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# THE CANADIAN HORTICULTURIST

JULY - - 1913  
Vol. 36 - - No. 7

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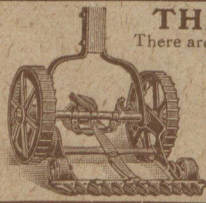
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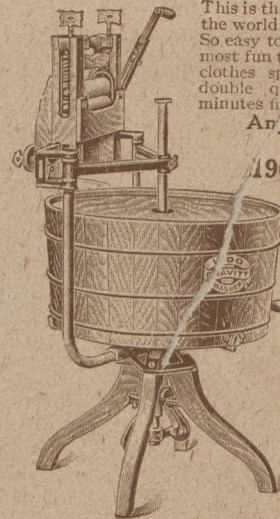
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# The Canadian Horticulturist

Regular Edition

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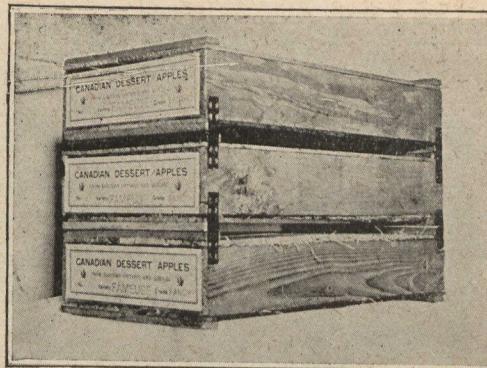
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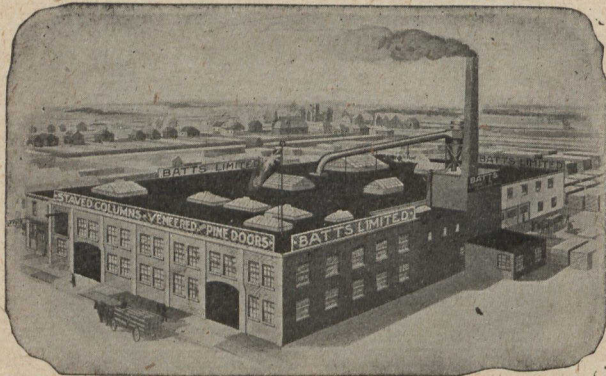


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# The Canadian Horticulturist

Vol. XXXVI

JULY, 1913

No. 7

## Thinning the Apple Crop a Profitable Operation

Justus Miller, Department of Agriculture, Port Hope

**T**HINNING the apple crop is the last feature of improved orchard culture a grower will take up. The object is to improve the quality of the fruit. The first steps in orcharding are proper cultivation, pruning and spraying. In our work in these counties (Durham and Northumberland) we have found it hard to persuade many farmers to undertake these tasks. The majority of them are not ready for thinning.

Many think that it is a very expensive operation. In our demonstration orchards we have thinned trees at a cost of sixty cents a tree. These apples had to be picked anyway, and it was much cheaper to snip them off when small and allow them to fall to the ground than to pick and pack them in the fall.

By thinning, the percentage of culls is reduced very greatly. These are not only of small value themselves but they lower the value of the entire pack. Considering the increased value of number ones resulting, P. C. Dempsey, an extensive apple grower of Trenton, Northumberland County, argues that the culls thus taken away are selling really at nine dollars a barrel.

The work is in its infancy in Ontario. In some orchards in Durham and Northumberland counties, experiments have been conducted, and some also in Norfolk. W. J. Schuyler, fruit specialist of Norfolk county, in the employ of the Ontario fruit branch, states that a system of thinning will bring uniform crops. In the natural state trees bear apples uniformly one year with another. But when unfavorable weather conditions produce a failure one year a very heavy set of fruit is produced the next. The tree cannot bring this abnormal crop to maturity and at the same time develop a strong growth of fruit spurs. When the apples are thinned abnormal crops do not exist, and fewer off years occur. By thinning before the seeds are developed a great deal of food is saved for the tree also. Of course some varieties do not require thinning as do others. The Duchess, Wealthy, Snow, Russet and in some cases the Spy, are especially benefited in our counties.

In 1912 experiments were conducted in two of our demonstration orchards. In one at Colborne, in Northumberland county, a few Snow trees were selected. The apples were thinned when about the

size of hickory nuts. They were taken off with thinning shears and all the work was done from ladders. The intention was to thin all clusters to one specimen and to leave no apples close enough together so as to touch each other or in such a position that they would rub against a limb or a twig when mature. The quality of apples on thinned trees was much superior to that of those on unthinned trees. But the thinning was not severe enough. When the apples matured it was found that full allowance had not been made for their increase in size.

