimes when bulbous plants are brought from the cellar and placed in light and warmth for forcing they do not flower satisfactorily unless special precautions are taken. Upon these precautions will largely depend the appearance of the flowers when utilized in the window or other position. Bulbous plants should not be brought directly from a cold cellar into bright light, or a room with a high temperature. It is better first to subject them to a temperature of about 50 for a few days in a dimly lit position. The effect of brilliant light and of heat is to cause a dwarfing of stems and leaves, and to force the flowers too quickly, thus it often happens that hyacinths and tulips throw up their flowers without making much leaf growth, and the plants being more or less abnormal do not please the eye. To prevent this state of affairs is an easy matter. Do not place the plants in a high temperature at first. Invert a flower pot over the growing bulbs, allowing it to remain until the leaves and flowers are fully five inches high. In a day or two place the plants near the window, and in a position where the temperature is 60-65 degrees fah-

renheit; so treated they will flower normally, and there will be no disappointment.

Beautiful window effects may be created through the use of flowering bulbs, effects which ladies would call dainty, especially when foliage of some kind is used in the arrangement. Imagine an ornamental indoor window box filled with pots of well grown narcissi between which are placed pots of Adiantum, pteris, the finer leaved Boston ferns, or asparagus plumosus manus. Imagine the combination of delicate white and pink tulips carpeted in a similar way with the greenery of ferns or of asparagus. It is almost impossible to imagine the beauty of these arrangements. They must be seen, otherwise the mind cannot conceive of their beauty. It is a somewhat more difficult matter to make such pleasing displays with hyacinths, as they are of a much stiffer and less graceful nature. When used in indoor window boxes a pleasing combination may be made by arranging them with tulips of a suitable color, and by interspersing through them a few ferns or other graceful foliage plants. Though narcissi are sometimes used in combination with hyacinths, it is not always wise practice. The expert may by the use of certain colors create a pleasing and attractive window display; generally, however, tulips will be found more satisfactory as companions to the hyacinths, and may be used within a much

wider range of colors. Yellow hyacinths and yellow narcissi, purple hyacinths and yellow narcissi go well together, and when used with plants with delicate and graceful foliage make a display of surpassing beauty. By the perfect blending of color a beautiful and harmonious arrangement is possible. By the use of colors such as the yellow of narcissus and the red of hyacinths, colors which do not blend, an effective and harmonious arrangement is not possible.

Color Effects.

There is a factor in the beautifying of our windows during winter of which many of us are unconscious, and which consequently we do not realize exists. We look at the flowers in a neighbor's house, and we say, "My, how beautiful!" Why are they so much more beautiful than in the windows of your own rooms? Simply because consciously or unconsciously your neighbor has selected colors which are in harmony with the interior window adornments, such as curtains and blinds, wall paper, and even the rugs on the floor, things which at a glance provide the main picture as the eye scans the room. Harmony, that is it, expressed in terms of dignified unity. Thus we see that the foliage and flowering plants and all things that are artistic and beautiful in our homes bear relationship to each other, and only when a thought is given to this relationship is it possible to bring out the innate beauties of our wonderful plants to the fullest extent in any arrangement. Please do not misunderstand the writer. He would have plants in the windows of his home no matter what relationship they bore to other objects, but suppose the writer had yellow curtains and he grew red tulips in the foreground, would there be harmony? Suppose the curtains were white, how beautifully the pink and white would harmonize. This simple illustration may show that by a lack of judgment beautiful things may be brought in contact and the beauty of each be impaired, but when judgment is exercised they may be brought into that harmonious relationship which we call a beautiful whole.

This year when about to purchase your flowering bulbs try the innovation of selecting colors which you think will harmonize with objects such as previously mentioned. There are so many delicate and beautiful shades in the narcissi, from deep yellow to white. The same is true of the hyacinths and tulips. Now is the time to prepare your list of bulbs. Make your winter window boxes just a little more pleasing. You will be surprised what a difference a little study of color relationship will make.



The flag iris, especially the newer varieties, are a source of delight in the well arranged garden. Garden of Dr. F. G. Brethour, Toronto, Ont. Note article on page 21.



This fine hedge of Kochia, in front of the residence of Mr. Jas. A. Kyle, Dundas, Ont., is over three feet high and 30 inches in width. While green and later when it turned red it presented a very pleasing effect.

The Geranium—A People's Flower

F. E. Buck, B.S.A., C.E.F., Ottawa

THE geranium, or more correctly the "Zonal Geranium" to distinguish it from the Crane's Bill, or the true wild geranium, is essentially a people's flower. It is a bedding plant and a greenhouse plant as well. On account of its remarkable vitality, persistence, and freedom from diseases and pests, it is perhaps the best known and most reliable house plant in existence. It is easy to grow, may be propagated readily, and blooms freely. It will stand more abuse than any other flowering plant of like qualities, and is not particular as to soil. Amongst modern geraniums are many of beautiful and pleasing colors. With all these qualities and merits it is likely long to retain its popularity.

The florist's Pelargonium, or the Lady Washington geraniums, are less suitable than the gardener's or zonal geraniums for outside culture. Since the war, however, their popularity as a florist's plant has greatly increased. This is due in large measure to the shortage of imported florists' plants like the azalea. Many greenhouse men have found the Lady Washington geraniums a paying crop. The necessary factor for success and the one which this article emphasizes, is to obtain suitable varieties.

In 1912 the Experimental Farm obtained a large collection of new varieties of zonal geraniums. Most of them came from the English firm of Cole & Son, and since that time the geraniums in the greenhouses at Ottawa during the winter months have attracted much attention and favorable comment.

While not more than about ten per cent of the varieties are fully successful bedding varieties, it is equally true

that not a much larger percentage is successful as house varieties. The varieties which have shown up best for inside culture are as follows:

*Abbie Schaffer.....	Double, scarlet.
Amaranth.....	Cactus type, deep pink and white.
Ascot.....	Single, deep salmon.
Athlete.....	" military scarlet.
Barbara Hope.....	" salmon pink, white eye.
Beauty.....	" scarlet cerise.
*B. K. Bliss.....	Double, scarlet.
*Bertha de Pressily.....	" bright pink.
Ceres.....	Single, salmon.
Chatsworth.....	" orange scarlet.
Champ de Neige.....	Semi-double, white.
*Colonel Thomas.....	Double, carmine scarlet.
Dublin.....	Single, rosy magenta.
Edmond Blanc.....	Double, crimson carmine.
Fanny Thorpe.....	Single, salmon, deeper centre.
Fire Dragon.....	Cactus type, fiery crimson.
Fred Bean.....	Single, rosy cerise.
F. V. Raspail.....	Semi-double, scarlet.
Gettysburg.....	Single, crimson scarlet.
*Gloire de France.....	Double, silvery rose, salmon centre.
John Doyle.....	Double, scarlet.
Julia Marlowe.....	Semi-double, scarlet.
King Victor.....	Single, clear cerise.
Lady Francis Russell.....	Single, pink, white centre.
*La Favorite.....	Double, white.
Lord Kitchener.....	Semi-double, bright scarlet.
*Manteau Rouge.....	Single, scarlet.
Mark Twain.....	" white, flaked carmine.
*Marquis de Galar.....	Double, salmon scarlet.
*Marvel.....	" scarlet crimson.
Maxime Kovalevski.....	Single, bright salmon scarlet.
Mlle. Meindre.....	Double, salmon pink margined.
Mlle. Ayme de Chev.....	" white.
raliere.....	Semi-double, white.
*Mme. Landry.....	" deep salmon.
Mrs. Chas. Platts.....	Single, pink white eye.
Mrs. Cordon.....	Double, rosy red.
Mrs. D'Ombra.....	Single, bright salmon.
Mrs. E. Rawson.....	" salmon, tinged scarlet.
Mrs. Kendall Barnes.....	" crimson shot with purple.
*Mrs. Lawrence.....	Double, salmon.
Norah.....	Single, soft pink.
*Paul Crampel.....	" bright scarlet.
Phyllis.....	" pale salmon rose.
Raspail Improved.....	Double, scarlet.
Rev. H. Harris.....	Single, rosy salmon.
Richmond Beauty.....	" salmon scarlet, white centre.
Sam Sloan.....	" scarlet.
*S. A. Nutt.....	Double scarlet crimson.
Scarlet, King of Denmark.....	" scarlet.
Shelley.....	Single, deep crimson.
Venus.....	" large white.
Warrior.....	Double, cerise scarlet.

* Those marked with an asterisk are also good varieties for outside work.

Best results are obtained when cuttings are taken from perfectly healthy stock in July or as early in the autumn as possible. Considerable damping off

occurs amongst cuttings taken later than this or when the wood is soft from autumn rains.

The soil best suited to produce a stocky plant is a friable clay loam, although any soil not too rich answers almost as well. Firm potting is also highly desirable. Too much water should be avoided, as it tends to produce like too rich soil, a rank growth and consequent loss of flowers. Very few insects or diseases affect the geranium.

A number of interesting hybrids have been produced lately at Ottawa by the Plant Hybridist, Mr. A. J. Logsdail.

Success With Dahlias

THE remarkable success that has been achieved by Mr. J. A. Washburn, of St. Thomas, in the cultivation of dahlias at his summer home on the Rideau Lakes has led many to inquire concerning the method of propagation that have been followed by him. As Mr. Washburn has exhibited with success at leading exhibitions in both Canada and the United States his methods are of more than general interest. In writing to THE CANADIAN HORTICULTURIST, Mr. Washburn states that he has not had the advantage of a greenhouse and consequently his operations have been confined to the regular growing season.

"I simply put cuttings in flower pots," writes Mr. Washburn, "usually about 5-inch pots, in free sandy loam, and keep them well watered in a shady place until they seem to show new growth. I then move them to partial shade, and in the course of a few days plant out where planned for.

"From early cuttings started in May I have had bloom in September, but only occasionally have I had bloom from cuttings set out in July. This year, I started some as late as the first of August with success. I have always has satisfactory tuber formation even though small in many cases.

"There should be no difference in regard to early flowering if one is in a position to set out well-started cuttings at the same time as they would put in sprouted tubers. I have no preference, as I would just as soon have a good cutting plant as a tuber to work with. I have used tubers because of the greater convenience of handling them, and have followed cutting mainly to increase my stock of some particularly desirable variety or some of the more expensive novelties."

Watch protected roses carefully to see that field mice do not take up their winter quarters in the covering material, as they are very destructive to protected rose bushes, even under snow alone, especially climbing roses.—Wm. Hunt, O. A. C., Guelph, Ont.

Early Preparations for Spring Gardening

Prof. J. W. Lloyd, Urbana

MANY people had gardens the past season who never had them before. The year's experience should serve a useful purpose when plans for next season's gardening are being made. Persons undertaking gardening for the first time next spring should profit by the experience of others.

After having reached the decision to have a garden next year, the first thing to do is to select a plot of ground for the purpose. The size and shape of the area will depend upon circumstances. A small area highly fertilized, thoroughly cultivated, and intensively cropped, is likely to give more satisfactory results than a larger area insufficiently fertilized or inadequately tilled. It is unwise to undertake a larger home garden than can be properly cared for during the morning or evening hours available for the purpose. If hand methods of tillage are to be employed, as will usually be true of gardens in town, smaller areas should be selected than where the tillage is to be done principally with horse tools, as should be the case in most home gardens located on farms.

If possible, the garden should be located near the house. If the back yard is sufficiently large and not too shady, it is the logical place for the garden. A vacant lot in the same or an adjoining block is also a favorable place to locate a home garden. More consistent and thorough care can be given a garden located close to the house than one at a distance; yet if no land is available near at hand, distant gardens are better than none.

The area selected for the garden should be well exposed to sunlight, rather than shaded by trees or buildings. It should be a well drained spot—one on which water does not stand after a rain. A gentle southern slope is an ideal location. The soil should be of a loamy nature rather than heavy clay or light sand, though a soil that is naturally too heavy or too light may be greatly improved for gardening purposes by the addition of organic matter.

As soon as possible after the area for the garden has been selected, it should be cleared of any trash or rubbish that may be upon it, such as weeds, refuse from preceding crops, tin cans, broken bricks, blocks of wood, old iron or wire, stones, broken bottles, etc. After the surface has been freed from foreign matter of these sorts, additional material that may be brought to light during subsequent working of the soil should likewise be removed.

MANURE.

Even though the garden may be located where the soil is considered rich, it will be greatly benefited if it has received a liberal application of manure

the fall before. Soil must be much richer for successful gardening than for general farming. Stable manure should be applied broadcast at the rate of about 40 tons per acre. This will be one ton to four square rods, or an area 33 x 33 feet. The manure will furnish both plant food and organic matter, and thus improve both the chemical and the mechanical condition of the soil.

Raising Plants From Seed

B. C. Tillett.

Plants may be reared from seed in various ways. Tender plants like half-hardy annuals may be raised in heated glasshouses or on hotbeds, greenhouse plants should be raised in a temperature of 55 to 65 degrees. Hothouse plants require a temperature of 65 to 75 degrees. Hardy annuals may be placed in the open garden where required to flower; hardy biennials and perennials in prepared seed beds outside; choice hardy plants, trees and shrubs in cold frames; ordinary trees and shrubs in the open ground.

Seeds may either be sown in a cold frame in the bed, or in boxes placed on the bed. If sown in the bed, the soil should first be forked over, and a mixture of good soil added, leaf mould with some wood-ashes and a little grit or sand, all being put through the sieve. Rake the bed level and make it firm with a board or brick. A narrow lathe, the width of the frame, pressed into the soil will make the drills, which should

be a quarter of an inch deep and three or four inches apart.

Having sown the seeds and covered them with some fine soil, water them thoroughly and close the frame. Matting or sacks should be placed over the sash to keep out the light. The frame should be opened each day to keep the air fresh, and as soon as the seeds sprout, give fresh air daily, at the same time removing the mats, except when the sun is fierce. Gradually admit more air and light as the seedlings get well up, but only water when the surface is becoming dry. When seed is sown in boxes, they should be placed on ashes to keep out worms. The boxes should be shallow—not more than three inches deep. An inch of cinders should first of all be put in the boxes, and over that decayed leaves or rough soil siftings. The soil for boxes for frames should be made up of two parts of good soil, one of leaf mould, and one of sand, well mixed and passed through a sieve. Before placing in the box, spread this compost out and pour boiling water over it. This will kill insects and weeds. The boxes should be filled to within half an inch of the top, and the soil firmly pressed down. Then sow the seeds and cover evenly with sifted soil through the sieve. Press the soil down over the seed, and give a good watering, and place the boxes in the frame. Numerous bedding plants can be reared this way, pansies, asters, stocks, auriculas, celery and other vegetables.

"THE CANADIAN HORTICULTURIST is all that can be desired."—R. DAVIES, Ottawa.



This summer cottage garden furnished many delicacies for its owner's table. Water was furnished from an elevated tank.—Photo taken in the Kawartha Lakes.



Schizanthus, because of their lovely bloom, are rapidly growing in popularity. A display in the greenhouses of the C.E.F., Ottawa, is shown.

Success With Sweet Peas

F. M. Christianson, Niagara Falls South

SUCCESS with sweet peas depends largely on preliminary care in the preparation of the soil. The best plan is to dig a trench two by two feet and place a good layer of strawy-manure at the bottom and then fill it nearly to the top with soil made rich and fine by working well-rotted horse manure up with good garden soil.

Firm the soil in the trench and make a drill through the centre of the soil; sow the seed thickly, say half-ounce to seven feet of row and when they get nicely started thin the plants to five inches apart in the row. Plant the seed either the last part of November or the first of December. The time will depend upon the season and locality; only have the trench ready and then the planting can be done when it should be.

After the seed has been put in the drill cover it about four inches rounding off the row and firm the soil so as to provide drainage. As soon as cold weather approaches cover the rows with straw or litter, being sure to remove it early in the spring. The seed will lie dormant during the winter, but will start growth early in the spring.

In the spring, as soon as the plants are an inch high provide supports. The best way is to put up neat posts at intervals and to these tack one or two inch poultry-mesh wire. This makes a neat yet sufficiently strong trellis through which air and light may pass freely and so save your plants from sweet pea blight, a disease very common if these essentials to plant life are withheld.

If the green aphid and red spider put in an appearance this kind of trellis per-

mits of thorough spraying with soap-suds or the kerosene emulsion.

GIVE SUPPORT EARLY

I cannot emphasize too much the necessity of providing early support. If it is not at hand when the plants require it they seem to lose the power to use their tendrils to the same extent and you lose a great deal in height as well as spread of plant and consequently bloom. So have the supports ready as soon as needed, and the plants will fix themselves firmly to them.

The plot used for sweet peas should be changed every year to have the best results.

It is a good plan to work about the roots of the pea-vines constantly to keep free of weeds; admit air to the soil and roots and thus keep the sub-soil moist.

As the hot weather of July and August comes on you will find it a good plan to put a heavy mulch of rotted manure at the roots of the vine as a final finish to weeds and to keep in the soil-water and further enrich the soil.

To have lots of flowers you must keep cutting them constantly. Cut them conscientiously every morning, early. Pick every freshly-opened flower. Use a pair of scissors to sever the stem so as not to disturb the roots of the plants, by pulling. I can assure you that if you'll follow these cutting directions that you will always have plenty of flowers, but that is the only condition. Seed-forming must be prevented for it is this that soon saps the vitality of the plants and then the flowers cease.

The Eckford strain is the kind I use, but whatever kind you plant make sure that your seed is of known strong germinating power. The sweet peas are such dainty flowers and so fragrant that everyone would wish to have a bed of them, and I feel that I can practically assure success with them to all who follow the above simple directions.

Care of House Plants

H. J. Moore, Niagara Falls, Ont.

IN caring for house plants it should be borne in mind that they are of two classes and that such plants as ferns, palms and the rubber plant will do better in those parts of the room where the light is limited, while flowering plants, such as geraniums, tulips, narcissi and cyclamen, must have as much light as possible. Plants are more like human beings than like bric-a-brac, and if grown to brighten the home during dull winter months they must not be left to take care of themselves or they will soon fail to fulfil the purpose of their presence.

There are not a large number of successful house plants and those which experience has shown are best suited for the purpose demand certain definite conditions. The fundamental condition relates to the atmosphere of the room. If this is suitable even the soil is of secondary importance. The atmosphere must be kept at a suitable temperature and also, for success, must contain plenty of moisture. A dry atmosphere, even when plants are well watered, is fatal to good growth. Regular watering is another important factor for success.

Plants will grow better in houses heated with hot water than they will in those heated by hot air or steam. The latter systems absorb the moisture from the atmosphere with the result that the plant either loses some of its leaves by withering or fails to make healthy growth. Pans of water stood on the radiators to give off moisture always improve the conditions for plants. The blooms will last longer when the atmosphere is kept somewhat cool and moist. The ideal temperature ranges from about 50° to 70°. Higher temperatures necessitate more frequent waterings. Some plants need to be watered daily, others not more than two or three times a week. A pot which rings hollow when tapped with the knuckle needs water. Over watering is bad for plants and only one or two varieties, like the spirea, will succeed if the pots are allowed to stand in water. All pots should be supplied with good drainage in the form of broken crocks filled in at the bottom of the pot when the plants are potted.

Fresh air is always beneficial, but not in the form of direct draughts. A temperature of 40° or lower will often seriously affect the tender house plants.

The Peony, An Aristocrat of Aristocrats*

Bertrand H. Farr, Wyomissing, Pa.

I REMEMBER the first peony I ever saw. It was the first year when father took us West and I was six years old. It grew in my aunt's garden. It wasn't a real peony, it was just a "piney," one of those old-fashioned red ones that grew in all old ladies' gardens, but I thought it was very beautiful. I told her if she would give me a bloom I would drive her cow home from the pasture that night. The arrangement was mutually satisfactory, and after further negotiations she agreed that if I would drive the cow home for one week she would give me a "piney toe," and so I came into possession of my first peony.

More than twenty-five years elapsed before I owned another peony, but when in 1897 I came to the point, where I could have a real garden, one of the first things I determined was to have a complete collection of peonies, "a white one, a red one, and a pink one." Then I discovered that Ellwanger & Barry had a great collection, as many as twenty kinds. After I had gotten these, one of Lemoine's catalogues fell into my hands and, after some hesitation over the extravagance, I made the plunge. I sent to him my first foreign order in 1901. Only then did I realize what was before me, but it was too late. The peony bug had gotten me, as it has gotten many others, and will get you too if it once gets fairly hold of you. Orders from Dessert and others soon

followed. Then from Kelway, in England.

A True Aristocrat.

The peony is a true aristocrat of the hardy garden. I do not apply this as a mere phrase, for it is true in every sense, both as to its lineage and its associations. In China, it is said that the tree peony has been their chief pride and glory for nearly 1,500 years, a theme for their poets and painters, and prized by their emperors for the beauty and fragrance of its flowers. For more than a thousand years a record of the characters, qualities and parentage of the new varieties raised from seed has been kept.

In their gardens the tree peony is known as the "King of Flowers," and the herbaceous peony as the "King's Ministers." It is descended from *Paeonia albiflora*, a native of Siberia. Knowing this, I can well understand why it thrives so luxuriantly in the rich alluvial soil of our western states and why it is the flower for the great north-west, enduring, as it does, the most intense cold without injury. This Asiatic peony must not be confused with the old-fashioned, early flowering red peony of our grandmothers' gardens, which belongs to an entirely distinct species, *officinalis*, a native of Europe, the early history of which is intricately woven with a haze of superstition, allegory and myth. Its magical charms were supposed to ward off witheraft, and the name peony is derived from a Dr. Peon, who used its roots as medicine.

It will be seen, therefore, that nearly

all of our modern peonies are of comparatively recent introduction. I am greatly impressed by the fact that practically all of the fine peonies we have to-day have come to us through the remarkable group in France—Calot, Crousse, Lemoine, and Dessert, most of them having a family relationship, and the few enthusiasts in America, just mentioned, who have taken up the growing of peonies, because they found it intensely fascinating for the peony, does not attract the commercial grower.