The result from two trees under identical conditions was:

Thinned tree—Six barrels number ones; three-quarters barrel number twos and one peck of culls.

Unthinned tree—Three barrels number ones; three barrels number twos, and two and a half barrels of culls.

In an orchard at Welcome, in Durham county, another experiment was made, this time with Duchess apples. The same methods were used as with the Snows. The results were:

Six thinned trees—Seventeen barrels number ones; three barrels number twos, no culls.

Six unthinned trees—Twelve barrels number ones; twelve barrels number twos and one-half barrel culls.

In this case the thinning should have been more thorough and more severe also. The three barrels of number twos equalled the number ones in size, but lacked color, and there were no culls at all. These trees were thinned at the rate of sixty cents a tree, three hours labor at twenty cents an hour being expended on each. It will be seen that the total crop was larger in the case of the unthinned trees.

The value of thinning rests in the increased percentage of number ones. If the entire crop is sold to a buyer at a flat rate for number ones and twos, there is very little profit in undertaking this work. But if the apples are sold through associations and are pro-rated according to class, as is done by the Norfolk Fruit Growers' Association, the profit is at once apparent. Consider the two Snow trees already mentioned. The 1912 price for number one Snows paid by the Norfolk Association was three dollars and ten cents, and for the number twos two dollars. The profit per tree would be something as follows:

Thinned Tree: Six barrels number one's at three dollars ten cents, eighteen dollars sixty cents; three-quarters of a barrel number two's at two dollars, one dollar fifty cents; cost of thinning, sixty cents; total, nineteen dollars fifty cents.

Unthinned Tree: Three barrels number one's at three dollars ten cents, nine dollars thirty cents; three barrels number two's at two dollars, six dollars; total, fifteen dollars thirty cents; profit, excluding culls, four dollars twenty cents.



Orchard Demonstration in Orchard of F. W. McConnell, Colborne, Ont.

This orchard gave a net profit of two hundred and fifteen dollars an acre in 1911.



## Points on Cover Crops

**T**HE sowing of cover crops is now a regular practice in up-to-date orchard management. This practice serves a two-fold purpose. It maintains the humus content of the soil and helps to regulate the growth of the trees.

Experience has proved that from spring until about the middle of July, constant cultivation is necessary for the proper growth of the trees and the setting of the fruit. Later in the season the growth of the trees must be retarded and the trees become fully dormant at the end of the growing season, otherwise winter injury is likely to occur. A cover crop sown during July will assimilate a part of the plant food in the soil that would have been available for the trees. This crop, when plowed under in the fall or following spring, decays and plant food and valuable humus become available for the tree when most needed.

Cover crops may be classified under two heads: those that collect free nitrogen from the air and those that do not. In the former class are the colvers, alfalfa, vetch, peas and beans. In the latter are such crops as rape, buckwheat and rye.

### NITROGEN COLLECTORS

Common and Mammoth Clovers are probably the most generally and the most successfully used cover crops that we have. As a rule it is not difficult to get a good catch. They give a good growth the first season, live over the winter, and produce a good growth the following spring, which when plowed down adds considerably to the nitrogen content of the soil. If good growth has been made the crop may be cut the first season and allowed to rot on the ground, provided it is cut early enough to permit of sufficient growth being made afterwards to tide it over the winter. A seeding of twenty pounds an acre about the middle of July generally gives best results.

Hairy Vetch is a close second to the clovers. It produces a thick mat of growth the first season, lives over the winter, and grows very rapidly in the spring. This last feature necessitates early spring plowing, otherwise the crop will drain too much plant food from the trees. Thirty to forty pounds is an average seeding. Vetch is a good nitrogen gatherer but the seed is rather expensive. In a dry season it is sometimes difficult to get a good catch.

Alfalfa, where it can be successfully grown, has most of the qualifications of a good cover crop. Its one disadvantage is that in the less favored sections it does not produce as heavy a growth as do the clovers and is more apt to winter kill. In favorable localities, seeded at the rate of twenty to twenty-three

pounds of seed an acre, it makes a good growth the first season.

Alsike Clover makes a good substitute for the common and Mammoth varieties in such localities as Eastern Ontario and parts of Quebec. It does not require quite as heavy a seeding as these varieties.

Crimson Clover does well in parts of southern Ontario but is not as hardy as the common or mammoth. Growers advocate a seeding of eighteen to twenty pounds an acre.

Peas and Beans can be grown to advantage as cover crops. Field peas sown with a nurse crop of barley or oats make a heavy growth. Such a crop, however, does not survive the winter. Soy beans and horse beans sometimes give good results but have the same disadvantage.

Where leguminous cover crops can be successfully grown the second class is

not recommended unless the soil is unusually rich in nitrogen. They are to be recommended rather for the purpose of enriching poor soils to make possible the growth of leguminous crops.

Buckwheat is the most useful non-leguminous cover crop we have. It makes good growth on poor soils and a catch can be obtained even when sown quite late in the season. It is a splendid crop for rapidly adding humus to the soil. It does not, however, live over winter. Five or six pecks of seed an acre gives a good stand.

Rye is a hardy crop but can only be recommended as a soil enricher preparatory to the sowing of clover.

Rape is a good humus producer but requires better soil conditions than does buckwheat. The tops die down in the winter but some growth is made the next spring in preparation for seed production. Six pounds an acre is an average seeding.

## The Cultivation of Small Fruits

Jos. Frappe, Stirling, Ont.

**T**HE cultivation of the soil, for strawberries and raspberries, to loosen the top surface should be commenced early in the season. For small patches of strawberries a common garden rake will do. For large patches I have used a wheeled hoe with a rake attachment for each side. If this is done there will be little danger of dry weather killing the plants as is often the case.

A cultivation and hoeing about once a week (especially in warm, moist weather when the weeds grow rapidly) is much better than to wait two weeks. The work is then easier, quicker, pleasanter and far better for the plants.

The up-to-date fruit grower or gardener does not hoe just to kill weeds. His first great object is to make a loose layer of earth—a dust mulch, so that the great quantities of water that are stored in the earth, and which rise by capillary action, may not escape by eva-

poration, but remain to supply the myriads of rootlets. Incidentally he kills the weeds. From this point of view it is obvious that the best time to cultivate is after a good rain.

Cultivate shallow. Deep cultivation dries out the ground. In hoeing after the runners have freely started it will pay to place them more in line with the rows. When sufficient plants are formed if the runners are kept trimmed, it will give increased vigor to the plants already formed.

The blossoms should be removed the first year. The strain of bearing fruit is too much for young plants. With large strong plants and great care in planting a few berries may be allowed to mature.

### RASPBERRIES

The red varieties of raspberries which sucker freely (i.e., send up young plants at different places along the roots) have been with me, the most pro-



Bush Fruits are Profitable when Well Cared for





AN AVENUE OF CHERRY BLOSSOMS  
M<sup>r</sup> PRIDHAM'S ORCHARD KELOWNA B.C.

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G. H. HUBSON KELOWNA B.C.

### A British Columbia Cherry Orchard in Bloom

fitable. They keep in good condition longer and the prices received have been the best. It is not wise to let the suckers grow unless they are in the hill or near it.

In the case of the raspberry, cultivation has three purposes: To make the all-important "dust mulch," to prevent weeds, and to keep suckers from growing. But cultivation answers for all three.

I allow four to eight young plants to grow up in each hill. The nearer these are together the better. It must be remembered that the young plants that grow the first year are the ones that bear the berries the next year, after which they must be removed.

My object is to get the canes I allow to grow to have as good a growth as possible. For this reason I remove all but the ones I wish to keep, quite early in the season, when they are only tender sprouts from one to two feet high. Here are some reasons why I do this:

It is more easily and quickly done, the work is done before the fruiting season, and consequently the strength that would be used in these canes is partly used to make bigger berries and more of them, but what is highly important the young plants which remain have more than double the growth, thus ensuring a good crop the next year; if many of these new canes are allowed to remain they make the hills bushy and the pickers will not get all the berries. This alone is inducement enough to have it done at the proper time. It makes the removal of the old canes a much easier task. The young plants grow more stocky and branch out more if the ends are pinched off after they are five or six feet apart. Cultivation late in the season after picking is not wise, as it induces a growth of tender wood that does not ripen and is likely to winter kill. Old canes are best removed late in the season, in the winter or even spring.