Methods of Culture.

In its propagation there is no easy, royal road to quick results. It takes from four to six years before the blooms may be had from seed and, if, perchance, one seedling in a thousand has sufficient merit and distinction to justify its introduction as a new variety, it takes many more years to raise by the slow process of division, sufficient stock to be able to offer it to the trade. That is why the new varieties are so expensive, unlike a new rose or carnation, which in a few months can be increased to an unlimited supply through cuttings. It takes years to acquire a few plants from a peony, and even to-day some of the old varieties are still scarce.

The professional grower cannot afford to wait so long for results. So most of the work with the peony has been done by those whose love for the flowers themselves and the fascination of watching them grow has been their chief incentive. Here is an example of your peony lover: Two or three years ago I visited your Mr. Fewkes, whom all of us peony people have come to regard in such high esteem. After we had enjoyed the peonies in his garden we went inside, where in a vase he had three of the most wonderful blooms I have ever seen. They were Lemoine's *LaLorraine* and Dessert's *Therese* and *Rose Bonheur*. As we stood admiring them, he remarked, "Do you know, it almost seems to me as if it is worth a year of a man's lifetime just to be permitted to look upon a thing so beautiful." Truly, the peony is an aristocrat.

Classification.

Passing from novelties and scarce kinds to varieties more plentiful, which may be had at a cost within the reach of all, and which are obtainable in quantities for mass planting, I would recommend the following list, which comprises varieties that may with certainty be relied upon to flower freely each year under conditions, all having blooms of the highest quality.



W. J. Sheppard's Experimental Apiary and Flower Garden, Nelson, B.C.

*Extract from a paper read at the recent annual convention of the Quebec Pomological Society.

The list here given in the various shades covers a period of bloom from earliest to latest in the order named, and covers a period of from three to four weeks:

White—Boule de Neige, Festiva Maxima, Mme. Calot, Duchesse de Nemours, Couronne d'Or, Albatre, Marie Lemoine.

White, Shaded Cream and Yellow—Lutea plenissima, Alba Sulphurea, Duke of Wellington, Candidissima, Solfatare, Lutea variegata, Primevere, Princess Maude.

Flesh and Light Pink—Umbellata Rosea (the earliest of all), Mme. Coste, Mlle. Rosseau, Marguerite Gerard, Akbert Crousse, Eugenie Verdier, Venus, Grandiflora, Modele de Perfection.

Deep Pink and Rose—Eduliw Superba, Monsieur Jules Elie, Gon Bertrand, Mme. Forel, Mme. Muysart, Henry Murger, Milton Hill.

Crimson—Adolphe Rosseau, Pierre Dessart, Mme. Mechin, Bertha, George Washington, Masterpiece, Felix Crousse, Armandine Mechin, Marechal Vaillant, Rubra Superba (the latest blooming peony of all).

Tricolor—Princess Beatrice, Mme. de Vetry, Alice de Julvecourt, Gloice de Charles Gombault, Philomene, Proflera tricolor.

The following is a list of peonies especially noted for their unusual pleasant fragrance:—Edulis Superba, Comte de Nanteuil, Carnea Elegans (Gr.), Lamartine (Cal.), Mme. Auguste Peltreau, Mme. Geissler, Mme. Thoucien, Monsieur Barral, Vicomte de Forceville, Zoe Calot, Dorothy Kelway, Kelway's Glorious, Splendida, Venus, Bertha, Enfante de Nancy, Galathee, La Fee, Mme. de Treyeran, Marcelle Dessert, Mont Blanc (Lemoine), Mierlle, Mignon, Primevere.

A short list of the very best singles will include. Albiflora The Bride, Pride of Langport, Madeleine Gauthier, Stanley, L'Etincelante, Austin Chamberlain, The Moor.

Special fine ones in the Japanese section are: Attraction, Flamboyant, Fuyajo-Ama-no-sode, Margaret Atwood, King of England, Tora-no-maki, Lemon Queen, Cathedral, Apple Blossom.

Succession of Bloom.

By including the various early flowering species, hybrids and tree peonies in one's collection, the blooming season may be extended over a period of fully two months. The tree peonies bloom quite a month ahead of the Chinensis, beginning early in May. As they do not die to the ground each year, they form in time woody shrubs four to five feet in height, their im-

mense strikingly beautiful blooms sometimes a foot in diameter; they are a wonderful sight. There are color schemes among them never found in the herbaceous section, brilliant scarlets, dark maroons and rich wine colors, delicate blush, pure pink and art shades of mauve and violet. Most of the varieties introduced by the European growers are full-double, while a large number of the Japanese sorts are semi-double, and single, with a large cushion of thick golden stamens in the centre, which produce a beautiful effect. Some fine tree peonies have been grown in Prof. C. S. Sargent's garden at Brookline, mostly from seeds of the Japanese sorts. Seeds should be sown immediately after they ripen, either in the open ground protected by a slight covering or in boxes placed in a cold frame. The young plants will appear the following spring and will produce varieties equal in every way to the name kinds.

Peony Lutea, a deep golden yellow single tree peony, was discovered a few years ago in the Mountains of Yunnan by the Abbe Delevay. Crosses from this were made by Lemoine

with other tree peonies. One of them La Lorraine, was exhibited by me at the American Peony Show in Philadelphia last June, and was given a special Award of Merit. Its blossoms, six inches in diameter, are fully double and are a deep yellow. A new Lutea hybrid soon to be introduced to the trade is Souvenir du Maxine Cornu, a deeper color with a shading similar to that in Mme Edward Herriot Rose. Lutea and its hybrids bloom later than the other tree peonies.

The Officinalis types begin to bloom almost invariably ten days before the Chinensis varieties. Officinalis rubra, the brilliant early red of our grandmothers' gardens, belongs to this species, which is a native of Europe. There is a white one, Officinalis alba plena, and a very beautiful large flowered pink one Rose Superba, besides a number of named single and double ones not commonly seen. Sabina, L'Oriflamme, Ourika and La Brillant are very attractive. Most of the other species are of little interest to the average growers but I have cut blooms of Triternata and Arietina in April, and of Rubra Superba the 27th of June, a season of quite two months.

Giving Plants An Early Start

Margaret McLaren, West Chezzetcooke, N.B.

I have grown Brussels sprouts more or less successfully for two or three years, but am not entirely satisfied with the results. Is it necessary or advisable to remove any of the large leaves from the stalk, after the sprouts have formed, and if so at what stage of development? My ground is carefully and thoroughly cultivated, and manured annually, and in past I have given the plants liquid manure applications, (I always have a barrel of it handy), and cultivated them thoroughly. In general I have been pretty successful with most of my vegetables, and flowers, too, but am always looking for information and, therefore, am writing you.—F. E. T.

THERE are many plants that require a longer time to mature, than the length of the growing season in Canada. To successfully raise these it is necessary to lengthen the season and this can be done by giving the plants an indoor start. By careful cultivation, perfect plants may be had, to set out when the ground has become warm and all danger of the frost has passed. For those who have no greenhouse, the following method will be found satisfactory.

Have shallow boxes fitted to the south windows of the dwelling house. Bore a few holes in the bottom of each box for drainage. Place a layer of moss in the bottom of each box, to retain the moisture and cause heat, thus giving something like the action of a hot bed. Over this, press down firmly good earth that has been well sifted with a little fertilizer and some sand,

until the boxes are three parts filled. The addition of sand causes the better assimilation of the warmth of the sunlight, and allows the entrance of air to the roots of the little plants, this being necessary for their proper development. When the boxes are prepared, set in the windows to warm the earth for a few days until it feels warm to the hand. To plant the seeds, make drills straight across the length of the boxes, two inches apart, and one inch deep. Sow the seeds sparingly, and cover well, pressing the ground down firmly. Moisten the earth in the boxes from time to time, and when the plants are up turn the boxes each day to ensure stocky growth. As they grow, put earth around them until the boxes are filled, and thin out if too thick.

Successful transplanting of indoor plants to the field or garden, depends upon their proper treatment during the three weeks preceding their removal. Spindling and tender plants cannot stand the exposure of the open ground as well as sturdy well grown plants, and these may be secured by thoughtful handling. Plants grown in the dwelling house require to be

(Continued on page 32.)

Increasing Your Stock of Perennials

Dr. F. G. Brethour, Toronto, Ont.

THE perennial border to be effective must have the greater part of the different varieties of flowers grown in good sized groups, arranged as to harmony of color, and showing a continuation of bloom. To fill a good big border by buying this thing and that by the dozen or two costs a lot of money. By following the method I have adopted the cost is very much smaller, and the pleasure and satisfaction a great deal greater. I shall mention a few of the indispensable plants, and how I work up my stock.

For instance, take *AQUILEGIA*, the long spurred; I grew these altogether from seed, which I started in a flat about the end of February, for the seeds take quite a while to germinate. These are planted out in some reserve corner fairly close together, say about ten inches, and by fall they are good sized plants which are now placed where I want them to bloom. They will bloom the following year, and the next year after that; and then I dig them up and replace by others coming along. After two years the old plants peter out. I think the Mrs. Scott Elliott's strain is the best.

ORIENTAL POPPIES are very easily grown from seed, but they do not come true as a rule. It is well, therefore, to buy a root of a few good ones in the fall, and plant them. After blooming, and during their dormant period, say, in

September, dig up the roots, and cut them up into pieces about two inches long, and replant two inches deep. These will bloom next year and make nice, large plants.

The *PYRETHRUMS*, so useful for cutting, and for garden display, are also easily grown from seeds. The seeds should be sown in March, and many will bloom the same year. These do not come true as a rule, but there will be plenty of good ones if the seeds are from best varieties. I would suggest buying a plant or two of such good varieties as James Kelway, Langport Scarlet, General French (single), Queen Mary, Lord Rosebery, Carl Vogt (double), and after blooming divide up into minute divisions and replant, giving plenty of water and frequent cultivation. These will make nice large plants by fall.

TROLLIUS are choice for cutting and for garden decoration. They grow from seeds, but not easily. After experimenting I found that, by planting them in flats as soon as ripe and leaving the flats out-doors all winter to be frozen, bringing in as soon as you can get at them in the spring, they will soon germinate and make nice plants the first year.

The *FLAG IRISES*, or German Irises, are also easily grown from seeds in the same manner as the Trollius. If you try your hand at hybridizing you may introduce something worth while.

PEONIES grow from seeds in the same

manner as Iris, but they do not germinate until the following August, and then they only produce a root; the stem appears the following spring, and the bloom comes in three or four years. It is a long time to wait, but it is worth it if you have the room.

DELPHINIUMS are easily grown from seed. They take about three weeks to germinate, and therefore should be planted the end of February. They will show bloom in the fall. I have been using the "Rev. E. Lascelles" seed, and I get enough variety to suit me, and some really very choice ones, an odd one coming true. From a Lascelles seed my neighbor has grown a most beautiful and unique variety. The flower consists of five layers of petals without a centre, and the spike is enormous.

CAMPANULA persicifolia, white and blue, and "Utherheimi" (double white) and Pfizeri (double blue) should be divided into small pieces and replanted. If not, these will peter out.

HEUCHERA in one year makes a quite large plant. If you break off each lateral shoot, and replant immediately after blooming, you will get a nice, large plant from each by fall.

GYPSOPHILLA can be increased by root division like the Oriental poppies.

JAPANESE ANEMONES can also be increased in the same manner, but this should be done in the spring in flats.

GAILLARDIA grows readily from seeds, also by small divisions taken off any time while growing.

PHLOX can be easily increased from cuttings, stuck in sand mould.

LUPINES will bloom the first year from seed sown early.

GEUM easily germinates, and I would advise trying "Mrs. Bradshaw's" seeds.

It may seem a lot of trouble to grow plants from seed, but the extra bother is doubly repaid by the great enjoyment you have in watching your seedlings come along. If you have a hot bed it is very much easier.

Why Not Use Vincas

Here is a tip for the gardener who wants to do his spring seed shopping early. Madagascar periwinkle, or vinca rosea and vinca rosea alba, is particularly well adapted for bedding and massing effect about buildings and lawns, the foliage being rich and glossy and supporting a constant mass of pink and white bloom. But the seed for this plant should be sown early in February in shallow boxes of fertile, sandy soil to produce plants suitable for transplanting.

If the boxes are kept in a sunny window where the night temperature does not fall below 50 degrees, the vincas soon pass through their slow growth; in the later stages the growth is reasonably rapid. When the second leaf has been formed the plants may be potted or transplanted into other boxes and later



A short, central walk that leads to the hammock in the garden of Dr. F. G. Brethour, Toronto. Note articles on this page and on page 21.



Entrance to the home of J. W. Henderson, Burlington, Ont., bordered by flowers on both sides.

set into the permanent summer bed when the weather is warm. The plants are bushy and compact, but do not exceed 15 or 18 inches in height, hence are quite adaptable for massing or bedding.

QUESTION BOX

Wm. Hunt, Guelph

Value of Lime.

Each spring after cleaning out the furnace I put a stone of lime in to absorb moisture during the summer. By autumn the lime has become slaked and broken up. Is it of any use and what for?—E.M.S.D., London, Ontario.

The lime would be of little use except to sprinkle when dry around in the corners of a chicken house, or to be dug into a heavy wet part of the garden, or sprinkled on a compost heap or for similar garden purposes. It is beneficial on wet, or what is known as sour land, as it will drive out earth worms and help to sweeten the soil. A bushel to one square rod of ground would not be too much. A very heavy application of lime or wood ashes should not be made on potato ground, as it sometimes causes scab on potatoes. Fresh stone lime is best to use to make a lime wash or to use as a deodorizer or disinfectant.

Where to Keep Corms.

I have a quantity of gladioli bulbs stored away in soap boxes. Where is the best place to keep them during winter?—R.T.S., Chatham, Ont.

Gladioli bulbs (corms) should not be stored in large quantities in deep boxes. If stored in deep boxes they sometimes start to mildew and decay, especially if at all damp when stored, and if stored in a warm place under these condi-

tions they will often start into premature growth during winter. They are best dried a little in a shed for two or three weeks, when dug in October, placed in shallow boxes about four inches deep, and kept in a cool fairly dry cellar, temperature as near 40 degrees Fahr., as possible. In damp cellars they should be put in baskets and hung up to the joists, or on the walls. A very dry furnace heated cellar or room is not a good place to keep them, as the corms lose vitality when kept too dry.

Non-Flowering Geraniums.

I have some geranium plants that are strong and healthy but do not flower in winter. Can you tell me the reason and also tell me of some plant food that will bring them into flower?—M. O'R.

The reason that geranium plants do not flower in winter arises mainly from two causes, unsuitable soil, or a too dry, over-heated atmosphere, or perhaps gas fumes, either from illuminating gas or gas from the furnace, or from a self-feeder stove. A low temperature or lack of sunshine will keep

plants from flowering. Too much humus (leaf mould or black soil from the bush) in the soil they are potted in will cause the plants to grow well and not produce flowers. The best soil to pot geraniums in for winter flowering is about seven or eight parts of well rotted sod from loamy soil, one part sand may be mixed with this, and one part of dry pulverized cow manure that can be gathered from pasture fields in the summer time, or the same quantity of pulverized sheep manure. This last can be bought at large seed stores. One part of the leaf soil mentioned may be added if the other soil is of a heavy nature. Good-sized plants in pots re-potted in this soil early in the fall should give good flowering results during the winter. If the plants are kept too near a hot stove, or if there are gas fumes in the house, it will prevent flowering. I am inclined to think that the trouble is in the soil, as you say the plants are healthy and vigorous. The very small amount of sunshine we have had this winter has also kept plants from flowering.

Raspberry "Leaf Curl" or "Yellows"

G. H. Duff, Dominion Pathological Laboratory, St. Catharines, Ont.

A PECULIAR disease of the raspberry this year has assumed serious proportions in the Niagara district. It is known as the raspberry leaf curl or yellows.

The symptoms of this disease are striking and characteristic. In an advanced stage the whole bush is stunted, the foliage is much reduced in size, the leaf-stalk short, each leaf being tightly curled downward and inward. The leaf veins become sunken, due to an arching upward of the tissues between and in addition there is frequently a distinct mottling of the leaves caused by light green areas irregularly distributed over them. Color effects vary considerably with time and locality, however, and the foliage may have a uniformly lighter or darker color than in normal plants.

While in the early stages the disease is hard to recognize, but the symptoms rapidly become more pronounced as it advances. The chief symptoms are the curling and puckering of the leaves, and with a little practise these may be detected even in very early stages.

The berries on an affected bush frequently dry up before maturity or ripen a week or more too early. In any case they are worthless, as they are small, insipid or bitter and off colour. To include them in baskets of first-class fruit is to reduce the quality of the picking very markedly, and many growers instruct their pickers to pass by entirely all bushes showing this disease.

The cause of the malady is very ob-

scure. It is almost certain that it is not due to insects, fungi or bacteria. It rarely appears in a plantation until it is two or more seasons old, and spraying has been found to be useless as a measure of control. The part that soil and climatic conditions may play is not clearly understood, though it is said that the disease is worse on heavy, ill-drained soil, and that at times of dry, hot weather the symptoms become very much more conspicuous. It seems certain, also, from field observations, that the disease is communicable from plant to plant, though how this is accomplished is not known. It is true, however, that if the disease makes its appearance in a bush which is allowed to remain, neighboring bushes will soon fall victims as well.

Preventive Measures.

Knowing as little as we do regarding the cause of the disease, no really adequate preventive measures can be devised. However, in planting red raspberries it should be borne in mind that stock from disease-free localities is preferable to that from badly diseased areas. Varieties that show resistance should be selected. Of the three varieties commonly grown in the fruit belt, Herbert is much the least susceptible; both the Marlboro and Cuthbert readily fall victims to the disease. The plantation site should be adequately drained. Finally, diseased plants should be removed as soon as symptoms of the disease appear.

What Hive and Frame Shall I Use?*

The Beginner's Problem—G. A. Deadman, Brussels

IT is an old saying, "make sure you are right then go ahead." This is easier said than done to the beginner in apiculture. "When doctors differ who shall decide," and so how is he to decide what hive is best, what frame is to be preferred? No one is less capable than himself for deciding in this matter, and so more than likely he will adopt the hive and frame that is most in evidence or that has been particularly brought to his notice.

As to the hive, there are three leading sizes of the Langstroth kind. They are the eight-frame, the ten-frame, and the twelve-frame variety. The eight-frame bids fair to become extinct, although I would recommend that those who contemplate scrapping theirs do not do so just yet, for I would like to show them how I believe it can be made the equal and superior to either the ten or twelve frame one.

Although I cannot see much in the Langstroth hive to recommend it yet, it is more than likely, unless side-tracked in some way, the beginner will begin with this, and still more likely the one commonly in use, viz., the single boarded hive. It is not for me to say which size frame is best, but I believe I can say without fear of contradiction which hive is best, the single or double-walled. It is a foregone conclusion, and universally admitted, that a double wall hive is warmer in cold weather and cooler in warm weather, than one that is single. Then why is it, the beginner may ask,

are not the double-walled used exclusively? There are two reasons for this. One is, they are supposed to take more lumber and the other that they are usually more cumbersome.

Now it is just here that the beginner will likely fall down, because this need not be. In fact you can not only make the double-walled the same size outwardly and inwardly, but it will even be lighter in weight. It is just such a hive that I advocated long ago of which I have about four hundred, and would not have any other. I must not say this though now. I could have said it truthfully two months ago, but now, well, I have since read the article in the November BEEKEEPER, by J. F. Dunn, of Ridgeway, Ont. Mr. Dunn has certainly given us something worth while, and any beginner or those increasing the number of their colonies who are living in a cold climate, and after what we are told will go on as usual, well, all I can say is, they are certainly not progressive. For reasons I will not explain now, I wanted the sides of my hive to be one and one-eighth inches thick. Now by re-sawing one inch lumber as Mr. Dunn does, I have two walls of seven-sixteenths inch thick and a dead air space of one-eighth inch to take the place of the seven-eighth inch lumber in use. By using two boards three-eighth inch thick and a dead air space of one-eighth inch, or two quarter inch thick and a dead air space of three-eighth inch you have a hive that will be the same dimensions as the single walled, requiring no more lumber and lighter in weight. Had I then known what Mr. Dunn tells us regarding the cork dust packing he uses, I certainly

would have made allowance for that and save the work of packing in the fall and unpacking again in the spring. A double walled hive is preferable if only a dead air space of eighth of an inch, whether you repack for winter or live in a climate that as far as cold is concerned require no packing..

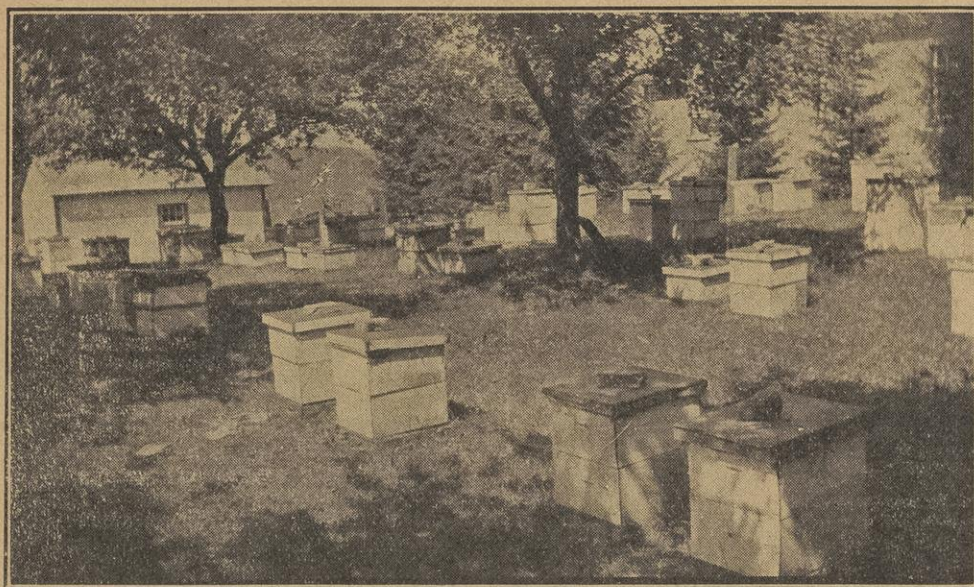
Mr. Dunn does not say whether or not he can tier up hive upon hive, or only the supers.

Personally, I prefer a hive that is interchangeable with the supers so that the super can be used as a hive (in emergency), or the hive as a super. Mr. Dunn's plan of reinforcing with neponset insulating paper is a good one. Whether we have the one-inch space cork-filled or an eighth of an inch dead air space this would be an advantage. Mr. Dunn has given us good proof of the wonderful non-conducting power of this cork-packing that he uses and makes the remarkable statement that his hive when complete weighs no more than the ordinary hive of seven-eighths lumber. I presume Mr. Dunn has corner posts in his hive. With my own I require none. I simply have the grain of the wood run perpendicular for the inside wall and horizontal for the outside. By doing this I have a hive that never varies as far as the depth inside goes and so the distance below the frames remains always the same, which is more than can be said for the single walled variety. And more than this, I have a stronger hive, for if the outside wall should split in two the inside holds it together. I will not speak of the other advantages now more than to say few or none of us realize the difference in the warmth of a double wall.

I recall where Editor Root, of Gleanings, mentions about the difference it made in his garage by having it double walled. And my own experience too in a little room I had at my apiary in Merlin. The weather turned very cold one time while I was there, and it seemed impossible to keep warm. One could fancy he could see the cold radiating from those single walls; anyway, I could certainly feel that cold air rushing about. I hastily went down and got some seven-eighths tongued and grooved pine and lined the inside of that room, and lo and behold what a change it made.

For some years I have been using a home made capping melter. Some years we have more, some less, but the last season I separated one hundred and seventy pounds of wax and some six hundred pounds of honey from the cappings, what were allowed to drain for twenty-four hours or so. This was

*This is the first of a series of articles Mr. Deadman has written specially for "The Beekeeper." Coming from one with a wide and varied experience in beekeeping they will contain invaluable advice to the beginner. The second article will appear in our March issue.



The Apiary and Honey House of Mr. Geo. Westgate of Kerwood, Ontario.



Part of the Apiary of Mr. S. Bisbee of Canfield, Ont. The location is well chosen, the high trees in the background forming an excellent protection from the north and east winds.

done with the expenditure of probably half a gallon of water that never boiled and at a cost of say ten cents for fuel and three-fourths of the wax required no re-melting. I may tell you some day how this was done, but suffice now to say that I could not have accomplished this world record stunt without a double-walled machine. Perhaps if I had had the cork packing instead of sawdust that Mr. Dunn tells us about, I could have done even better.

Speaking of re-sawing lumber, this is best done before it is planed, and we then have one-inch stuff instead of seven-eighths. As for myself, I go even one better than many manufacturers, and buy it in the log and have it cut to order. When the logs are small they generally overrun and I have got as

much as 2000 feet of half-inch stuff from 1000 feet log measure. You may call me a crank on this double wall business if you like, but I have such a strong conviction of its superiority that I have even my supers double-walled at the sides, the ends I leave single, as I get more frame space. You cannot go around my apiary after a frosty night and locate the cluster of bees by the moisture on the cover, as my covers are double-walled, as also the movable bottom board. I have no worry over the cold of spring after bees have been cellar wintered, and do not wrap with paper as some do. This is a one-sided subject, however, for I believe, as I have said, it is universally conceded that the double wall is superior, so much so I have never heard or read it argued otherwise. But whatever else you overlook in Mr. Dunn's one-inch cork packing or the eighth of an inch dead air space that the latter is even lighter and also stronger than the single walled hive, and of the same dimensions. As I understand Mr. Dunn, the neponset paper is placed next the corked packed space on the outside wall, and on the side next to the frames on the inside wall. If this is correct, why not put the paper on the side next the packing on the inner wall the same as he does on the outer wall?

Beekeeping in New Brunswick

L. T. Floyd, Provincial Apiarist

DURING the last ten years or more since the beekeeping industry has grown in importance in Ontario and Quebec, the eyes of the interested ones have turned inquiringly towards the Maritime Provinces, and the question has been frequently asked, "When will the Maritime Provinces wake up to their possibilities in honey production?"

In 1913 New Brunswick received its first grant of any importance for the furtherance of the work. This consisted of \$500.00 of an annual grant and was used in demonstration work at exhibitions and field days but because of the small amount of the grant there was little chance of reaching the large number of interested ones scattered all over the province.

In the fall of 1917, I was employed by the New Brunswick Department of Agriculture to visit as many beekeepers as I could locate to ascertain if enough persons were interested to warrant the formation of an Apiary Division as a part of the activities of the Department. During the two months, I visited 250 beekeepers scattered over five counties, with 1773 hives. Of this number 1,135 were frame hives and 638 box hives of various designs. A large percentage of the frame hives were little better than

the box hives, as many of them had been used without foundation or wire.

At the first of the year 1918 I was appointed Provincial Apiarist with instructions to forward the work of honey production in the province. The plan I adopted was to first visit each beekeeper. I carried with me a fully equipped ten-frame Langstroth hive, also some other articles of equipment necessary for up-to-date work. I used this equipment to demonstrate better methods of work. On my first trip I planned for field meetings next season. In the sections visited the previous fall I held demonstrations during the latter part of June and the first of July and treated every case of foul brood I could locate. Our disease-infected district comprises parts of three counties in the southern part of the province and as there are few beekeepers in that section, and these are fully awake to the seriousness of the situation, and anxious to co-operate with me, I feel that we can stamp it out in a few years. The disease is of the American type and the beekeepers claim that it was introduced some years ago in a shipment of bees from the United States.

Mr. C. B. Gooderham, Assistant Apiarist, Ottawa, rendered me valuable assistance with this work. He spent

two days with me early in the season, giving me the benefit of his experience in inspection and treatment.

I had an average attendance of 25 at the field meetings. These meetings were not advertised in the local papers, the beekeepers alone being notified so that only beekeepers were in attendance, some of the keenly interested ones travelling as far as twenty miles to attend. This phase of the work will be largely extended next season. The balance of the summer was spent visiting in the counties missed the previous fall. I listed 576 with apiaries of one and two hives up to one hundred. Some of them get very good crops of honey of a fine quality. Nearly all were working for section honey or keeping the bees in the old box hive way smothering off the surplus swarms in the fall. The few who were working for extracted honey were producing good enough crops to make the future look exceedingly bright for the industry in New Brunswick. One of the converts to better methods had an average crop of 132 pounds per hive from three hives the first season. Some of our larger apiaries report a crop of a ton or more.

As soon as it was possible to compile a mailing list, crop report forms were distributed and from the returns made the average per hive figured out about thirty pounds.

The work so far has brought a large correspondence and I believe will result in an appreciable increase in honey production as well as a great improvement in the quality of the sample offered for sale. The Beekeepers' Association of 118 members purchases its supplies co-operatively and last season handled close to \$2000.00 for this work, which is fairly good for a beginning.

Bees By Parcel Post

BEES can now be sent in quantities through the mails in Canada. Instructions permitting this were issued by the Post Office Department in January, with certain regulations regarding queen bees. The instructions read as follows:

"LIVE BEES."—Queen bees and their attendant bees, when accompanied with a copy of a certificate of the current year from a Government apiary inspector to the effect that the apiary from which said queen bees are shipped is free from disease, or by a copy of a statement by the beekeeper, made before a notary public or other officer having a seal, that the honey used in making the candy used in the queen mailing cage has been diluted and boiled in a closed vessel, may be sent in the mails when so put up as to render it practically impossible that the package shall be broken in transit, or the persons handling the same be

injured, or the mail bags or their contents soiled.

Honey bees in quantities may be sent in the mails under the same conditions as are prescribed for queen bees and their attendant bees when delivery can be made to the addressees within a period of five days. If the cages are wooden, the material of which they are constructed shall not be less than three-eighths of an inch thick and the saw cuts therein or space between slats shall not be over one-eighth of an inch wide; if the wire screen is used for the sides of the cages there shall be two thicknesses of screen separated by slats at least three-eighths of an inch in thickness. The container shall be provided with a suitable handle and no honeycomb, water or liquid food shall be placed therein. Such parcels shall be transported outside of mail bags.

The above instructions are the same as those that are now in force in the United States. Bees may, therefore, be sent by parcel post from places in the United States to places in Canada and vice versa, provided the packages are only prepaid at the rates of postage prescribed by the regulations of the country of origin for packages of merchandise, and provided the weight of each package does not exceed 4 pounds 6 ounces.

It is believed that this means of transporting bees in quantities will be of service to beekeepers, especially to those purchasing bees in 1, 2 and 3-pound packages, without combs, from the Southern States in spring. The Railway Mail Service knows no international boundaries, consequently there will be no delay on the border in the case of bees entering Canada by mail from the States. All parcels entering Canada have, however, to pass the Customs. In order to facilitate the clearing by Customs, which, it is anticipated will not exceed a few hours at the Customs house nearest to the addressee in the direct route, the value of the bees should be placed on each package, and the package should be labelled "Live Bees, Perishable." Customs officers have instructions to pass on perishable articles of all kinds without delay. The Commissioner of Customs has promised that special instructions to this effect for the handling of the live bee traffic will be given. In some cases it might help to prevent delay for the addressee to obtain from his postmaster the name of the place of his nearest Customs house, and to ask the sender to state on the package "For Customs clearance at _____ (name of place)." Live bees enter Canada duty free.—F. W. L. Sladen.

Returns From Bees at the Experimental Farms

BEES are now kept at sixteen of the Experimental Farms as compared with only five in 1913. During the past few years the number of colonies at some of the Farms have increased, while at others they have decreased, chiefly through loss in winter. Methods of preventing much of this loss were worked out.

Taking a period of six years (1913-1918 inclusive), the highest returns have been obtained at the Central Experimental Farm at Ottawa, where the average annual yield of honey per colony, spring count, for the six years, amounted to 121.6 pounds. The next highest yield was at Nappan, N.S., where the average yield was 102.2 pounds for a period of five years (1913-1917); Lethbridge, Alta., gave 76.2 pounds (1913-1918); Invermere, B.C., gave 70.5 pounds (1914-1918); Ste. Anne de la Pocatiere, Que., 59.4 pounds (1913-1917); Cap Rouge, Que., 58.7 pounds (1913-1918); Lacombe, Alta., 52.6 pounds (1915-1918); Fredericton, N.B., 50.9 pounds (1914-1918); Kentville, N.S., 47.4 pounds (1914-1918).

The above gives only the amount of surplus honey obtained; to this must be added the net increase made in bees during the same period. The average value of the honey, the price of which varied at the different Farms, and of the increase of bees per colony during the same number of years is as follows: Ottawa, \$17.27, 1913-1918; Lethbridge, Alta., \$16.49, 1914-1918; Nappan, N.S., \$13.41, 1913-1917; Invermere, B.C., \$13.26, 1914-1918; Lacombe, Alta., \$12.79, 1915-1918; Indian Head, Sask., \$11.83, 1915-1917; Ste. Anne de la Pocatiere, Que., \$10.42, 1913-1917; Fredericton, N.B., \$9.91, 1914-1918; Summerland, B.C., \$9.38, 1916-1917;

Cap Rouge, Que., \$8.79, 1913-1918; Kentville, N.S., \$8.11, 1914-1918.

White and alsike clover were the principal sources of honey at all the Farms except Lethbridge, where the honey came from alfalfa. All the honey produced was of good quality, that from Ste. Anne de la Pocatiere being exceptionally fine.

Management was found to be an important factor in honey production. The men in charge of the apiaries who had over two years experience did much better than those with less. The bees at Ottawa have been under expert care all the time, and if those at Nappan, Lethbridge, and a few of the other places had received similar care, equal, if not larger returns might have been obtained. It was also noticed that horticulture and beekeeping make a better combination than poultry and bees, as the men engaged in horticulture take a keener interest in bees. Many horticulturists and small farmers find beekeeping both a congenial and profitable side line.

There are few places in Canada where beekeeping cannot be carried on profitably. There are also many farming areas, excellent for beekeeping, where it is largely neglected. For example, Prince Edward Island, certain marsh lands in Nova Scotia, the St. John River Valley, N.B., the Lake St. John district, Que., and many places in Ontario and Manitoba.

Italian bees are more docile, better housekeepers, better feeders of their brood, more hardy, better honey gatherers, defend their hive against the wax moth better, are more immune from European foul brood than the black bee, more pleasant to work with, and more beautiful to look upon. Surely with so many commendable points no other bee should be kept.—E. F. Robinson, Victoria, B.C.



Field Meet on an up-to-date Apiary in Lambton Co.



Apiary of G. S. Peabody, Woodstock, N.B., President N.B. Beekeepers' Association.

Winter Work for the Beekeeper

NOW that the most active part of the year is over and the bees are safely packed away in their winter quarters, the beekeeper should turn his attention to the preparation for next year's activities. As the honey gathering season is comparatively short and things move rapidly during that time, success depends mainly upon having everything in readiness before it is actually needed. Much of this work can be done during the winter months.

One of the most valuable assets of the beekeeper is a good supply of empty combs at the commencement of the season and great care should be taken to preserve them during the winter months from the ravages of mice and wax moth. A good method is to place the combs in supers and to tier the supers up one above another with a sheet of paper between each and a hive cover on top of the tier. This will prevent the mice from getting at them. The combs should be stored in a dry, cold place. Exposure to zero weather will destroy the larvæ of the wax moth. Fumigation with carbon bisulphide will also destroy them, but care must be exercised in handling this material as it is highly inflammable.

All supplies should be thoroughly gone over and put into working shape. If any new supplies are required, order them as early as possible, and get them made up before spring. By sending early orders, you not only benefit yourself but you are aiding the manufacturer to fill all orders in time. It is not advisable to put foundation in the frames till spring as it becomes very brittle in the cold weather and there is danger of breaking it in handling. If you have any old broken combs, cappings, etc., now is a good time to get them rendered, using a wax press for this purpose and to have the resulting wax made into foundation.

Protect your bees from mice by having the entrances to the winter cases reduced too small or by covering with a screen too small for mice to get through, but large enough to allow the bees to pass through freely. The entrances of the hives in the cellar can also be closed by this screening. The temperature of the cellar should be kept at about 45° F. The cellar should be dark, and well insulated against changes in temperature.

If the bees were placed in winter quarters rather light in stores, it may become necessary to feed them before bringing them out in spring. For this purpose, candy made as follows is recommended: Stir six pounds white granulated sugar into one and one-eighth pints of boiling water. When the sugar is thoroughly dissolved, add quarter teaspoonful tartaric acid and boil at a temperature of 240° F. over a hot fire for three to four minutes without stirring. Allow the mixture to cool to 130° F. and then

stir till it begins to whiten. Then pour quickly into moulds, making cakes about one inch in thickness. When cool, these cakes can be placed on the top of the frames above the clusters.—Experimental Farms Note.

Good Short Course in Apiculture At O.A.C.

THE rapid rise in importance of honey production in Ontario, is amply attested by the size and enthusiasm of the two weeks' class in apiculture, which met at the Ontario Agricultural College, at Guelph, January 13th to 24th. Over three-fourths of the counties of Ontario were represented by the 47 students.

The programme was exceptionally complete, and designed to give students an insight into and working knowledge of every phase of beekeeping.

The high standards of the Apiculture Department were ably maintained by Professor Burton N. Gates, A.B. A.M., Ph.D. Doctor Gates became a member of the College staff last November, coming from the Massachusetts Agricultural College, where for eight years he was in charge of the beekeeping work, in the Entomology Department. He had been also "Expert in Beekeeping" for the United States Department of Agriculture, with its principal bee yard at College Park, Maryland. Mr. W. A. Weir, who operates two apiaries in York County, formerly acting as Assistant Provincial Apiarist, assisted Doctor Gates.

No two bee men do everything exactly alike; thus the Department enlisted the services of successful beekeepers and professionals in the Province, to speak on certain phases of the subject: Mr. F. W. L. Sladen, Dominion Apiarist of the Central Experiment Station, Ottawa, Mr. Jas. Armstrong, a commercial apiarist for forty years, and Provincial Bee Inspector. Mr. F. W. Krouse, who maintains 500 colonies about Guelph, and sells bees and bee equipment of all sorts.

Various Departments of the College co-operated with the Apiculture Department, in special lines of the work.

Beginning on the assumption that the class knew nothing whatever about bees, the whole subject was taken up topic by topic covering the practice for twelve months in the year, and from the stone age to to-day. The class met from 9 to 12 o'clock and from 2 to 4 p.m. This arrangement allowed ample time to read in the up-to-date bee section of the College Library, and to discuss problems with bee men and women.

One feature of the course that appealed especially to the novice, was the many styles and sizes of equipment on display and used in demonstrating the lectures. Many lantern slides showed queen cells, eggs, larvæ and adults, drones and workers, diseased comb, location and arrangement of bee yards and wintering cellars,

and general beekeeping manipulations and practices. By trips to the College and neighboring apiaries and work shops, everything was calculated to save the student money in starting in bees or in increasing his output.

When one of the speakers told of taking \$100 worth of honey from one colony in a year, enthusiasm ran high, but a few talks on diseases and other sources of loss, and on feeding 50 bags of sugar in a bad year, reduced the conception to at least normal. With ordinary, understanding attention seventy-five lbs. of extracted honey can be expected from a colony in an average year.

Swarming cuts honey production, and can be held down to three swarms from a hundred colonies, according to one speaker.

One way to put apiculture on a sound footing is to market only uniformly good honey, be a member of the Ontario Beekeepers' Association, and read up-to-date bee journals such as the BEEKEEPER.

Kootenay Division Beekeepers' Association of B.C. Meet

THE first annual meeting of the Kootenay Division, Beekeepers' Association of British Columbia, was held in Nelson on January 16th, at which the Vice-President, Mr. A. E. Pittaway, presided.

The Secretary-Treasurer's report stated, in part, that a first class crop of honey was obtained during the past season, for which there was an unprecedented demand, at prices considerably higher than had ever been anticipated.

The Association honey labels supplied for the use of the members were in greater request.

The beekeepers in the Kootenays now number about 175, 88 of whom are members of the Association.

The arrangement made with the Nelson Agricultural and Industrial Association for extending the prize list for honey, bees-wax, etc., at the Nelson Fruit Fair, held in Sept., was highly satisfactory, and resulted in the most extensive and the best apicultural display that has been made in this district, which formed a centre of attraction, and created great interest.

The booklet on "Beekeeping in the Kootenays," published by the Kootenay Division, will, it is hoped, be found helpful to the beekeepers and result in increased honey production. Considerably over two hundred copies have already been sold, the price charged for same being only intended to cover the cost of printing and distribution.

The finances of the Kootenay Division are in a satisfactory condition.

During the meeting a letter was read from the president, Major-General Lord Aylmer, offering to donate a silver trophy, of the value of about \$25, to be offered as a prize for the encouragement of beekeeping in the Kootenays, which was gratefully accepted.

At the close of the annual meeting a series of lantern slides, illustrating the natural history of bees, and ancient and modern methods of beekeeping, were exhibited, which were followed with much interest by the audience.

The following officers and directors were elected for the current year:

President—Major-General Lord Aylmer, Queen's Bay, B.C.

Vice-President—A. E. Pittaway, Castlegar, B.C.

Secretary-Treasurer—W. J. Sheppard, Nelson, B.C.

Auditor—John Fraser, Nelson, B.C.

Directors—A. M. Black, Nelson; John Blinco, Creston; Gordon P. Brown, Robson; T. L. Bloomer, Nelson; S. Fawcett, Nelson; C. C. Heaven, Grand Forks; J. R. Hunter, Nelson; James Johnstone, Nelson; B. Lockwood, Nelson; Rev. J. F. Mahood, Queen's Bay; G. E. Parham, Invermere; R. V. Ramsden, Nelson; A. Harvey Smith, Nakusp; W. Romain, Nelson, W. J. Sheppard, Nelson.

Ontario Beekeepers Meet in Annual Convention

Raise Membership Fee to \$1.50.—Protest Against Introduction of "Honeyoline."

OVER one hundred beekeepers from all over the province gathered to the fortieth annual convention of the Ontario Beekeepers' Association, held in the Parliament Buildings, Toronto, on February 4, 5 and 6. That interest in the problems of the beekeeper is not confined to the male sex alone was evidenced by the number of ladies present at the meetings. An excellent programme had been prepared, and keen discussion followed many of the papers. Many valuable hints and suggestions were given, and the entire proceedings throughout were marked with that spirit of mutual helpfulness and camaraderie which made it a joy to every member present.

President's Address.

In his opening address President Jas. Armstrong said that the past year had been a strenuous one for beekeepers. Insufficient help in the apiaries, conscription and the greatly increased cost of equipment, were some of the factors that they had to put up with. Contrary to indications at the beginning of the season one of the most prosperous years in their history had been enjoyed. "Altogether," said Mr. Armstrong, "Ontario beekeepers harvested a very good crop, and the price they were able to obtain for their product made 1918 one of the best years in their history. With a return to normal times a drop in the price of honey was to be expected."

Foul Brood.

Speaking of foul brood, Mr. Armstrong said we knew now where to find both types of foul brood, and the time seemed ripe, he said, for a more intensive effort to stamp out the disease. He advocated the closing up of definite areas year after year until the diseased districts have been quite wiped out. "The only sure method of treating the disease," he said, "is that advocated by the Provincial Apiarist, and it is the method enforced under the administration of the Foul Brood Act."

Many returning soldiers, the President said, were showing a great interest in beekeeping, and would doubtless make that their life work. All beekeepers, he said, should do all in their power to assist these men, and he hoped that the Apiculture Department would render every assistance.

Following the President's address the subject of the disappearing disease, or bee paralysis, came in for considerable discussion. Considerable difference of opinion as to its cause was expressed, some members strongly claiming that climatic conditions such as a wet season was responsible for it, while other members as strongly adhered to the opinion that climate was not responsible for it.

Pound Packages.

In his paper on "Experiments With Pound Packages of Bees," Mr. A. J. Bainaird said "that for the rapid building up of any colony of bees the most essential elements are eggs, nurse bees, combs, food and heat. In a pound package of bees we have the young queen capable of laying an abundance of eggs, and nurse bees enough to care for them." An experiment tried last season for the first time in the use of artificial heat for small colonies of bees proved very interesting and quite successful, the bees used for the experiment being composed of four one pound packages and two average full colonies of bees. Space does not permit of our entering into the details of this experiment. "Pound packages to be

successful," said Mr. Bainaird, "should be received as early in April as your dealer can supply them, usually about the 10th to the 15th."

Discussion.

A good deal of discussion followed Mr. Bainaird's paper. Some of those present had purchased packages of bees, and they had come in good condition and done well, while the experience of others present had been exactly the reverse. Mr. Armstrong said that his experience with pound packages had been such that he would not hesitate to recommend their purchase, as he had had excellent satisfaction. Over against this was the statement of Mr. Langstroth, well known from the hive bearing his name, who said that he had received what were supposed to be two pound packages, but when they reached him there was barely one pound. His experience was not such as would warrant him trying a two pound package again, though he thought he might try a pound package.

It was pointed out here by Mr. Sladen that the new postal regulations permits the sending of bees by parcel post in Canada. The full text of the regulation is given on page 32 of this issue of The Beekeeper.

A vigorous protest was made by some of the members present against the introduction of a substitute for honey and known as honeyoline. This has already made its appearance in the stores. A committee was appointed to investigate the matter.

A question drawer conducted by J. L. Byer of Markham opened the session on Tuesday morning. Many questions were asked and satisfactorily answered by Mr. Byer, and much information imparted.

The Farmer Beekeeper.

Mr. R. G. Houghton gave a very good paper on the combination of farming and beekeeping, illustrated by facts from his own experience. "Beekeeping and farming," said Mr. Houghton, "is good for some men, but it must be the right man in the right place." He thought that farmers should take a short course in apiculture to gain an insight into modern working methods. The combination business, thought Mr. Houghton, helps a man over hard times, as it is

not likely that both the farm crop and the honey crop will fail in the one year. "One man," continued Mr. Houghton, "can, with the use of hired help for the harvest, attend to 50 acres and 80 or 100 colonies of bees, and the profit is equal to about 150 acres of land, and to farm that amount of land would require help for eight months or at least \$400, which means a saving of about \$300 without board, to say nothing of the pleasure of being your own boss. The advantages and disadvantages of growing sweet clover came in for considerable discussion, the consensus of opinion seeming to be that for the man who was combining farming and beekeeping it was desirable to grow sweet clover.

Bee Diseases.

Mr. Chas. Stewart, inspector of apiaries, Johnstown, N.Y., spoke on "Bee Diseases," and how they had treated them on the other side of the line. The best method, he said, of treating either American or European foul brood was Italianising—the re-queening with a vigorous strain of Italians. Mr. Stewart thought every beekeeper should raise his own queens, as his experience with queens sent by mail was that they were invariably damaged in transit. In reply to a question by Mr. Holterman as to whether he had noticed any difference between this new disease, known as the disappearing disease, and the old disease, known as bee paralysis. Mr. Stewart said that they were similar in their symptoms, but he could go no further than that. He said that he had noticed the disease twenty years ago.

Secretary's Report.

The report of the secretary showed a membership of 930 during 1918. Four hundred and twenty-five of these memberships came in from affiliated societies, and the balance of 505 by single subscriptions. The treasurer's statement showed a balance on hand of \$195.85.

The Hon. George S. Henry, Minister of Agriculture, in the course of a short address of welcome, said that the Government were always ready to assist the beekeepers, and that if the Association in the past had not received much financial assistance the reason perhaps was that they had not asked it.

A Canadian Bee.

In the course of an address on Thursday (Continued on Page 38.)

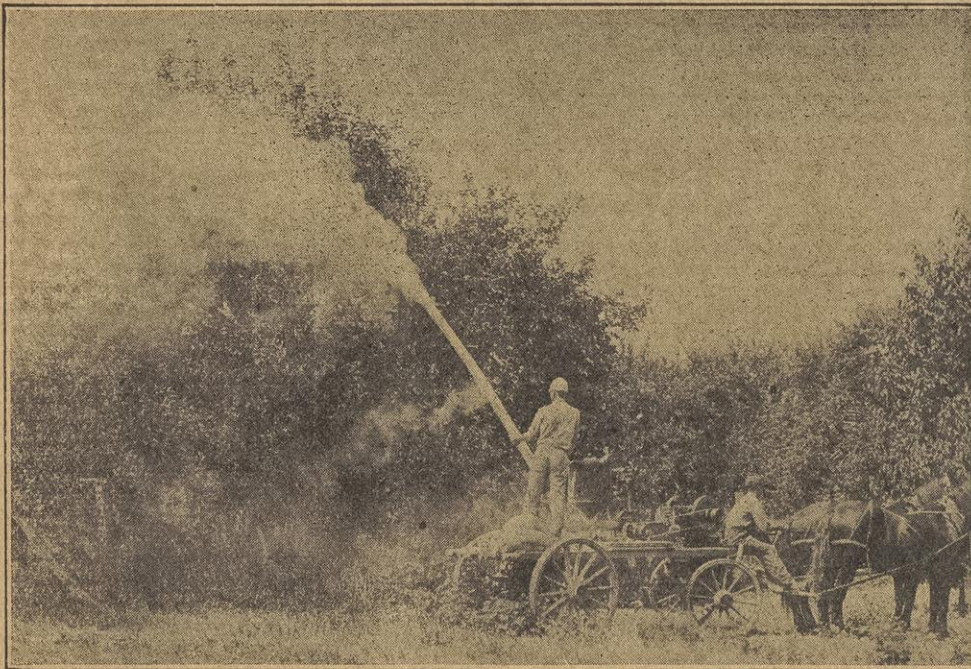


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Field Meet of the Lambton Co. Beekeepers' Association.

morning, Dr. B. N. Gates said that the consensus of opinion was that southern queens were not of much value. He thought that bees from the southern States were not adapted to northern conditions, and said we should have a Canadian bee adapted to our locality. He would like to see an Ontario bee. "The queen business is not paying," continued Dr. Gates, "why not be our own queen raisers." In reference to pound packages he was not over enthusiastic on their purchase, as we do not always get what we seem to get, he declared.

Honey Reports.

Nothing has raised the level of beekeeping and honey in the United States, said Dr. Gates, like the government action in July, 1917, of having honey included in the telegraphic crop reports. This was one of the important things, he thought, that could with great advantage to the beekeepers be introduced in Canada.

Speaking of European foul brood, Dr. Gates in reply to a question said he did not think it was possible to fully eradicate the disease, but it could be kept under control.

County Associations.

Speaking of "County Associations and What They Can Do for the Beekeeper," Mr. R. C. Fretz questioned the wisdom of co-operative buying and selling among county associations, as beekeepers were too widely scattered. The purpose of the County Associations, he said, was identical with that of the O. B. A., which through its officers and appointed committees acts as agent for all the beekeepers of the province, so should the County Association act as agent for the beekeepers within its borders. In organizing a County Association Mr. Fretz said stick to simplicity. The less officers you have the better you get along.

Queens.

An excellent paper on "Queens" was read by S. B. Bisbee, at the afternoon session on Thursday. Every honey producer declared Mr. Bisbee should know how to rear his own queens. There were times, he said, when it was better to buy, and times when it was advisable to raise queens. Here is one simple way as given by Mr. Bisbee, by which a beekeeper may re-queen his apiary. "Go over the yard and select about one half of the best colonies. Assuming the bees to be Italians, mark the ones you wish to dispose of, and after destroying the queens introduce the good queens to the colonies, where the other queens have been destroyed. You will find the smoke method work exceptionally well where the queens have just been taken from the hive and

have not stopped laying. Ten days later slip a queen excluder underneath the hives where the queens have been introduced in order to confine undesirable drones, as by this time young queens will be about to hatch in the colonies that have been queenless. If this method is followed just at the close of the honey flow, colonies may be requeened at very small cost and the quality of the bees very much improved."

Much discussion followed Mr. Bisbee's paper, and many questions were asked.

Mr. Wm. A. Weir, in speaking of the sugar situation, said that unless something very unforeseen occurred, beekeepers had nothing to fear for next year's supply of sugar.

Raise Membership Fee.

A motion that the membership fee be raised to \$1.50 per year, which would entitle one to membership in both the Provincial and County Associations, was unanimously carried.

Association's Officers.

The officers for the ensuing year are as follows:

President, James Armstrong, Selkirk; 1st Vice-President, W. W. Webster, Little Britain; 2nd Vice-President, A. McTavish, Carleton Place; Secretary-Treasurer, Dr. B. N. Gates, Guelph.

Directors for the various districts were chosen, as were delegates to the exhibitions and the Honey Crop Committee. The elections resulted as follows:

Directors—No. 1 district, R. E. L. Harkness, Iroquois; No. 2, A. McTavish, Carleton Place; No. 3, M. B. Holmes, Athens; No. 4, John Chisholme, Belleville; No. 5, W. W. Webster, Little Britain; No. 6, H. G. Sibbald, Toronto; No. 7, F. W. Krouse, Guelph; No. 8, James Armstrong, Selkirk; No. 9, John Newton, Thamesford; No. 10, J. Myers, Stratford; No. 11, C. E. Chrysler, Chatham; No. 12, R. G. Houghton, Bradford; No. 13, Dr. B. N. Gates, O. A. C., Guelph.

Exhibition representatives—Canadian National, Toronto, T. D. Evans, Islington; Ottawa, M. B. Holmes, Athens; London, E. T. Barnard, Lambeth.

Honey Crop Committee — H. G. Sibbald, Toronto; W. Couse, Streetsville, and W. J. Craig of Brantford.

A Local International Convention

The beekeepers of Lambton county enjoyed a rare treat recently in the form of a joint convention with the beekeepers of St. Clair County, Michigan. The meeting was held in the office

of C. L. Brodie, St. Clair County Agricultural Representative, at Port Huron, Mich., on December 17th, 1918, at one p.m.

In the absence of Mr. William Bidelmann, president of the St. Clair County Association, the secretary, Mr. N. E. Haskells, welcomed the Canadian boys. A suitable reply was made by Mr. Harry Lucas, the energetic president of the Lambton Association, who was requested to take the chair.

Miss Waldron, who is connected with the St. Clair County Office, very suitably read an instructive essay on the relation of the County Office to the beekeeper. In concluding, Miss Waldron gave the Canadian beekeepers a standing invitation to make the Port Huron Agricultural Office their headquarters whenever in the city.

The Michigan State Apiarist, Mr. B. F. Kindig, in his address on the problem of brood diseases, sounded a note of warning to all present to prepare at once for European foul brood, the presence of which is known to be in St. Clair County. This fact has special significance to Lambton beekeepers having apiaries along the St. Clair River. Mr. Kindig signified his willingness to do cooperative inspecting along the border or in any other way assist Ontario beekeepers and inspectors.

Mr. James Armstrong, who is so well known to all Ontario beekeepers, was on the job every minute. In one of his intensely practical talks on the subject of successful wintering, he again sowed seed which fell on fertile soil, judging by the questions he was asked to answer throughout the course of his address.

Mr. Edwin Ewel, who is in charge of the organization work for Michigan beekeepers, stated that the success of the six weeks' old St. Clair County Association was assured. He now has over thirty counties organized and hopes in a short time to have all the rest follow suit.

After a review was given of the methods of carrying on field demonstrations in Western Ontario, by Stanley Rumford, the convention adjourned.

A banquet was given at 6.30 p.m. in the Chamber of Commerce, Port Huron, where a bounteous repast was enjoyed by all. After dinner a programme of music and speeches was carried out, there not being a dull moment throughout. Why should it be otherwise, with our jovial toast master, John Farrell, more jolly and more jovial than ever? That fraternity which should exist among all beekeepers, one of the grand principles of which is brotherly love, was especially in evidence during this banquet. The general sentiment of the speakers was that now was the time to encourage fraternity among the border Associations, and so lay a foundation for an international Association of Beekeepers, with limitless possibilities for the beekeeping brotherhood in America.

Should Beekeepers Be Licensed?

EDITOR, BEEKEEPER,

Dear Sir,—I have read with much interest the article, Should Beekeepers be Licensed? the one by Mr. John Moore, Strathroy, in November issue, and the one signed W. J. S., in the December issue. I think that every beekeeper would approve of such a method if it could only be brought to the notice of all beekeepers, as it is protection we want to bring beekeeping to its highest standard of proficiency. I do not say but what one person has as much right to keep bees as another, but there should be some protection. For instance, no person should be allowed to buy bees and move them close to another bee yard without a guarantee of health or inspector's certificate; but it is done and always will be, until such protection is secured; and I think that if all beekeepers were licensed such protection could be secured for one and all.

E. T.

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Old-Style Baskets Permitted

An order has been passed by Mr. J. H. Grisdale, Acting Deputy Minister of Agriculture, at Ottawa, granting permission to fruit growers until the 31st of December, 1919, to use eleven and six-quart wood veneer fruit baskets of the following dimensions:

"Five and three-fourths inches deep perpendicularly, eighteen and three-fourths inches in length, and eight inches in width at the top of the basket, sixteen and three-fourths inches in length, and six and seven-eighths inches in width at the bottom of the basket; and

"Four and one-half inches deep perpendicularly, fifteen and three-eighths inches in length, and seven inches in width at the top of the basket, thirteen and one-half inches in length, and five and seven-eighths inches in width at the bottom of the basket:

"All measurements to be as nearly exact as practicable and to be inside of the veneer proper and not to include the top band."

The amendments to the Inspection and Sale Act, approved at the convention of fruit growers last March, permitted the use of the old style baskets only until June 1st, 1919, and prohibited the manufacture of the new style baskets after that date. In other words, manufacturers were obliged to make packages of the old size until June 1st, and after that date could not dispose of them. The foregoing order extends the period during which the old style packages may be used. It is probable that there are sufficient of these now manufactured to take care of next year's crop.

I am very much pleased with The Canadian Horticulturist and find in it many helpful ideas.—A. E. Rowlinson, 854 Ossington Ave., Toronto.

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Commercial and Stenographic Department under the direction of a trained Accountant, teaching the most modern of accepted business usages. A SCHOLARSHIP IN AGRICULTURE is one of the many valuable scholarships awarded.

Write for calendar, stating course in which you are interested. Enter at any time.

E. N. BAKER, M.A., D.D.,
Principal.

THE BEEKEEPER'S DIRECTORY

The following beekeepers will be able to supply Bees and Queens in any quantity for the season of 1919. Order Early.

W. R. STIRLING,
Ridgetown, Ontario.
Breeder of fine Italian Queens.

E. E. MOTT,
Glenwood, Michigan, U.S.A.
Northern bred Italians, E.F.B. resisting.

L. PARKER,
R.F.D. No. 2, Benson, N.C., U.S.A.
Dr. Miller's Strain of Italian Queens.

EASTERN LABEL CO.,
Clintonville, Conn., U.S.A.
Attractive Honey Labels. Catalogue Free.

WM. BEUGLASS,
R. R. No. 3, Bright, Ontario.
Full Colonies of Bees, Spring, 1919.

J. F. DIEMER,
Liberty, Mo.
3 Banded Italian Queens.

JOHN M. DAVIS,
Springhill, Tenn.
Breeder of three band Italian Queens.

F. W. JONES & SON,
Bedford, Quebec.
Choice Italian Queens. Italian Bees in Pound Packages.

RUMFORD & FRETZ,
Forest, Ontario.
Choice three band Italian Queens.

THE ONTARIO BEEKEEPERS SUPPLY CO.

Write us as to your requirements and we will be pleased to give quotations.
24 Melville St. Guelph, Ont. Phone 1464.

BEE SUPPLIES

of every description.

Root goods made in Canada, Beeswax made into foundation. Ask for prices on honey and wax. Canadian catalogue on request.

The Canadian Bee Supply and Honey Co., Ltd.
73 JARVIS ST. - TORONTO, ONT.

Help Wanted

Will give experience and fair wage to active young man not afraid to work for help in large, well equipped set of apiaries for season starting in April.

State present occupation, weight, height, age and beekeeping experience, if any.

MORLEY PETTIT

The Pettit Apiaries - Georgetown, Ont.

What Is a Fair Price?

J. A. Grant, Markets Commissioner, Calgary

What is a fair price? is also a contentious question. It is one where a remedy for existing conditions is needed. Signs that the remedy is at hand are not wanting for we see springing up everywhere "Serve yourself," "Groceriterias" and "Cash and Carry" stores. Today the customers that pay cash and carry their goods home, are charged as much for them as the credit customer who gets the goods delivered to his back door. Besides, this customer if he defaults payments, and all defaulters are credit customers first, creates a loss to the merchant. That loss, the merchants make good out of the cash buyers. It looks as if cash and carry stores and serve yourself institutions have come to stay. Customers should be made to pay for the service they get, instead of robbing one set of customers to pay for the other. A fair price is based on paying for value received.

Organization will rapidly put trade on a different basis. It will standardize and classify the necessities of life as well as control distribution. Its aim is in that

direction. It will eliminate unnecessary intermediate speculators, prevent overcrowded markets and regulate the growing of crops from the selling end. Its success will solve many market problems and secure for labor bestowed on production, sufficient reward for the work and labor entailed in its production.

Bees Wanted

Full colonies free of foul brood for spring delivery. Quantities of ten to one hundred. Give full particulars in answering.

S. D. DUNN

184 Westminster Ave., Toronto.

No Reduction Possible In High Grade Fertilizers This Season



"Making two blades grow where only one grew before"

They are controlled absolutely by cost of materials and labor. That's why we say order your

Gunns

"Shur-Gain"
FERTILIZERS

right away. Waiting for a possible price reduction can only mean disappointment and may endanger your delivery because the shipping situation is still very complicated. If you want top notch fertility and a handsome, easily sold crop this year put your faith in Gunns "Shur-Gain" Fertilizers. Write today for prices.

GUNNS, LIMITED

West Toronto

Canada Food Board License No. Packers 13-43.



Queens - Italian - Queens

Bred in Ontario from Doolittle Stock

1919 - PRICE LIST - 1919

Delivery Beginning June 15th.

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

Send us list of your requirements EARLY so as to insure date of delivery. We are booking orders now.

RUMFORD & FRETZ
FOREST - - - - - ONTARIO



HONEY CONTAINERS

BE PREPARED

LAST year the prospects for a honey crop did not look very good, until the season was well advanced, when suddenly favorable weather produced an unexpected flow, and many beekeepers were without pails. Although we endeavor to keep ample stock at all times, the sudden heavy demand depleted our stock quickly, and the beekeeper blamed us for his not having pails on hand.

THEREFORE, BE PREPARED

and have at least a reasonable supply on hand by ordering early when we can make shipment.

Our illustrated circular and price-list is being sent out. If you do not receive yours, drop us a card.

MACDONALD MFG. CO., Limited

Spadina Ave. and Richmond St.

TORONTO - - - CANADA

HONEY CANS

We are prepared to quote on full line of Honey Containers.

When writing for prices state quantity required of each size.

American Can Co.
HAMILTON, ONT.

FEED THE LAND

By using the best Manure and get

GOOD CROPS

For Nurseries, Fruit Growers and Gardeners.

Sure Growth Compost

(A Composition of all Natural Manures)

Makes poor land fertile and keeps fertile land most productive.

Supplied by

S. W. Marchment

133 Victoria St., TORONTO

Telephones: Main 2841; Residence, Park. 951

Say you saw this ad. in The Canadian Horticulturist.

TREES & SHRUBS BROWN BROTHERS CO. NURSERYMEN LIMITED BROWNS NURSERIES, ONT.

PRACTICAL QUEEN REARING

is the title of the new bee book, cloth bound, 110 pages, finely illustrated, which has just been written by Mr. Frank C. Pellett, former State Apiarist of Iowa and well known bee-keeping writer.

For many years there has been a demand for a book which would give in concise form the many different methods of queen rearing, as the Doolittle, Pratt, Alley, Miller, Dines and others with variations as practised by the large queen breeders.

You have this in this new bee book.

Send for your copy now and learn for yourself how to rear queens from your best colonies to advantage. Variations of plans may be of great value also to queen breeders.

Price postpaid, \$1.00, or with the American Bee Journal, one year only, \$1.75.

(Canadian postage 15 cents extra.)

AMERICAN BEE JOURNAL
HAMILTON, ILLINOIS



SMALL FRUITS

Raspberries, Gooseberries, Red Currants, Black Currants, Strawberries, Rhubarb Roots, Asparagus Roots, etc., etc.

WM. FLEMING
NURSERYMAN
Owen Sound - Ontario



Make a Bee-Line

for these bargains

Special large discount for February and March on Hives, Supers and Frames. Write for prices.

A. T. HAINES
Cheltenham - Ontario

More Beeswax Wanted

We will pay the Highest Price.
Write, stating quantity and quality.

F. W. JONES & SON
"JONES-WEED" Process Comb Foundation
Beekeepers' Supplies
BEDFORD - QUE.

What Increased Rates Mean

THE following table, showing how the increase in express rates, asked for by the express companies, would affect the fruit industry if granted, was laid before the Dominion Board of Railway Commissioners by representatives of the fruit growers at the session of the Board held in Toronto January 13.

	From Winona.		From Chatham.		From Leamington.	
	Prs.	Pro.	Prs.	Pro.	Prs.	Pro.
Windsor	80	120	40	75	30	60
London	50	75	40	75	50	90
Toronto	40	75	70	105	80	120
North Bay ..	100	135	120	165	120	180
Peterboro ...	60	90	90	135	90	135
Kingston	70	120	90	150	90	165
Ottawa	80	135	100	180	100	195
Montreal	80	165	100	210	100	210
St. John	175	315	185	345	185	360
Halifax	175	360	185	390	185	400
Winnipeg	265	505	290	540	290	540

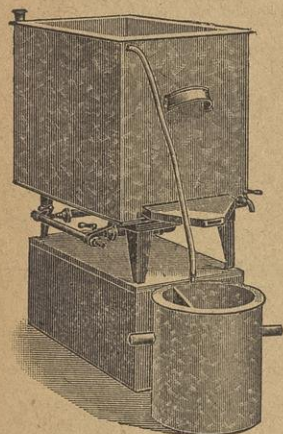
British Columbia.

	From Kelowna.		From Victoria.		From Vernon.	
	Prs.	Pro.	Prs.	Pro.	Prs.	Pro.
Calgary	200	270	250	385	200	225
Edmonton ..	210	360	275	475	210	295
Saskatoon ...	250	475	280	585	250	430
Regina	250	475	280	570	250	430
Brandon	255	570	290	655	255	520
Winnipeg	265	600	290	685	265	570

Dr. Rimer, of Vernon, B.C., grew a McIntosh apple last year that weighed 17½ ounces. Its measurements in circumference were 14 x 13¾ inches. It was well colored and was grown on an eight year old tree. Dr. Rimer obtained as high as fifteen orchard boxes of fruit from one eight-year-old tree.

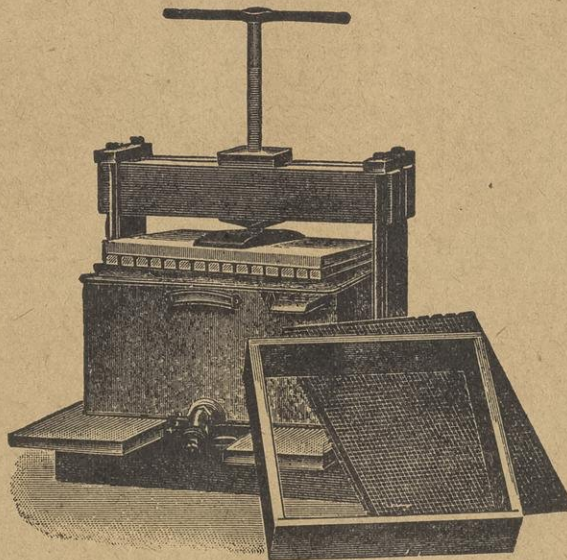
I am pleased with the contents of The Canadian Horticulturist. It is an instructor to most men in any pursuit in Horticulture.
—J. B. Williston, Bay Du Vin, N.B.

SAVES HONEY SAVES WAX SAVES MONEY



The Armstrong Cappings Melter.

Two machines that every up-to-date beekeeper should possess. Beeswax wanted for cash or in exchange, or we will make it into Comb Foundation by Weed Patent Process for you. Early cash order discounts and prompt service NOW.



The Sibbald Wax Press.

The Ham & Nott Company, Limited
Brantford - - - Ont.



Big Triple Value Collection

25 Flowers and Plants
for \$1.00

EVERBLOOMING BUTTERFLY BUSH, the best novelty of the season. Hardy shrub, blooms from June to frost. We have nice little plants in pots. Our big Peace Year collection contains:—

One Butterfly bush described above; New Salvia America, dwarf free bloomer; Asparagus Fern; Asparagus Sprengeri; Little Gem Calla; Strawberry Geranium; Begonia; Achyranthus; Coleus, trailing Queen; German Ivy; Artillery plant; Fern; Wandering Jew; (tricolor) Gladiolus America; 10 Gladioli, fine mixed and a liberal packet of Spencer's Orchid Flowered Sweetpeas, all postpaid for \$1.00.

GLADIOLI.

100 fine mixed Gladioli, by express, \$1.00, if by mail add 40c for postage.
All finest perennials, 10c each.
Peonies, white, red or pink, 25c each.
Lovely Iris, 10 varieties named, express \$1.00.
Raspberry Plants, Marlboro, 20 for \$1.00.

J. H. Callender

WELLER ST. - PETERBORO.
The Flower Bargain Man.

Increase In Freight Rates

G. E. McIntosh, Dominion Fruit Division,
Ottawa.

The express companies in Canada have recently made application to the Board of Railway Commissioners for permission to increase their rates. The proposed increase is of general application, but as it is the intention to cancel all commodity tariffs, the fruit industry in both eastern and western Canada will be one of the interests most seriously affected, as shown by the following schedule:

	From Group No. 1.		From Group No. 2.		From Group No. 3.	
	Pres.	Pro.	Pres.	Pro.	Pres.	Pro.
Windsor	80	120	40	75	30	60
London	50	75	40	75	50	90
Toronto	40	75	70	105	80	120
North Bay ..	100	135	120	165	120	180
Peterboro ...	60	90	90	135	90	135
Kingston	70	120	90	150	90	165
Ottawa	80	135	100	180	100	195
Montreal	80	165	100	210	100	210
St. John	175	315	185	345	185	360
Halifax	175	360	185	390	185	400
Winnipeg	265	505	290	540	290	540

Group No. 1 includes all producing districts in the Niagara Peninsula; Group No. 2, Chatham district; Group No. 3, the district comprising Leamington, Essex, Kingsville, Sarnia, Forest, etc.

You will note the increase in some instances is over 100 per cent. Just what effect this will have upon the fruit industry cannot be determined with any degree of exactness. My object is to obtain an expression of opinion from those directly interested. In the meantime the Board of Railway Commissioners have been advised that in all probability representatives of the fruit industry will desire to be heard when the case comes up. Fruit growers are therefore requested to give the matter careful consideration, and if they think objections should be made before the Board I would be glad if they would send me as fully as possible their reasons, along with any specific data they may be able to supply.

CANADA PAINT

INSECTICIDE



Spray, If You Want Good Crops.

C.P. Dry Powdered ARSENATE OF LEAD contains from 31 to 33 per cent Arsenic Oxide, and does the work of twice the quantity of the paste material.

It kills the orchard pests every time—destroys all leaf-eating insects—is easy to use—stays in suspension longer—is more economical to ship—and keeps its strength indefinitely.


PARIS GREEN for Potato bugs—C.P. Arsenate of Lime (KALCIKILL)—C.P. BUG-O-CIDE are Insecticides that give results every time.

Ask your dealer for the C.P. brands and write us for our Spraying Booklet.

THE CANADA PAINT CO., Limited,
Makers of the famous "CANADA PAINT"
and "ELEPHANT BRAND" White Lead.

572 William Street, Montreal.
112 Sutherland Avenue, Winnipeg.

16



We Build
GREENHOUSES
and Glass Enclosures

For over half a
Century it has
been our Busi-
ness.

Send for Catalog

Lord & Burnham Co.
Limited, of Canada
TORONTO MONTREAL
Royal Bank Bldg. Transportation Bldg.

DOUGLAS GARDENS

Catalogue for 1919

Contains a complete list of a number of new plants that will interest customers this season.

A fine assortment of Paeonies. Perennial plants of all kinds. Shrubs and roses.

BEDDING PLANTS

Standard Fuchsias from 2 to 3 feet. Carnations of the finest varieties. Heliotrope, Cowslips, Salvia, Salpiglossis, Snapdragons, Pentstemon, Lobelias, Pansies, Ageratum, Verbenas, Asters and Stocks.

ERICK ERICKSON
OAKVILLE - ONTARIO

Northern Ontario

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

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

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

H. A. MACDONELL,
Director of Colonization,
Parliament Bldgs., TORONTO, CAN.

G. H. FERGUSON,
Minister of Lands, Forests and Mines.

Top Dress with Nitrate

Plenty of Nitrate in Chile

The total amount of Nitrate of Soda in the vast Chilean Deposits is

720,000,000 Tons

At the present rate of the world's consumption, these deposits will supply Nitrate for

300 Years

Shipping conditions are rapidly improving. American farmers should learn the FACTS about the Nitrate Supply. Write for information.

WM. S. MYERS

Chilean Nitrate Committee 25 Madison Ave., New York

POULTRY YARD

Running the Incubator

J. R. D., Wellington County

WE have now been running our machine for three years. The first two years, as we did not have a breeding pen of our own, we purchased all of our hatching eggs. We got them from a reliable poultry man, paid him a premium for eggs from his best pens, and had hatches of over 80 per cent. We had had no previous experience in running an incubator, and so were well pleased with our first results. Our success we attribute to following implicitly, the directions of the manufacturer and also to buying a good machine. A poor machine, particularly for early hatches, is dear at any price.

Next to keeping an even temperature it is important that the eggs be turned regularly. The first week we turn the eggs twice a day, turning each egg with the tip of the finger and place the trays right back in the machine. Then up to the 18th day we allow the eggs to remain out in the morning until they are cool to the lips. And perhaps I should mention that, more important even than the work of incubation, are good strong germs in the eggs themselves. We insist on eggs from breeding pens of year-old hens. If pullets are of the bred-to-lay birds, they will overwork themselves during the winter and the germs would lack in vigor in the spring.

We leave the chickens in the incubator for 36 hours after the hatch is complete, opening the door slightly for ventilation. If the chicks crowd to the front with their mouths open, it is an indication that they are not getting enough air. If they crowd to the back of the machine, they are getting too much.

Chicks Are Healthy.

There is a general belief that artificially hatched and brooded chickens are more subject to disease than those hatched under a hen. In our first year we had heavy losses ourselves, but now we know how to avoid them. It is a case of thorough disinfection and proper feeding. Before placing the eggs in the incubator, thoroughly scrub every square inch of the interior with a solution of zenoleum. This scrubbing is given before every run of the incubator. Before the chickens are moved into a brooder house, the floors are first cleaned thoroughly and then scrubbed out with a solution of zenoleum. The walls are sprayed with zenoleum, and even the base of the brooder stove gets a bath. The chaff on the floor must be of the cleanest, and we prefer baled shavings for the small chicks. Any must or dust may be a cause of disease.

Dry Feeding

Michael K. Boyer.

Of late years dry feeding is becoming popular, although it is not a new idea in the poultry ranks. Fully 20 years ago the matter was agitated and adopted by some poultrymen, but as a general thing it was not favorably received.

The arguments used in favor of the dry mash and whole grain diet are, first, after



THE COLLINS CYCLE HATCHERS

THE 50 Egg Incubators are built scientifically. They hatch close to nature's way. Use one gallon of oil for entire hatch. Simple to operate. Full directions with each machine. Cycle Hatchers \$8.00, Brooder Hatchers \$10.00.

Write for catalogue to

COLLINS MFG. CO., Dept. C, 415 Symington Ave., TORONTO, ONT.

INCREASE YOUR EGG YIELD BY FEEDING

Predigest Poultry Feeds

Predigest is an entirely new poultry feed, containing all the qualities which produce the most satisfactory results at a cost much lower than grain.

The predigested meat scrap in this food is the same to poultry as a bug or worm, very palatable indeed and nourishing, supplying the necessary elements of blood muscle, bone and fat to keep the body in best condition for egg producing.

Predigest Poultry Mash is an ideal laying mash, and if fed according to directions makes the best early morning feed for your laying hens.

Predigest Granulated Poultry Food should be used as the evening meal, as a scratch feed or fed in hoppers similar to grain.

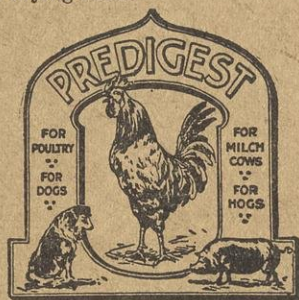
Both the mash and granulated food dissolve quickly in the bird's crop, making it more easily digested than grain.

Ask your feedman for "Predigest." Accept no substitute. If he does not carry it, send us his name and we will arrange to have him stock it.

"Predigest—highest in food value, lowest in cost."

**PREDIGEST FOOD COMPANY
LIMITED**

TORONTO - CANADA



Our Trade Mark is the Seal of Quality.

WISCONSIN INCUBATOR AND BROODER BOTH FOR \$17.50

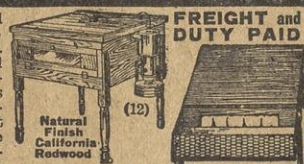
**130 Egg
INCUBATOR
130 Chick Brooder
BOTH FOR
\$17.50 Freight
and Duty
PAID**

If ordered together we send both machines for only \$17.50 and we pay all freight and duty charges to any R. R. station in Canada. We have branch warehouses in Winnipeg, Man. and Toronto, Ont. Orders shipped from nearest warehouse to your R. R. station. Hot water, double walls, dead air space between, double glass doors, copper tanks and boilers, self-regulating. Nursery under egg tray. Especially adapted to Canadian climate. Incubator and Brooder shipped complete with thermometers, lamps, egg testers—ready to use when you get them. Ten year guarantee—30 days trial. Incubators finished in natural colors showing the high grade California Redwood lumber used—not painted to cover inferior material. If you will compare our machines with others, we feel sure of your order. Don't buy until you do this—you'll save money—it pays to investigate before you buy. Remember our price of \$17.50 is for both Incubator and Brooder and covers freight and duty charges. Send for FREE catalog today, or send in your order and save time.

WISCONSIN INCUBATOR CO.

Box 242

RACINE, WISCONSIN, U. S. A.



Write Us Today—Don't Delay

becoming used to it, fowls will prefer the ground grain dry to that which is either cooked or steamed; second, it is a labor-saving method, better fertility to the eggs.

At first the fowls will not take kindly to the dry feed. As meat scrap is mixed with it, they will pick out all such, then probably the cornmeal, or some may prefer the bran, but all of it is seldom consumed until the fowls become accustomed to it. Gradually they will eat more and more of it, finally cleaning the trough. Another benefit is that after eating a few mouthfuls they will repair to the drinking vessel and secure several swallows of water, then back again to the trough, and so on during the entire meal. It is claimed that more water is consumed by dry-fed fowls, and as water enters so largely in the composition of the egg, increased egg production should be the result.

The method is a great labor-saver. It is possible to both feed and water the birds in the same time it takes to prepare the wet mash and feed it.

I prefer feeding the dry mash in troughs instead of hoppers, unless a hopper is used that will be proof against mice and rats. Such a hopper should be constructed of galvanized iron, and made to close at night and open in the morning. If large enough to hold sufficient material for several days' feeding, still more labor can be saved.

Three pens of Barred Plymouth Rock hens were fed the same rations as three lots of white Leghorn hens for 32 weeks in a feeding trial conducted at the Ohio Experiment Station. Two hundred and eighty-seven hens were used in the test. The Barred Plymouth Rocks required 52 per cent. more feed per dozen eggs than the Leghorns during this test period.

SKINNER SYSTEM OF IRRIGATION

Control complete. Prevents drought loss. Reduces labor bills. Increases profit. Special Portable Line for \$15.75. Send for new Bulletin.

The Skinner Irrigation Co.
217 Water Street Troy, Ohio.

The Fruit & Produce Market

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

H. J. ASH

44-46 Church St. - Toronto, Ont.

CONSIGNMENTS OF FRUIT & VEGETABLES SOLICITED

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

DAWSON - ELLIOTT CO.

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

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

HERBERT PETERS

88 Front St. E., Toronto, Ont.

See advertisement on page 54.

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

PEERLESS PERFECTION

Made of Open Hearth Steel Fence Wire—tough, elastic, springy—will not break or snap under shock or atmospheric changes. Our method of galvanizing prevents rust. Will not flake, chip or peel off. The joints are securely held with the "Peerless Lock" and can be erected on the most uneven ground without buckling, snapping or kinking. The heavy stay wires prevent sagging and require only half as many posts as other fences. Keeps all animals out, confines the smallest chicks, they can't get through.

Build a greater and a better Canada. Our boys coming home will demand better homes, better farms and better fencing on the farm—Poultry need it too.

PEERLESS POULTRY FENCING

A real fence, not netting. Strongly made and closely spaced, a complete barrier against animals of any kind. Keeps the small chicks confined. They can't get through. Does all and more than is required of a poultry fence.

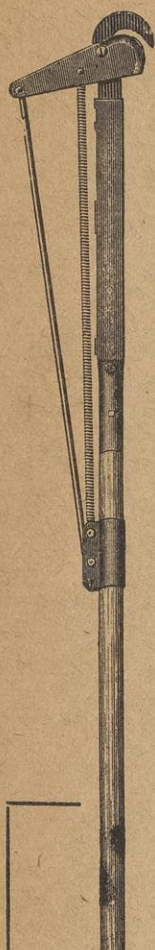
The heavy, hard steel top and bottom wires with intermediate laterals will hold a carelessly backed wagon or unruly animal and immediately spring back into shape.

The wires are held together at each intersection by the Peerless Lock.

Send for Catalog and address of nearest agent. We make a complete line of farm and ornamental fencing. We now have agents nearly everywhere, but will appoint others in all unassigned territory. Write for catalog today.

THE BANWELL-HOXIE WIRE FENCE CO., LTD.
Winnipeg, Man. Hamilton, Ont.





Taylor-Forbes Tree Pruners

Made on the correct principles, of superior materials and priced right because they are made in Canada with Sheffield steel blades.

Sold by
Hardware Dealers
Everywhere

If you can't find just exactly what you want in a Tree Pruner, write for our catalog

Taylor-Forbes Co.
LIMITED
Guelph, Canada

Vegetable Growers Meet in Annual Convention

Co-operation Urged Amongst Growers—Resolution Passed Favors Grading of Potatoes—Other Important Questions Discussed

ONE of the most successful conventions in the fourteen years history of the Ontario Vegetable Growers' Association was that held on January 22 in the Masonic Temple, Toronto. The most important question before the meeting, and the one that provoked the liveliest discussion, was the proposed suggestion to have potatoes graded.

President's Address.

In his opening address President J. J. Davis of London spoke of the keen competi-

tion vegetable growers had met with during the past two years when everybody "from the Minister of State down to the school boys and girls were exhorted to grow vegetables." The growers, he said, had accepted the situation in the right spirit, and now that the fear of food shortage had been removed this competition to a great extent would be eliminated.

Mr. Davis was optimistic for the future, and stated that the life of a vegetable grower was a long period of reconstruction and readaptation, and the man who could most readily adapt himself to the changing seasons and changing conditions of growing and marketing and changing methods of combatting insect and fungus diseases is the one who is most likely to make a success as a vegetable grower. He also thought that invaluable assistance might be rendered by the more experienced growers to any returned soldiers who might contemplate taking up vegetable growing.

Secretary's Report.

The report of the secretary-treasurer, J. Lockie Wilson, showed a very satisfactory year for the Association. The crop competitions were quite up to the standard and the quality of the exhibits of the prize winners shown at the Canadian National, Central Canada and Western Fairs was never surpassed. It was suggested that a new district be formed in the Niagara Peninsula. Prospects for the incoming season, he thought, should be good. A balance on hand of \$659.15 was shown by the financial statement.

Vegetable Specialist's Report.

Mr. A. H. McLennan, in opening his remarks, paid a very fine tribute to the late Dan Johnson, who, he said, had been a good friend to the vegetable growers. The vegetable survey has been finished this year, but has not been fully tabulated yet. The work has shown that growers do not make the use of experimental work they might. A fuller report of Mr. McLennan's report will appear in another issue of the Canadian Horticulturist.

Mr. F. F. Reeves, of Humber Bay, spoke of the survey of Ontario vegetable growing. This survey was taken for the benefit of commercial growers alone. The number of growers visited was 1,692.

Grading of Potatoes.

Mr. Henry Broughton, of Sarnia, speaking on the standardization or grading of potatoes, said that the grading question was a vexed point with vegetable growers. He thought Ontario needed a standard potato for commercial purposes. "By grading our potatoes," he said, "we can establish our (Continued on page 48.)

Gladiolus, Paeonies and Phlox

List ready February 15th

H. P. Van Wagner - R.R. No. 5
HAMILTON, ONT.

PERRY'S SEEDS

Alpine and perennials, unique collection; many new varieties unobtainable from any other source.

Hardy and adapted for Canadian climate.

HARDY PLANT FARM, ENFIELD, ENGLAND

Deafness



Perfect hearing is now being restored in every condition of deafness or defective hearing from causes such as Catarrhal Deafness, Relaxed or Sunken Drums, Thickened Drums, Roaring and Hissing Sounds, Perforated, Wholly or Partially Destroyed Drums, Discharge from Ears, etc.

Wilson Common-Sense Ear Drums

"Little Wireless Phones for the Ears" require no medicine but effectively replace what is lacking or defective in the natural ear drums. They are simple devices, which the wearer easily fits into the ears where they are invisible. Soft, safe and comfortable. Write today for our 168 page FREE book on DEAFNESS, giving you full particulars and testimonials.

WILSON EAR DRUM CO., Incorporated
561 Inter-Southern Bldg. LOUISVILLE, KY.

Spraying for Dollars with a

Spramotor
It isn't a SPRAMOTOR unless we made it

IF you protect your orchards and row crops from disease and pests, you will realize a quick reward, for they'll return you big thanks that very season, in greatly increased crops.

You take no chance when buying a Spramotor. This is the machine that met and beat the world at Government Spraying Contests and Expositions,

carrying off over a hundred Gold Medals and First Awards. Why be content with half crops, quarter crops or less, when with a Spramotor you can double and treble the yield? We make outfits of all kinds, sizes and uses. Write for catalogue and free booklet on "Crop Diseases."

SPRAMOTOR WORKS

5003 King Street - - London, Canada

IMPORTANT

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



FOR SPRING 1919

We have a fine assortment of Apple, Pear, Plum, Cherry, Peach and Ornamental Trees, Grape

Vines, Shrubs, Roses, Hedge and Small Fruit Plants, all well assorted.

Send for Catalogue. We deal direct. No Agents. Over 39 years at it.

A. G. HULL & SON

Central Nurseries
ST. CATHARINES - - ONTARIO

RENNIE'S SEEDS

A Billion and a Half Worth of Food Required

THE greater part of Europe is on the verge of starvation. Over twenty million tons of food must be sent overseas. This makes the necessity for increasing our home-grown output of food products greater than ever—people must eat more vegetables.

Every horticulturist should exercise careful judgment to insure that he sows seeds, which have been proven of the highest quality by germination. Our Trial Grounds at Long Branch are operated for the purpose of safeguarding our customers. All seeds that do not come up to the high standard of Rennie Quality are at once discarded.

Specials for the Hothouse or Hotbed to Make Sturdy, Thrifty Plants for Transplanting

VEGETABLES

CABBAGE.

Copenhagen Market, $\frac{1}{4}$ lb., \$4.50; oz., \$1.60; pkt., 15c.
Early Jersey Wakefield Improved, $\frac{1}{4}$ lb., \$3.00; oz., \$1.00; pkt., 10c.

CELERY.

Paris Golden Yellow Extra Select (French), $\frac{1}{4}$ lb., \$6.00; oz., \$2.00; pkt., 25c.

EGG PLANT.

Rennie's Improved New York Purple.

ONION.

Early Yellow Danvers, $\frac{1}{4}$ lb., 95c; oz., 30c; pkt., 10c.

CUCUMBER.

Davis Perfect, $\frac{1}{4}$ lb., 75c; oz., 25c; pkt., 10c.

LETTUCE.

Grand Rapids (forcing), $\frac{1}{4}$ lb., \$1.00; oz., 35c; pkt., 10c.

TOMATO.

Bonny Best (Original), $\frac{1}{4}$ lb., \$1.75; oz., 60c; pkt., 10c.
New Globe (Livingston's), $\frac{1}{4}$ lb., \$2.50; oz., 75c; pkt., 10c.
Holmes Supreme (Forcing), oz., \$1.00; $\frac{1}{2}$ oz., 60c; pkt., 15c.

CAULIFLOWER.

World's Best Snowball (Gilt Edge), oz., \$8.00; $\frac{1}{4}$ oz., \$2.50; pkt., 25c.

FLOWERS

STOCKS.

Rennie's XXX Large Flowering Globe, pkt., 20c.

HOLLYHOCK.

Rennie's XXX Mammoth Flowering Mixture, pkt., 20c.

PANSY.

Rennie's XXX Exhibition Mixture, $\frac{1}{8}$ oz., \$1.25; pkt., 25c.

ASTERMUM.

Rennie's Finest Mixed, pkt., 15c.

When buying from dealers insist on Rennie's Seeds.

THE **RENNIE** COMPANY
WILLIAM TORONTO LIMITED
ALSO AT MONTREAL. WINNIPEG. VANCOUVER.

To all customers sending in orders amounting to \$1.00 or over, we will send FREE one of our Vegetable Garden Charts. It will last you for years. Every gardener should have one.



Money Makers for Gardeners

GAINS WORTH WHILE!

Increases reported in Fertilizer Experiments :

% Gain in Yield from fertilizer and manure over manure alone.	Crop.	FERTILIZER DATA.				
		Quantity Manure Alone.	Yield per Acre.	Manure and Fertilizer.	Yield Per Acre.	Station.
31.16 %	Celery	Per Acre 30 Tons	Tons. Lbs. 22—1056	Per Acre 15 T. manure 920 lbs. Fer.	Tons. Lbs. 29—1096	Dom. Exp. Farm.
29.00 %	Onions	30 Tons	14—1480	15 T. manure 920 lbs. Fer.	19—37	"
12.3 %	Tomatoes	30 Tons	16—610	15 T. manure 895 lbs. Fer.	18—636 bus..	"
34.3 %	Potatoes	15 Tons	131.61 bus.	15 T. manure 583 lbs. Fer.	200.33	"
46.1 %	Potatoes	7½ Tons	94.36 bus.	7½ T. manure 583 lbs. Fer.	bus. 175.33	"
14.17 %	Tomatoes	16 Tons	9680 lbs.	16 T. manure 610 lbs. Fer.	lbs. 10910	Ohio Exp. Station.
28.1 %	Sweet Corn	16 Tons	767 dozen	16 T. manure 610 lbs. Fer.	983 dozen	"
22.0 %	Cabbage	16 Tons	18,000 lbs.	16 T. manure 610 lbs. Fer.	21,960 lbs.	"

A Salem (Ont.) farmer, by fertilizing his 1918 turnip field, had not only a large crop of fine quality, but the earliest in the district, and sold at the high prices then obtainable.

Writes an Ontario farmer of his fertilized tomato crop. "There was a big difference in the plant growth, the amount of fruit and the stage of ripening."

Volumes of figures attest the value of fertilizers in growing truck crops.

Increase and improve your 1919 yield by balancing the manure with suitable high grade fertilizer.

Write for Free Bulletins.

The Soil and Crop Improvement Bureau
of the Canadian Fertilizer Association

1110 TEMPLE BUILDING - - - - - TORONTO

Cut out this advertisement for future reference



(Continued from page 46.)

home products. We can grow as good potatoes as any other place, and if we had a standard potato we would increase our markets." It would also protect the honest grower, he thought, from the man who is careless and indifferent in the cultivation of his potatoes. Mr. Broughton would have no more than two grades, No. 1 and No. 2, the first not less than 1½ inches with 25 per cent. of the run not less than that, and the second 1½ inches, with 20 per cent. not less than that. This evoked a somewhat lengthy discussion amongst those present. Some members thought that a standard potato would benefit both grower and consumer. Others thought that the land of many growers would not produce a potato of the standard grade, and such an act might force them practically out of the market.

Mr. C. W. Waid, of East Lansing, Mich., explained at some length the results of potato grading in the United States. He cited as examples of successful grading the cases of oranges, prunes, etc., and pointed out that where the standardization of products has been adopted it has always resulted in benefit to the growers. What they are now trying to do is to have every dealer licensed. We want, he said, to have a universal grade that will be recognised.

Resolution Adopted.

After much discussion of the subject of potato grading the following resolution was unanimously carried:—

Resolved, that this organisation will go on record as favoring an act establishing the standards of grades of potatoes. We are, however, opposed to the compulsory enforcement of the proposed act when such enforcement will work hardship to both grower and consumer. Before final action is taken the committee recommend that an exception be made from the act in the case of new potatoes marketed in the months of July and August. We as a committee recommend that a permanent committee be appointed to wait upon the Department of Agriculture and consider with them the various phases of the proposed act before its enforcement.

Co-operation Amongst Growers.

The benefits of co-operation to the vegetable growers were ably set forth by Mr. J. H. Smith in tracing the history of Lambton Growers' Co-operative Association of Sarnia, of which he is president. Before they got together he said when each grower marketed his own product the result of the season's business for 1909 was so bad that many growers seriously considered the question of ceasing to grow vegetables because of the poor financial results obtained. In the spring of 1910 some thirty-five to

(Continued on page 50.)

Paint Without Oil

Remarkable Discovery That Cuts Down the
Cost of Paint Seventy-Five Per Cent.

A Free Trial Package is Mailed to Everyone
Who Writes

A. L. Rice, a prominent manufacturer of Adams, N.Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 37 North Street, Adams, N.Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

FRUIT GROWERS

Here is the remedy

Secure a good crop of clean
fruit by using

ACCO SPRAY POWDER



*It is the most effective remedy
for Codling Moth, Apple Mag-
got, Cherry Fruit Flies, Pear
Slugs—all leaf eating insects.
Will not harm the tenderest
foliage.*



READ WHAT OTHERS SAY ABOUT IT

Toronto, Sept. 23rd, 1918.

The Acco Chemical Co., Ltd.,
23 River St., Toronto, Ont.

Dear Sirs:—

For more than forty years I have been battling with a very large apple tree, which year after year produced no sound fruit, but a continuous pest of worms. By accident a friend recommended me to try your Acco Spray Powder, which I did with most gratifying results. For the first and only season, the tree produced a large crop of St. Lawrence apples, all sound. I wish that all apple growers would try your wonderful remedy for clearing fruit trees of troublesome pests.

I have written you this unsolicited letter in the hope that its great work may be known. One season's trial will prove its value to all fruit growers.

You may make any use you like of my letter, and I will be much pleased if it results in bringing the merits of your Acco Spray Powder to the Farmers and Fruit Growers of the Dominion.

Yours very truly,
(Sgd.) PETER RYAN,
City Registrar.

St. Basils' Fruit and Vegetable Farm,
Toronto, August 15th, 1918.

The Acco Chemical Co., Ltd.,
23 River St., Toronto, Ont.,
Re Acco Spray Powder.

Gentlemen:—

In these times it would naturally seem that every one is predisposed to give a hearty welcome to every real Canadian product, but there is more than that about Acco Spray Powder for it is without doubt the King of Bug Killers. This season is proving with its intense heat and drought the severest kind of test for all kinds of remedies to fight off blights and pests.

But Acco Spray Powder with us here, has stood every test and we wish to take this means of congratulating you on putting on the market such an effective, and at the same time, reasonably priced remedy. If directions are carried out profitable results are bound to follow.

You are perfectly free to make what use you wish of the above as we believe it is but fair to give praise where it is due.

Faithfully yours,
(Sgd.) REV. J. F. PLAYER, C.S.B.,
Acting Bursar

Toronto, Aug. 6th, 1918.

The Acco Chemical Co., Ltd.,
23 River St., Toronto, Ont.

Gentlemen:—

To commend Acco Spray Powder to the public is by no means an illusion. Tested and tried on vegetables, in weathers, and under conditions that would be the most difficult to kill the insects, has been my experience with this material. Acco Spray will destroy anything from the Green Fly to the Potato Bug, and do its work thoroughly, if directions are followed.

I cannot speak too highly of this valuable insect destroyer. Year after year I have been pestered with the Codling Moth, Red Spider and Green Fly, and after two or three applications of this powder the plants exhibited new life.

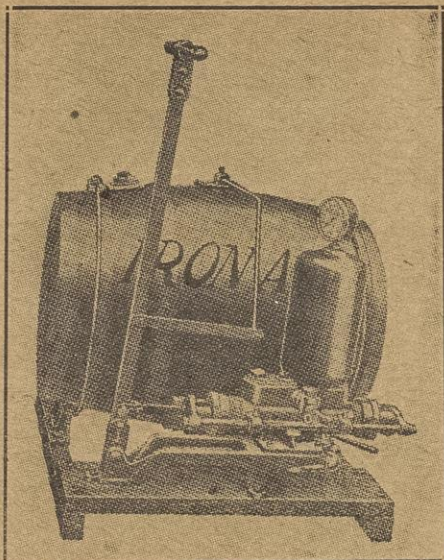
(Sgd.) E. E. GREENWAY.

HAROLD F. RITCHIE & CO., LIMITED

Sales Agents for Canada

10-12-14 McCaul Street - - - - - Toronto, Ont.

Manufactured Solely by Acco Chemical Co., Toronto, Ont.



Don't Run a Hatchery For Bugs and Diseases

Don't be satisfied to take for your share only what luck has saved for you, after the bugs and diseases have had all they want!

Don't let crop pests trim off all your profits just because you do not spray, or because the sprayer you have fails to do a real job.

IRON AGE

Sprayers are built to deliver a heavy pressure that drives a poison-fog into the cracks and folds of plant and leaf. Spraying at high pressure also reduces wastage of solution to a minimum.

The cost of this kind of spraying will be insignificant when compared to the increase in quality and quantity of crops.

Iron Age Barrel Sprayers, furnished with either double or single-action pumps, can be used in any wagon, cart or sled. The reliable, easy-working pump is placed outside the barrel—prevents rusting and makes all parts easy to reach.

Iron Age Traction Sprayers supply the pressure from the wheels, covering four to six rows at a time. An orchard attachment adapts them to orchard and vineyard spraying. Two sizes: 55 and 100 gallons.

These and other IRON AGE goods are made in Canada

The Iron Age line includes Garden Seed Drills, Double and Single Wheel Hoes, Combination Garden Tools, Riding and Walking Cultivators, Potato Planters and Diggers. They are made in the same factory as the Climax Ensilage Cutters, Wilkinson Plows, Wheelbarrows, Drag Scrapers, etc.

Write to-day for booklets

The Bateman-Wilkinson Co., Ltd.

46 Symington Ave.

TORONTO, ONT.



forty growers got together on a co-operative selling basis, placing the selling of their products in the hands of one firm on a commission basis.

Experimental Seed Growing.

Prof. J. W. Crow, of Guelph, and Mr. O. J. Robb, Vineland Station, spoke on the Results of Experiments in Growing Seeds. The former said that some of the strains they are developing have been tested out and given excellent satisfaction. Mr. Robb said they had been growing vegetable seeds for the past four years, to find out if the climate was suitable, if the soil would give a large yield, and what kind of vegetable seed could be grown at a profit, and to ascertain if home-grown seed was equal in quality to that of the seed houses. Samples have been sent out to various growers and given excellent satisfaction.

Owing to lack of time several addresses that were on the programme had to be omitted. These will be given in a later issue of The Canadian Horticulturist, as will other papers that space does not permit of our mentioning here.

Officers Elected.

The following officers were elected for 1919: President, W. S. Eborall, Beamsville; 1st Vice-Pres., Maurice May, Tecumseh; 2nd Vice-Pres., G. H. Poad, London; Secretary-Treasurer, J. Lockie Wilson, Toronto; Executive Committee, W. S. Eborall, M. May, G. H. Poad, J. Lockie Wilson, F. F. Reeves, J. J. Davis, Thos. Delworth.

Directors, Geo. Elvins, Belleville; D. S. Sitter, Sarnia; I. A. Farquharson, Ottawa; C. F. Kitney, Peterboro; Wm. Guthrie, Sarnia; C. W. Dempsey, Stratford; T. K. Aymer, Humber Bay; A. Nolson, Fonthill; J. W. Smith, Sarnia.

What is a Brand Name?

R. C. Abbot, Fruit Commissioner and Inspector, Vancouver, B.C.

WHAT is in a "Brand" name? Shippers who have adopted the use of a registered brand for apples and potatoes appear to have lost sight of what a brand name really means, not only to themselves but to the consuming public. Where a brand name has become known to mean "quality" consumers will invariably ask for that brand and even after the quality of the brand has fallen off the consumer will still take a chance for some time, with the hope that the original quality has been restored. After a time the consumers will become prejudiced against the brand and even though the shipper gets the quality back he will find he has to go all through the work again of advertising his brand and probably change the name altogether.

Why are the special brands adopted by our shippers in British Columbia not being kept up to standard? Is it the psychological

SEEDS

Wholesale

Improved Farm Root Seeds
Improved Vegetable Seeds
Improved Flower Seeds

Seedsmen please enquire for our SPECIAL PRICES

KELWAY & SON, Wholesale Seed Growers
LANGPORT, England

Cable Address: KELWAY, LANGPORT

instinct which appears to be prominent in human beings that, when the selling prices are high, there is the wanton tendency to ship in as great a quantity as possible, taking chances on the results of the grades with the hope of making a little clean up? Is it because labor is scarce and what we have are not sufficiently trained? Is it be-

cause the superintendents are unskilled and cannot handle the packers? Is it because the packers are making high wages and the human instinct to make a little more has got the best of them and they have run to speed instead of quality?

Whatever may be the reason there is no doubt but that some of our shippers, who

have an established brand, will find that a little more careful attention given to maintaining the quality of these brands would work out to their benefit.

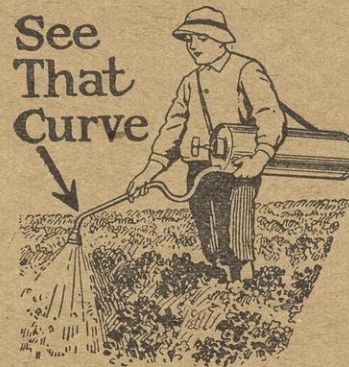
I remember an old copy-book headline which read, "A man is known by the company he keeps," and just so is the shipper's brand known by the quality it keeps.

Potato Spraying

Changed from a Big Job to a Small One

PROPER spraying may save you the cost of acres of potatoes this year. Our sprayers cut down both work and time, leaving you not a reason in the world for taking a chance on bugs and blight. It turns this big job into a little one and leaves you extra time for other things and for spraying oftener. You can have time to spray to prevent bugs and early and late blight.

See
That
Curve



O-K SPRA

Here is without a doubt the surest, most convenient and most durable hand sprayer ever invented. It is equipped with the "Efficiency" non-clog nozzle, which has a thimble-shaped strainer, and will keep in action longer without attention than any other type. Its shape prevents clogging.

Take a look at the curved lance. (See picture.) It saves many a backache!

It lets you get the nozzle under the leaves without bending your back.

The non-clog nozzle and curved lance enable you to use the O-K Spra for trees, shrubs, vines, bushes, or for disinfecting barns and hen coops, or for applying oils and washes to stock. Certainly no farmer could be persuaded to give up its use once he has had this all around handy and effective sprayer in use.

O-K Canadian 2-row Sprayer

For small acreages it certainly is a surprising time saver. It does the work as fast as you could run a wheelbarrow over your crop. It is used like a wheelbarrow and is just as easy to operate between rows. If need be a horse can be used for heavy ground. It sprays two rows at a time and there is no stopping for adjustments once it is set for width of rows. It throws out a fine plentiful mist that reaches every fold or surface on the plants, two rows at once. The discharge pipe can be detached for spraying trees, etc. and may be adjusted instantly for both height and width of rows. Tank holds 10 gallons. Write for full particulars.



O-K Canadian 2-row Sprayer

O-K Canadian 4-row Sprayer

Think of spraying an acre of potatoes in twenty minutes! It works like a charm even on heaviest land, spraying efficiently four rows at a time. One horse pulls it easily and the driver can watch every operation. There is easy access to all controls. Write for booklet.

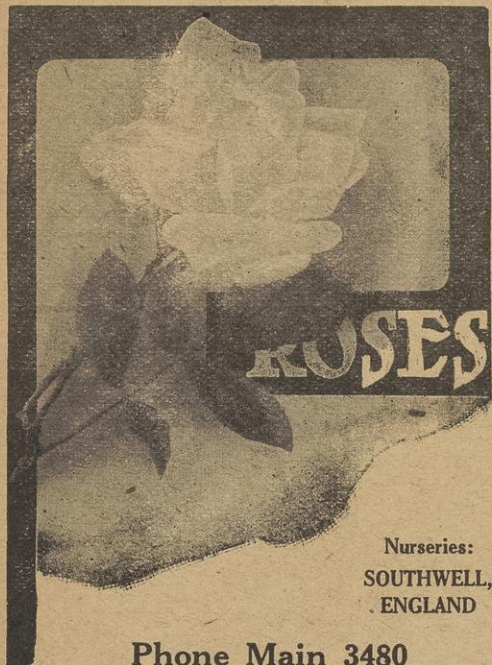
Time is Precious

If you leave off buying until your busy time you might put it off again—and lose far more than the cost of the machine. Write us for free literature with full descriptions and valuable information about bug poisons, fungicides, etc. Let us tell you how you can do your spraying in quick time and how to mix spraying materials.

Canadian Potato Machinery Co., Ltd., Galt, Ont.

MAKERS OF THE FAMOUS O-K POTATO PLANTERS AND DIGGERS

MERRYWEATHER'S



They are true to name
STRONG and HARDY

Send for list of the names and
prices of the following collections:

- 25 Best Garden Roses
- 18 " Hybrid Teas
- 12 " Scented Teas
- 12 " Decoration
- 12 " Yellow

— also —

Smaller Collections of Six Each.

M. A. BRUSH

Sole Agent

Dominion of Canada

26 Wellington St. W.
TORONTO

Nurseries:
SOUTHWELL,
ENGLAND

Phone Main 3480

Grading Vegetables

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

VEGETABLE growing is very closely identified with fruit growing. There are few fruit growers who do not grow vegetables, and I would like to call attention to the advisability of adopting grading regulations for these vegetables. At the last session of Parliament, potato grades were established; but the use of them was left optional. The administration of these regulations and the enforcement of the law governing the weights of vegetables, was transferred to the Fruit Branch. Many requests have been made for the compulsory grading of potatoes, in fact, some criticism has been offered for failing to make the grading law for potatoes compulsory from the start.

In considering the adoption of potato grades, it was deemed unwise, in view of the great need for increased production of potatoes as a substitute for wheat, to place any possible obstacle in the way of greater production. The present optional grading regulations, therefore, were adopted as a basis upon which to buy and sell where buyer and seller were great distances apart.

Numerous requests for the establishment by the Government for the establishment of grades for onions. The lack of these this year has resulted in a great deal of dissatisfaction and loss. I would be very glad if those interested in fruit and vegetable growing would give this matter their careful consideration with a view to establishing grades for vegetables. I am sure there are none who will question the advantages to be derived from the standardization of any product, and vegetables are no exception.

The Apple Outlook

During a discussion of the apple outlook by a number of Ontario fruit growers, Mr. Elmer Lick, of Oshawa, stated that the quality of the Ontario apple crop on the average has been growing poorer for several years. "Lack of labor," said Mr. Lick, "is the main reason, as well as an increase in insect pests. Our hold on the western market is being lost in consequence. Unless we do something to improve the situation this will mean a serious loss to us as if we can produce a high grade crop we can be sure of obtaining satisfactory prices. A big crop of inferior apples always creates a situation that is unsatisfactory both to the producer and the consumer."

"We must grow all the fruit we can," said Mr. Lick, "as there is going to be a good demand for it. A grower with a nice young orchard is warranted to-day in taking care of it, as within a few years there will be a strong demand for large quantities of high grade fruit." Mr. Gilbertson, of Norfolk County, endorsed Mr. Lick's views and said that he believed one of the reasons for the decreased interest in fruit growing in Ontario during the past few years was due to the failure to hold the annual Horticultural Exhibition, which was held for some years before the outbreak of the war and which always created much interest.

There is a chicken law in Indiana, according to State Attorney Jeffries, which claims that when chickens wander away from their owner's premises and take to tearing up the neighbor's garden, they become wild birds, and the aforesaid neighbor may shoot them.

PRIZE WINNING DAHLIAS

Ten Cactus varieties	\$1.00
Ten Show and Fancy varieties	1.00
Ten Decorative varieties	1.00
Ten Peony Flowered varieties	1.00
Ten Pompon varieties	1.00
Ten of all classes	1.00

Postpaid.

Twenty-five mixed varieties, \$1.00 by express.
MRS. C. DOUGLASS, Buctouche, N.B.

WHITEWASHING

The very best Acco Lime for whitewashing your fruit trees, poultry and outhouses. Will not rub off. Put up in 5, 10, & 25 lb. bags, ready to use.

Write for circulars.

ACCO CHEMICAL CO., Limited 23 River St., Toronto
Harold F. Ritchie Co. Limited, Toronto, Sole Agents



Dominion Seeds
LIMITED
Book of

FREE

For all gardeners—a combined textbook and catalogue. It tells you everything—Study it before you commence your season's work.

FREE

For all poultry keepers and stock raisers, a book that tells you what to do, what to use, and where to get it.

Write for it, Hang it in a handy place—Of infinite value as a ready reference.

Dominion Seeds, Limited
LONDON, CANADA



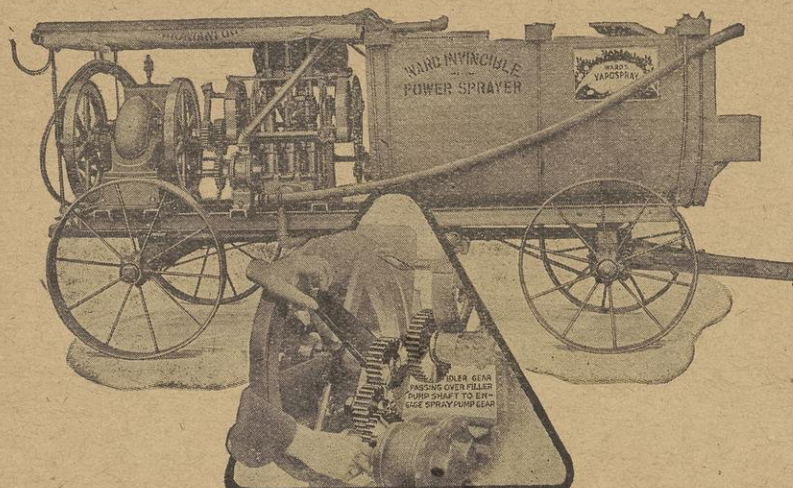
1919

Dominion Seeds
LIMITED
GARDEN
BOOK

SEEDS
PLANTS
BULBS
ROSES
SHRUBS
VINES
FRUITS

10
Ct

The Ward Invincible Sprayer



The Sprayer without a fault. The most up-to-date Power Sprayer ever made. Has more exclusive features than any other make. You can use the engine for sawing wood or other work without removing. You can run engine Spray Pump or Filler Pump as you see fit. The Ward Flexible Gear Drive is the greatest improvement ever put on a Spray outfit. Gears are always in constant mesh. Our Invincible Pump guaranteed to withstand 300 lbs. working pressure and delivering 10 gallons of liquid per minute.

Note the 22 Features Below

1. Pressure Tank (extra large and always filled with air at maximum pressure).
2. Ward Flexible Idler Gear (assures uniform mesh on any condition of ground, quickly changed to neutral or to filler pump without running spray pump).
3. Well and strainer (with shut-off valve).
4. Pressure regulator (positive regulator and pump unloader).
5. Filler Pump Gear.
6. 3 H. P. Engine (uses gas or oil).
7. Double Gear Drive (on crank shaft).
8. Quick Removable valves.

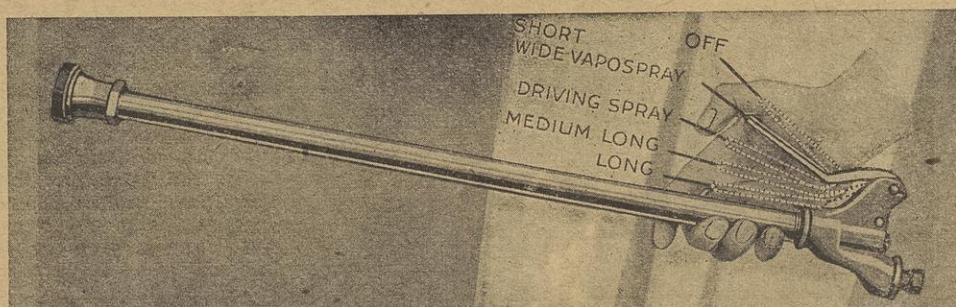
9. Easy Drain for Tank.
10. Attachment for Pully (can be quickly attached to crank shaft for other work).
11. Cab Hinge (will open easily for inspection).
12. Stringless Curtains.
13. Clamp Plates (hold tank rigid).
14. Hand Relieving Valve (relieves all pressure from outfit).
15. Adjustable Hooks (swing either way to avoid catching limbs).
16. Positive Agitator (keeps chemical in solution, prevents sediment).

17. Rocking Bolster (maintains level of tank and engine on uneven ground).
18. Plate Support (for rear axle).
19. Tank Strainer (prevents foreign substance from entering tank).
20. Spring Equalizer (makes allowance for shrinkage or swelling of tank).
21. Filler Pump (rotary pump using only clean water for filling tank or cistern).
22. Grease Cups (on end of agitator bearing).

The lowest outfit made—55 inches high.

The Ward Vapo-Spray Gun

Shoots Farther and Sprays Finer. No Other Like It. Gives Four Distinct Sprays.



NOTE THE EASY

The SPRAY is controlled by pressure of the hand that holds the Gun. Lightest and quickest in action. Easiest on the arm. You can run it all day without tiring. No kick on the wrist when shut off. The ONLY Gun where nozzle can be removed for cleaning without shutting off hose.

Spray changed to fit target limb without waste. Just press down the grip.

What the Largest Apple Grower in Illinois Says

WARD PUMP CO., Rockford, Illinois.
Gentlemen:—

Savoy, Illinois, May 13, 1918

We have been giving the spray Guns a test, and we are greatly pleased with the results. I regret that we have not more of them. The device of opening the valve, I refer to the hand lever, is the best I have seen so far. The difficulty with a great many guns is not that they will not do the work but with the man behind the gun making a fire engine out of it instead of a spray machine. With your lever for adjusting the spray it is not easy for the operator to do the wrong thing. It is easier to do the right thing than the wrong. If he opens it up too much the regular pressure will tire him out. I congratulate you on what seems to me to be a very successful and easy to operate spray gun, one that is fool proof.

Yours very truly,

H. M. DUNLAP

Built by **WARD PUMP CO., ROCKFORD, ILL.**

Send for complete Catalogue and Prices.

JAMES E. JOHNSON & BROS., SIMCOE, ONT., Agents for Ontario
LIVE DEALERS WANTED.

The Farmer-Banker Alliance



You go to your lawyer for legal advice; to the doctor for medical advice; why not to The Merchants Bank for financial advice?

If you want a loan to buy cattle, hogs or equipment—if you want information as to how to invest money—come to those who make a business of financial matters, and are in a position to give you sound and impartial advice.

THE MERCHANTS BANK

Head Office: Montreal, **OF CANADA** Established 1864.

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Seed Merchants
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Effects of Winter Killing

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

Last winter the weather in the fruit growing districts of Canada was most severe, possibly the lowest recorded temperature for years, and many of the fruit trees in their weakened state from several years neglect, were unable to stand the severity and died. Just what the extent of the injury is will probably not be known until 1919. Some of the fruit growers upon discovering their trees were injured, commenced pruning and may possibly have saved the greater portion of them. Trees which were covered with foliage in the spring, shed their leaves early and we can only hope that the present winter will not be too severe and that some of these may survive.

At one time it was thought that the greatest injury to apple trees had been done in the Province of Quebec. While the injury was great, later reports indicated that it was not as bad as at first reported. In these days of re-construction, the orchard and fruit farm must not be neglected.

Success With House Plants

"Milady's House Plants," by F. E. Palmer, is one of the new books on growing plants in the home. It is called the complete instructor and guide to success with flowers and plants in the house. Anyone who wishes to know how to look after foliage plants, flowering plants and bulbs in the house, successfully, should secure it. The price is \$1.00 postpaid.

The Canadian Horticulturist is making a special offer for the month of February of one new subscription to the Floral and Fruit Editions given free with each copy ordered at the regular price of \$1.00.

Also one renewal yearly subscription, and one new yearly subscription to both Editions given with each copy ordered at the special price of \$1.25. As these offers are good for only a limited period, send in your order now to The Book Department, The Canadian Horticulturist.

I have met with considerable success in the growing of early tomatoes. People from a number of cities have seen my plants and have complimented me on their growth. I have followed very carefully the methods of other growers that I have read in The Canadian Horticulturist. Off a piece of ground 10 x 15 feet I picked tomatoes up to August 1st to the value of \$9.50.—E. T. Austin, Belleville, Ont.

Fruit and Vegetables Solicited

We Get Best Prices

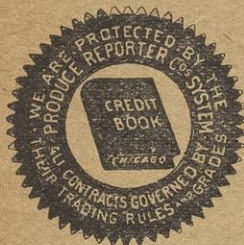
OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto Market, we have established branch warehouses with competent men in charge at Sudbury, North Bay, Cobalt, Cochrane and Porcupine. In time of congestion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

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



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The Rochester Fruit Growers' Convention

THE joint meeting of the Western New York Horticultural Society and the New York State Fruit Growers' Association was held in Convention Hall, Rochester, N.Y., on January 15th, 16th and 17th. This was the final meeting of these two organizations as separate organizations, a new organization having been formed combining the two under the name of The New York State Horticultural Society. U. P. Hedrick, of the Geneva Experiment Sta-

tion, was elected first president of the new organization. E. C. Gillett, of Penn Yan, secretary-treasurer of the New York State Fruit Growers' Association, was elected secretary of the new organization. The programme of the joint meeting contained many addresses by those prominent in the horticulture of New York State, and the large attendance was evidence of the interest taken by the fruit growers of the State in the subjects under discussion.

A paper which is of particular interest to Ontario fruit growers was given by Prof. W. H. Chandler, of the College of Agriculture, Ithaca, N.Y., on "The Effect of the Severe Winter of 1917-18 on the Fruit Industry, and Its Lessons for the Fruit Grower." Prof. Chandler held that winter killing ordinarily is the result of a sudden drop in temperature and extreme cold during one night, and is not usually the result of continued cold over a long period. The reason given for this is that the average temperature for all fruit districts in New York State is about the same taking the winter as a

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Can be kept from year to year. Will not freeze or evaporate. 1-lb. does the work of 2-lbs. of paste.

S-W New Process Arsenate of Lead (in paste)

Neutral—will not burn or hurt even the tenderest foliage.

Berger's Pure Paris Green

Sure death to potato bugs. The Standard Paris Green for years—up to Government standard in every way.

S-W Calpoiso-Arsenate of Lime

A Dry Powder. The best to mix with Lime Sulphur or Bordeaux Mixture.

S-W Dry Lime Sulfur

A Powder to be mixed with water. Lasts for years. No freight to pay on water as is the case with solutions.

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Arsenate of Lead combined with Bordeaux Mixture to spray garden and orchard.

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whole. Some districts, however, missed the extreme cold of December 30th, 1917, due probably to local weather conditions such as proximity to water, presence of clouds, etc., which tended to modify the cold, and in such districts winter killing was noticeably less than in those which received the full effects of the cold night, December 30th.

One of the most important observations made by Prof. Chandler was that the winter killing was much more severe on trees which had fruited in 1917 than on those which did not fruit in that year.

With reference to the cutting out of weak trees, Prof. Chandler's advice was to go slow, as there had been a gradual improvement during the season of 1918 in the recovery of the trees and expectation was that in 1919 we might reasonably look for a further improvement.

As to the precautions to be taken in the future looking to the prevention of winter killing, it was advocated to secure an early, vigorous growth on trees while they were young, giving them sufficient pruning but no more. In other words, good cultural practice was the best preventative.

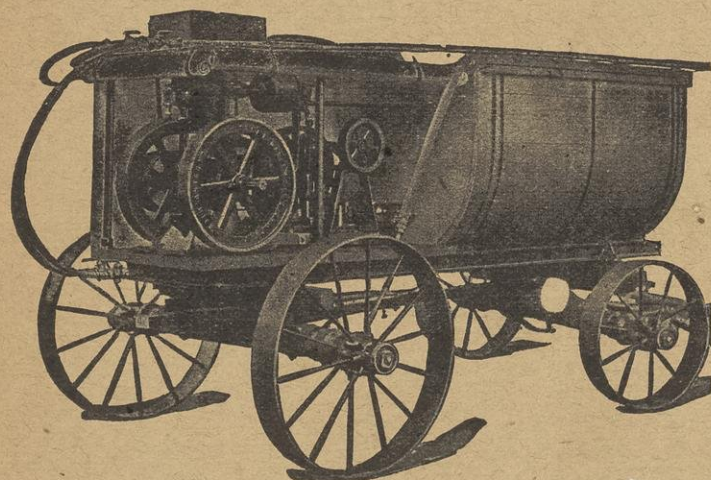
Seasonable Spraying Suggestions.

Prof. P. J. Parrott, State Entomologist, of the State Experiment Station, gave an interesting address on "Seasonable Facts of Special Interest on Orchard Spraying." According to Prof. Parrott, the value of calcium arsenate for New York conditions has not yet been fully determined. With reference to oil sprays, these were classed as dangerous for the average grower, though for special conditions and in the hands of growers experienced in the handling of oil sprays, they were successful.

With reference to lime solution and various substitutes, such as barium sulphur,

The Hardie Sprayer and Orchard Gun

*The Sprayer that Searcheth the
Insects and the Fungus*



The Hardie Sprayer is known in every fruit section of America. A postcard will bring the complete Catalogue of the Hardie Line, and prices that are right.

We Can Fit You with any Size Sprayer to Suit Any Size Orchard.

Hardie Orchard Gun

This Hardie Gun has become very popular and there are good solid reasons why.

First they are **Comfortable** because they eliminate the holding of a heavy spray rod with the drip from the nozzle running down your arms. No spray thrown on you by the other fellow. No shaking and throwing about on a cumbersome tower.

Secondly they are **Efficient** because every grower knows with absolute certainty he can control the orchard pests and diseases with the old time proven liquid sprays. With the Hardie Gun the drudgery is taken out of the job and the labor cut in half, making it easy and practical as well as insuring absolute safety for the fruit crop.

Thirdly they are **Economical**, being composed of less parts, entirely of brass, and exceptionally well made. They last for years. They save material, the control being instant, and the regulating screw will not move or get out of adjustment by the pressure, which has not been true of other devices of this kind. As a labor saving device one man can do the work of two and do it better.

Write for Hardie Gun Circular



The Biggs Fruit and Produce Co., Limited

Burlington, Ontario

dried lime sulphur, soluble sulphur and potassium sulphur, the interesting and valuable point was brought out that when these various lime sulphur substitutes are used at the same strength as commercial lime sulphur, their cost is much greater than that of lime sulphur. The cost of 50 gallons of liquid lime sulphur diluted to dormant spray strength was \$1.11; barium sulphur diluted to the same strength, \$3.07 for the 50 gallons; dried lime sulphur, \$2.63; soluble sulphur, \$2.08; potassium sulphur or liver of sulphur, \$4.60. Prof. Parrott stated that the probable reason why good results had not been obtained by the use of some of these lime sulphur substitutes was that the strength recommended by the manufacturers was insufficient. The fruit grow-

ers had followed implicitly the instructions on the spray containers and therefore applied their spray in too weak a strength to get the desired results.

Modern Problems.

Dr. W. H. Jordan, Director of the New York Agricultural Experiment Station, gave a very interesting and instructive address on "The Agricultural Outlook." Dr. Jordan was of the opinion that the future prosperity of agriculture depends in a large measure upon a better understanding between producer and consumer, between the farmer and the city people. People in the city do not, as has often been pointed out, understand the farmers problems, and consider that the price they pay for farm pro-

duce all goes to the farmer. Similarly, Dr. Jordan was of the opinion that farmers had much to learn of the city man's viewpoint. Direct from producer to consumer has often been advocated as a method of cutting down the cost to the consumer, but it was pointed out by Dr. Jordan that where city distribution comes in the middle man is an absolute necessity. While no doubt there are some middlemen who are rogues, he felt that most of them were honest and doing a necessary business in a legitimate way.

Of special interest at this time was the symposium on tractors and trucks in charge of Profs. Howard W. Riley, Department of Farm Mechanics, and G. F. Warren, Department of Farm Management,

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During the next five years, the buying power of the dollar will rise. Every four "low-powered" dollars you invest in War-Savings Stamps this month will bring you five "high-powered" dollars in 1924, when food will not command present prices.

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

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Collins' Sprayers For All Purposes

The **STURDY SPRAYER** holds 3 imperial gallons and is used for spraying flowers, fruits, vegetables and wherever a good sprayer is required.

We have a catalogue illustrating all our different sprayers; also Incubators, Poultry Hoppers, Founts and Brooders, which we want to send you. A post card will bring it.

The COLLINS MANUFACTURING CO.
415 Symington Avenue, Toronto.

LIME LIBERATES MINERAL PLANT FOOD

Potash Materials are very scarce and expensive, try our **Acco Hydrated Lime** as a fertilizer for your soil instead. Put up in 5, 10, 25 and 40 lb. bags. Ready to use.

Write for circulars and price list.
ACCO CHEMICAL CO., Limited, 23 River St., Toronto
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ALL LOVERS OF ROSES, PEONIES and FLOWERING SHRUBS

should write for my catalogue, best and cheapest in Canada.

A. W. GRAHAM - St. Thomas, Ontario

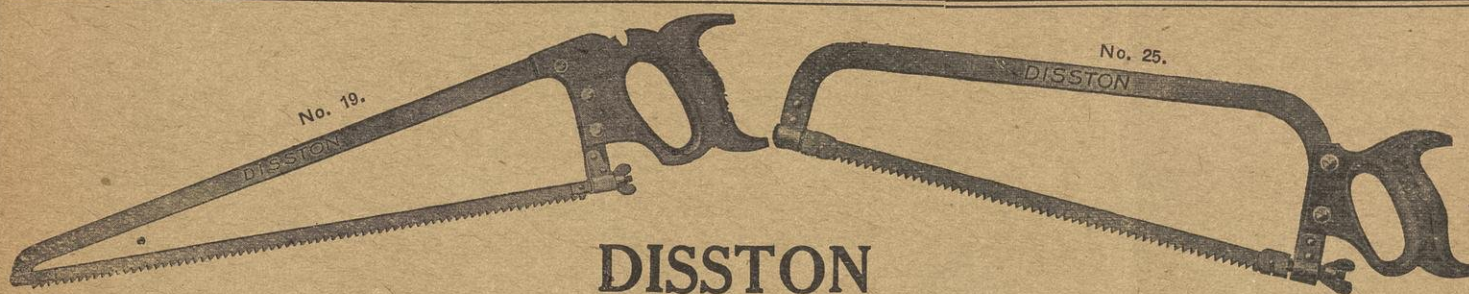
Cornell University. For orchard work it was pointed out that a low wheeled, quick turning, high engine-speed tractor was necessary.

New Varieties.

Of particular value to those interested in the introduction of new and improved varieties of fruits was the address by Prof. U. P. Hedrick, Horticulturist of the State Experiment Station. The work at the Experiment Station, Geneva, in plant breeding was started some thirty years ago and has been progressing steadily ever since. Several new fruits have been distributed, including six varieties of grapes, several strawberries, etc. Hardiness and disease resistance are two of the main points being kept in mind in the breeding work. In pears, particularly, much has been done looking towards blight resistance. This work was started ten years ago, and as a result thirty seedling pears have been selected as worthy of trial throughout the State. In peaches the endeavor is to secure varieties which will bloom later than our present varieties and so escape late spring frosts. Also particular attention is being given to the question of hardiness in wood and bud, two very important points.

The fruit exhibit at the Convention was very good, the chief feature being the display of the State Experiment Station and a carload of barrelled apples exhibited by Niagara County.

Tractors, farm implements and conveniences, apple graders, etc., formed a strong department and added greatly to the interest and usefulness of the convention from the practical fruitgrower's standpoint. While there were a few Ontario growers, mostly from the Niagara Peninsula, who took in the convention, the importance of the subjects discussed would warrant a far greater representation from this Province.—E. F. P.



DISSTON Pruning Saws

A STYLE FOR EVERY REQUIREMENT

No. 19.

Flat steel back, narrow tapered point, Beech handle, varnished edges, three brass screws. Handle has extra large hand-hold for use with gloved hand, swivel stretcher, blued steel blade. Blade 18 inches centre to centre of holes.

D-24.

Narrow point crucible steel blade, copper handle with beechwood grip. 14 to 24 inches.

No. 25.

Flat steel frame, riveted sockets, swivel stretcher. Beech handle, varnished edges, two nickel-plated screws. B. steel blade. 14 inches.

One-Man Cross-Cut.

Made on the same principles as our Disston handsaws. Designed to withstand maximum "thrust" without buckling, and for easy rapid cutting.

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One-Man Cross-Cut.

D-24.

The President of the N.P.F.G.A.

The recently elected president of the Niagara Peninsula Fruit Growers' Association, Mr. David Allan, of Grimsby, an illustration of whom appears on page 000 of this issue, has long been actively identified with fruit growing in the Niagara Peninsula. Born in Halton county of Scotch parents he moved to Lincoln county in 1886 and engaged in fruit growing and general farming in North Grimsby. In fruit growing he has confined his operations entirely to plums, benefit the growers of the district could receive through the Niagara Peninsula Fruit Growers' Association he identified himself with that organization many years ago and has been a director of it for the past eight or ten years. Four years ago Mr. Allan was appointed Post Master at Grimsby. He is prominent in church and social orders and a member of several fraternal societies.

St. Thomas

Having been prevailed upon to continue as president of the St. Thomas Horticultural Society at a salary of \$100 a month, Dr. F. E. Bennett, who has held the position of president for ten successive years, is actively engaged in promoting a Memorial Drive. This drive will be about four miles in length, and it has been estimated that it will entail an expenditure of \$12,000,000. The Board of Trade is co-operating. Citizens living along the proposed drive-way have been invited to donate some of their land to help promote the scheme. Several have done so. At a recent public meeting held by the Society colored stereopticon views were shown illustrating the work of the Society on the Michigan Central Railway Park, Pinafore Park and in other sections of the city.

Suggested National Flower



By Miss Ada B. Currie, Guelph, Ont.

In a letter which I wrote to the daily press respecting a national flower I expressed a strong preference for the wild rose and the lily of the valley. I am now even more impressed with the suitability of the latter. During the season of its blooming it is surprising to observe the vast numbers who, in the early morning, wear a sprig of it to office, store or factory. Apparently it is a favorite with men and women in all walks of life.

The valley lily lends itself most readily to design. If sentiment be a consideration, and I understand it is, then what flower have we which plays such a part more than this one? From its growth at my own home I know it to flourish and bloom in places where other flowers and bulbs would die. The scarcity of labor and the great number of soldiers' graves ought to make this a consideration. The foliage being so trim and attractive, it is a desirable plant at any time of the year.

Next to the valley lily I think the rose holds such a high place in the regard of the Canadian people (possibly it stands first) that I should like to cast my word in favor of either.

We are getting a few apples away to England and hope there will be space for more, but shipping matters are very unsettled. The freight being very high, and having to be paid in advance, has discouraged many farmers from trying to get in the game again. Before another season we may be in a better position in relation to the English market.—Manning Ells, Port Williams, N.S., Sec. Nova Scotia Fruit Growers' Association.

Announcement

The advent of peace, welcomed with joy in every home in the Dominion, brings to every one of us Canadians a new meaning, new opportunity, new responsibility, as regards our citizenship in this great and growing Nation.

To carry on during these reconstruction days, to build and rebuild for permanency, in everything that makes for peace, plenty and perpetual prosperity, is the ambition of every one of us. Every farm home in Canada must be made pleasant and comfortable. Every field, garden and lawn must be substantially, conveniently and pleasingly fenced. Our greeting to you at this time is to remind you of our part in Canadian development in the past and ask your co-operation and continued patronage for the future. May we, therefore, direct your attention to some of the fence facts that should be known and rightly understood by every patriotic citizen desirous of making Canada a better place to live in these days of well-earned and well-deserved peace.

FIRST, the time to buy and build fencing is now. Our improved and enlarged facilities, giving us the largest Fence Factory in Canada, enable us to render for Canadian farmers a superior, prompt, honest and efficient service—we are the "farmer's friend," first, last and all the time. Why? Because the farmer is our customer. We manufacture just such fencing as best meets the needs of the farmer.

SECOND, the purchasing power of every farmer is the highest ever. The farmer's medium of exchange—the crops he produces—is comparatively large. A bushel of wheat or a ton of hay will buy more fencing now than ever before. Prices will not—cannot—be lower for a long time to come. We mean prices of farm products. What the farmer produces and has to sell, that which represents his buying power, the world needs badly and must pay the price to get it. Nor will the price of materials used in manufacturing fencing be lower for a long time to come. Wire prices across the border are dependably fixed. That fixes the price for Canada. What real difference does it make as long as the parity is maintained? When the price of farm products is lowered, then and not until then will wire prices be lessened. It is to your advantage, therefore, to buy and build now.

THIRD, the Sarnia Fence Company has saved the farmers of Canada thousands upon thousands of dollars in actual money saved. Our plan of saving money for you is made possible under our selling system of direct dealing from factory to farm. Just two profits in the transaction—yours and ours. We are partners in the fence business. You buy and buy again, and others do the same. Satisfied customers mean a growing business. We pay nothing for your patronage, besides a good service rendered. You save by dealing directly with us on our direct dealing plan. It is a mutual co-operation between manufacturer and user of fencing that produces real fence satisfaction.

FOURTH, our price is always low—very low. If you could save twenty percent by buying from us, would you do it? We always quote lowest prices for just the kind of fencing you may need. Write us before you buy. Tell us your plan. Our expert advice may help you to a wise selection and, perhaps, mean a great saving of money. It is safest to know the truth about fencing before you act. Remember, we are fence manufacturers. Our one moderate profit added to actual cost of production leaves a larger profit for you.

FIFTH, our business is built upon the service basis—a real service to our customers—the satisfaction kind, the kind that lasts and brings repeat orders and induces your neighbors to do likewise. We owe the farmers of Canada the best fence service we are capable of giving. The farmers of Canada owe us their patronage as a consequence.

SIXTH, the Sarnia Fence Company saves money to every farmer who patronizes us. Our improved facilities, enlarged working capital, together with the fact that we have recently added to our management and working force the best fence talent obtainable, puts us way in advance in fence production. Our guarantee is back of every promise we make. Everything is just as represented in our advertising literature. Thousands of farmer testimonials to the good quality of our fencing. The money you save and the satisfaction you get in dealing direct with us will be your compensation.



SEVENTH, we prepay freight on all fence orders over 200 lbs. Our prices are quoted on fencing delivered at your nearest station. You pay but once. That covers the price of the fence and the transportation to your home town, excepting electric lines and on steamboats.

This announcement will be followed by others in the Farm Papers of Canada from time to time. Do not wait, however. Cut out this announcement and get our name and address correctly fixed in your mind. We want you to know the truth about Sarnia fencing. No trouble to answer questions. Write us about your fencing plans. We are specialists in the fencing line and are here to help our farmer friends. Our advertising literature describes in detail the Sarnia fence and the best method of fence construction. It will make plain to you the Sarnia plan. We are yours to serve.

Bank reference—Bank of Montreal.

Sarnia Fence Company, Ltd.

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A Wealth Producing Apple Orchard



The Investment Opportunity of the Hour

British and European markets are again opening for the Canadian apple. NOW is the time to plant and renew old orchards. Send for list and catalogue.

Salesmen Wanted.

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"Canadian Beauties"

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

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Pansy, "Royal City," mixture. Packet 25c
Aquilegia, lovely long spurred Colum-
bines. Packet 25c
Iceland Poppies, "Pearls of Dawn"
(Perennials), beautiful bright
shades, very choice. Packet 25c
Delphinium—"Majestic Giants"
from a choice collection of named varie-
ties. Packet 25c

WM. McSKIMMING, Pansy Specialist

233 ELIZABETH ST., GUELPH, ONT.

Niagara District Fruit Notes

F. G. H. Pattison, Winona, Ont.

WITH the exception of a small interval during Xmas week we are having the mildest winter in the fruit belt for a number of years. At present (January 20) it freezes at night and thaws in the day, more like March than January. Fruit trees appear to be in fairly good condition, however, and the buds are not so far forward as one might suppose. A very sudden cold dip below zero, however, might do a good deal of harm.

Pruning, drawing manure, and attending meetings are the chief occupations of the fruitgrowers, the last named being the greatest of the three. On December 27th last representative grape-growers interviewed the Dominion Government, urging that the time limit within which they were entitled to transport native wines be extended. In accordance with their request the Government has passed an Order-in-Council permitting the wine manufacturers in Ontario to continue shipment within Ontario of their wine till the 30th of April next, provided the sale is not prohibited by the Ontario Legislature in the meantime.

One of the burning questions in the Niagara District recently has been the application of the Express Companies to the Railway Board for permission to raise their rates to an extremely high figure. In consequence of this an important conference of leading Niagara Peninsula fruit growers was held at Beamsville on January 9th, at which a powerful committee was appointed to place the fruitgrowers' case before the Railway Board at Toronto on the 13th. The feeling of the meeting was that the proposed rates, particularly on long distance shipments, were prohibitive and would seriously injure the fruit industry.

On January 11th a meeting of fruit-growers was held at Burlington and the following committee was appointed to oppose, before the Railway Board at Toronto, on the 13th, the application of the Express Companies for an increase in rates: W. F. W. Fisher, A. W. Peart, M. C. Smith, and H. B. Foster.

The peach acreage in the Leamington District is reported to be only 10 per cent

of what it was four years ago. Winter killing of the trees and the greater profit coming from tobacco and vegetable crops are the chief reasons for this. Last winter has pretty well established the fact that the Niagara District proper is the only part of Ontario where peaches can be profitably grown year in and year out.

During the four years of the war 1,645,000 pounds net of high-grade fruit products, including jams, jellies, and canned fruits, were prepared at the Experimental Station at Vineland, and donated by the Provincial Government to the Canadian Military Hospitals overseas. The Fruit Branch at Hamilton of the Canadian Red Cross Society, starting in early in the war, successfully conducted a campaign to place in all Canadian hospitals the best fruit delicacies obtainable, and depending largely for its raw material upon the gifts of the growers in the fruit belt, produced a greater variety of fruit products than did the Station at Vineland. On Jan. 6th F. W. Macbeth, manager of the Hamilton Red Cross fruit kitchen, announced the closing up of the kitchen. During the week previous a carload of fruits was sent to a military hospital in Regina and another carload to the hospital in Calgary. There was also a car sent to Winnipeg and a composite shipment to Russia, consisting of fruits from all the kitchens in Ontario.

The enlarged demand for canned products from abroad is very encouraging to the canning industry. The export demand is becoming an increasingly substantial factor in the business and will clean up stocks that might otherwise have remained, and will thus assure the canning companies entering upon the new season with a clean slate. The only difficulty is the question of shipping space. While there is a large market for vegetables and other canned goods, the owners have to assume the responsibility of finding shipping space. Another factor of importance in fostering this trade is the reduction in the freight rate from 9½ cents a pound to 5 cents.

The canning trade is also fortunate in the revival of a strong market that has

Your Peace Garden

EVEN though the war is over, it is still very necessary to continue your Back-Yard Garden, as the whole world is short of food, and will be for some time to come.

Plant a Peace Garden with Bruce's Seeds, the best that grow. It will be a source of revenue to yourself, and will fulfil a duty to your country.

112-Page Catalogue now ready, describing Seeds, Plants, Bulbs, Poultry Supplies and Garden Implements, and quoting prices. It is free for the asking. Write now for it.

JOHN A. BRUCE & CO., Ltd.
Established 1850. HAMILTON, ONTARIO

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The policy of the Ford Motor Company of Canada' Limited, to sell its cars for the lowest possible price consistent with dependable quality is too well known to require comment. Therefore, because of present conditions there can be no change in the price of Ford Cars.



Runabout	-	-	-	\$660
Touring	-	-	-	690
Coupe	-	-	-	875
Sedan	-	-	-	1075
Standard Chassis	-	-	-	625
One-Ton Truck Chassis				750

These prices are F. O. B. Ford, Ontario

All prices subject to war tax charges, except truck and Chassis.

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Advertisements in this department inserted at the rate of 15 cents a line, each line averaging seven words. Part lines count as whole lines, minimum of two lines accepted. Strictly cash in advance.

BEEES

FOR SALE—Fifteen colonies, Italian bees, new equipment, excellent condition, will sell part or whole. Will. Staples, 69 Hogarth Ave., Toronto.

WANTED—Twenty-five or more colonies of bees. Full particulars to I. J. Kiteley, Moorefield, Ont.

WANTED—a yard of 50 to 100 colonies of bees for cash. Send particulars to Dr. C. J. Devins, St. Michael's Hospital, Toronto, Ont.

BEEKEEPERS—Please write for our Catalog. Write to-day for special prices on honey pails. Morgan's Supply House, London.

EMPLOYMENT

AGENTS WANTED to sell the new collapsible fruit basket, made to comply with Government Inspection Act. Write for sample and secure territory. A. B. Scott, Ltd., Niagara Falls, Ont.

REAL ESTATE

ALL KINDS OF FARMS—Fruit farms a specialty. Write, stating requirements. W. B. Calder, Grimsby.

GOOD FARMS for sale, in the vicinity of Thornloe, New Ontario. Write, stating requirements, Wm. Agar, Thornloe, Rt. 1.

GAS ENGINES

2½ H. P. GASOLINE ENGINE for sale cheap, or will exchange for bees in spring. Also 200 egg incubator, bargain at twenty dollars. Warren Sadler, Mossley, Ont.

SEEDS, BULBS, PLANTS, SHRUBS

C. KEUR & SONS, Hillegom, Holland. Bulbs of all descriptions. Write for prices. New York Branch, 8-10 Bridge St.

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

SPRAYS

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

WOOD

WANTED—Green apple logs, 13" and over in diameter, 3' and up in length. Agents wanted to secure this material. Henry Disston & Sons, Inc., Tacony, Philadelphia, Pa.

MISCELLANEOUS

ANYONE KNOWING the whereabouts of Charles W. Cummings, otherwise called Charles W. LaHue, please communicate with the undersigned. A reward of \$5.00 given for such information. Cummings has one arm, is about 50 years old, of stocky build, with black hair and moustache. Former inmate of Rochester State Hospital. Sarah Cummings, 13 Elwood Bldg., Rochester, N.Y.

GLADIOLUS BULBS

When planning your flower gardens, why not include some of the showiest flowers of summer? I will send 100 bulbs of America, the most popular pink or Burrell, a handsome red, with splendid markings, in any proportion you desire, for \$2.50 prepaid anywhere in Canada. Smaller bulbs, \$1.75 per 100.

Send for my list. It is not large, but lists some fine varieties.

G. W. J. BRIDGER,
Box 125 - - - SARNIA, ONT.

been lacking for some years past. I refer to the demand from the lumber camps which, during the war, was reduced to a minimum, but which has come to life again now and has again become a very substantial factor in business. Altogether the canning industry appears to be facing a fairly satisfactory future.

Apples are selling at high prices and the season is far enough advanced to enable dealers to predict a continuance of existing conditions. Barrelled stock is moving quickly to England and a good many cars of boxed fruit as well. All Canadian apples shipped so far have brought the maximum price on the British markets of \$16.50 per barrel, or \$4.74 per box. This price, apparently, affords a liberal margin of profit to exporters and dealers are buying up all the apples in sight.

The Dominion Cannery throughout the District are taking contracts for tomatoes at the same price as last year, 50 cents per bushel.

Annapolis Valley Notes

Eunice Buchanan, Berwick, N. S.

WITH the large prices for which apples are being sold comes a renewed interest in orcharding. Farmers are planning to give their orchards extra good care this season, but we predict that by May the unsettled conditions in the industrial world, combined with the high prices of labor, fertilizer and spray materials, will rob many of courage to do so. This will lessen competition for the orchardist with a good crop of fine fruit.

Many orchards have been so badly neglected that with the best of care it is doubtful whether they can return a profit next season.

It is currently reported that one man in buying apples for export made net profits of from \$75,000 to \$100,000 and two others made profits of about \$10,000 each in this one Nova Scotian town. In spite of the big profits made by apple dealers, growers are receiving bigger prices than ever before. Some of the first apples sent across this season made \$9 (nine) a barrel. Boats are now regularly carrying apples to England from Halifax.

The Nova Scotia Fruit Growers' Association held their annual meetings at Bridgetown from January 21st to 23rd. The winter has been very changeable with much rain and mild weather. Some pruning was done in December.

The potato market is dull. There have been labor difficulties in Cuba, which prevented rapid unloading of cargoes.

Hon. E. D. Barrow, the new minister of agriculture, is expected to announce shortly his choice for the office of deputy minister of agriculture to take the post vacated through the resignation of William E. Scott. Plans for the reorganization of the department of agriculture in British Columbia with a view to increased efficiency and the prevention of duplication of work done by other government departments and the provincial university were discussed at a recent meeting of the advisory board of the Farmers' Institutes, held in Victoria. Effect to some of the recommendations will probably be given in legislation adopted by the Legislature at its next session.

At the International Dry Farming Products Exposition, at Kansas, M., last fall the first prize offered for the best collection of vegetables shown by any state or province was won by Manitoba. Kildonan Agricultural Society, of Manitoba, won the county prize for best collection of vegetables. Quite a number of Manitoba growers exhibited as individuals and won important awards.

**FLOWER POTS****Hanging Baskets and Fern Pans**

We make the "Standard" Pot, the best Pot in the world—uniform, best of clay, well burned, in every respect superior to all others.

All our pots have rim on shoulder, thus allowing them to be placed together perfectly and preventing breakage in shipping and handling.

Place your Spring Order NOW.

A complete line and large stock of all sizes kept on hand to ensure prompt shipment.

Send for NEW CATALOG and PRICE LIST.

The Foster Pottery Co.

HAMILTON - Main Street West. - ONTARIO



**Never Tolerate
Mustard Kill
It With a**

Spramotor
It isn't a SPRAMOTOR unless we made it

YOU can kill mustard in the growing grain without injury to your crop if you own a Spramotor. The same machine can be used also for row crops, orchard trees, spraying paint, whitewashing, disinfecting, cattle-spraying, etc. Made in all sizes, styles and capacities, from \$7 up to \$400. Made in Canada—no duty to pay.

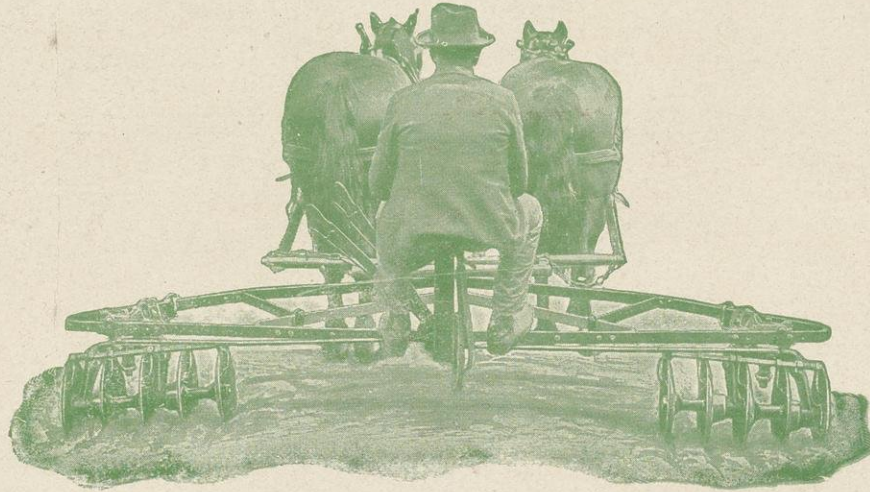
Free Send for valuable illustrated work on "Crop Diseases," and how to cure them. We mail it postpaid, anywhere.

IMPORTANT—On account of scarcity and uncertainty of raw material, we advise intending buyers to place their orders NOW for delivery in the Spring. Write for information.

Spramotor Works

5004 King St. - London, Canada

Massey-Harris



Dependable Implements for Fruit Growers

Massey-Harris Garden and Orchard Implements are invaluable helps in the producing of better crops.

They are thoroughly dependable, being made with the same high grade of materials and workmanship as the big farm implements, which are of world-wide fame because so uniformly good and reliable.

ORCHARD DISC HARROW—Reversible and adjustable. Gangs can be adjusted to either throw the soil from or to the trees and vines. Extensions can be furnished for working under branches. It has ten 16-inch discs, cuts 5 ft. 6 in., and with long extension frame, measures 10 ft. 1 in.

VINEYARD PLOWS—The Vineyard National Gang Plow is made expressly for Vineyard work. Its capacity is 17 to 20 inches wide and 4 to 7 inches deep, land wheel and handles are set well in away from the vine, and clevis is extra long, allowing horses to be hitched away from the vine.

GRAPE AND BERRY HOES—The ideal tool for the cultivation of grapes, berries, peaches, and plums and all kinds of small trees. A great time and labor saver that improves the quality of the fruit.

SPRING TOOTH HARROWS—Ten, Fifteen or Seventeen Teeth. The Ten tooth size is one section, and can be furnished with handles for vineyard work when so ordered.

CULTIVATORS—We carry a great variety of Cultivators for cultivating small fruit, vineyards and orchards. The Massey-Harris 9-Tooth Cultivator is adapted to a variety of work both in field and vineyard. With attachments it can also be used for furrowing or ridging. Extension frame can be furnished for orchard cultivation.

SCUFFLERS—Our No. 6 Scuffler is especially adapted for flat cultivation among garden vegetables and strawberry alleys. It is rigged with five steel Standards, two Oval points, one 12 inch and two 10 inch sweeps.

GET IN TOUCH WITH THE MASSEY-HARRIS AGENT.

MASSEY-HARRIS CO. Limited

Head Offices—Toronto, Ontario

Branches at

Montreal, Moncton, Winnipeg, Regina, Saskatoon, Swift Current, Yorkton, Calgary, Edmonton. Transfer Houses—Vancouver and Kamloops.

Agencies Everywhere

SPRAYING

The Life Blood of the Fruit Business

Get Ready NOW!

Spraying time is only about two months away. Get ready now. Order your supplies and get your repairs done. Things left till the last minute often go undone.

Do you need a barrel spraying outfit for a small acreage? Cost is about \$30. Figuring on a power outfit for a larger acreage? Cost is \$300 to \$400. For the three essential sprays, the yearly cost, by power, is about 40c. per large tree plus, say, 30c. for labor and machinery. Smaller trees cost less. For efficiency and labor saving, the spray gun with the power outfit is winning great praise.

Remember, unsprayed fruit is worth from \$1 to \$5 per barrel LESS according to grades. Some men say they don't succeed with spraying. The reasons are certain to be:

1. Lack of thoroughness in applying spray, or
2. Improper time of application, or
3. Omitting one or more of the essential sprays, or
4. Using wrong mixtures.

Stick to commercial lime sulphur and arsenate of lead (paste or powder) for right results in Ontario spraying.

Have you a copy of our Spray Calendar? It's free. Fully explains the essential sprays, mixtures, etc., etc. We gladly supply any additional or special information on your fruit problems. Write us fully.

Ontario Department of Agriculture
PARLIAMENT BUILDINGS, TORONTO

Hon. Geo. S. Henry
Minister of Agriculture



Dr. G. C. Creelman,
Commissioner of Agriculture



1st Spraying Stage

2nd Spraying Stage

3rd Spraying Stage