## Cutting out the No. 3 Apples

L. D. Robison, N. S.

Improvement in the quality of the apple has not kept pace with the production. In the mad race for more fruit, too little attention has been given to "better fruit." As a proof of this assertion, of the ninety thousand barrels of Gravensteins produced in the Annapolis Valley last year thirty per cent. graded ones, while fifty-eight per cent. graded threes. I propose in this article to show how the threes may be largely eliminated. It involves better pruning, better cultivation, better fertilization, better spraying, better thinning.

### PRUNING

Not only should all dead, diseased, and crossing branches be removed yearly, but the whole tree should be opened up to air and sunshine by judicious pruning. Careful pruning not only increases the size of the fruit, but greatly improves its color; for color is now known to depend wholly on sunlight. Then, too, proper pruning has much to do with the production of fruit free from spot, for it is much easier to reach every part of a well pruned tree with spray, and it dries out sooner after a rain or heavy dew.

### CULTIVATION

Cultivation gives handsome returns in the Annapolis Valley. Fall plowing about three to four inches deep is the usual practice. It possesses the following advantages over spring plowing: Fall plowing makes it possible to work the soil several days earlier in the spring; it is an aid in the conservation of moisture; it covers the dead leaves which carry the spores of apple scab.

In the spring, as soon as the ground is fit, the orchard should be thoroughly harrowed. Afterward, the surface of the soil should be stirred lightly every week or ten days, for the destruction of weeds and the conservation of moisture. A cover crop, preferably one of the legumes, should be sown about July 1st, later if the season or the soil be dry, earlier if wet.

### FERTILIZATION

Annual crops of high grade fruit are only possible in orchards abundantly supplied with plant food. Stable manure at the rate of twelve tons an acre applied annually will give excellent results. Equally good results can be obtained from fertilizers along with cover crops. While no formula can be given that will be equally good for every orchard, the following may be suggested: Two hundred pounds nitrate of soda, three hundred and fifty pounds acid phosphate, and one hundred pounds potash. These amounts applied yearly are usually sufficient for an acre of orchard in full bearing. The nitrate of soda should be sown when the trees are



in blossom. Slag at the rate of five hundred pounds an acre may be substituted every few years for the acid phosphate with advantage. It should be sown in the fall.

The great importance of thoroughly spraying, so far as the elimination of number threes is concerned, can scarcely be over-estimated. While pruning, cultivating, fertilizing, and thinning all have an important bearing upon the production of first-class fruit, these are of little value where spraying has been neglected or carelessly done. In making dilutions of lime-sulphur, the hydrometer should be used. Winter strength is 1.03, summer strength for use on foliage, 1.009.

Arsenate of lead at the rate of two and one-half pounds to forty gallons should always be used in spray for foliage, both on account of its fungicidal value as well as its insecticidal value. It should first be reduced in water and then added to the dilution while the agitator is in vigorous motion. A good power sprayer is almost a necessity in an orchard, producing upwards of six hundred barrels of apples. It should have a mechanical agitator, the blade propeller type is the best, and be able to maintain a constant pressure of about two hundred pounds on four-disc nozzles.

Spray for scab and bud moth a little before blossoms open; for scab, codling moth, etc., when two-thirds blossoms have fallen; for scab, codling moth, green apple worm, etc., ten days after blossoms have fallen; for scab, fly speck spot, young bud moth that defaces apples, etc., when the apples are a little larger than crabs.

Spray thoroughly; cover every part of the trunk, every limb, every twig, every leaf.

#### THINNING

Thinning is now a recognized part of orchard work. Its object is first the removal of spotted, deformed, and worthless specimens, and second, the further reduction of the fruit so that remaining specimens may grade as number one. This work should be commenced soon after the June drop, and may be continued two or three weeks. The degree of thinning will depend upon the variety. The general rule is to leave only one fruit to each fruit spur, and then, if necessary, continue the thinning till the apples are from four to six inches apart, depending upon the variety. Of course it means work, but it also means number one apples instead of cider apples. Therefore, it pays a handsome profit. The time lost in thinning is largely made up in the greater ease in picking and grading.

## Studies on the Montreal Market Muskmelon

Prof. Wm. Stuart, Burlington, Vt.

(Continued from June issue)

THERE are two distinct types of melons under cultivation, one of which is roundish oblate, the other more or less oblong, the first type being slightly deeper ribbed than the latter. These two do not seem to be separated out by the growers, in fact, when the question was put to a grower as to which type he selected for seed purposes his reply was almost invariably that he selected from both, provided the qualities of netting, solidity, thickness, and flavor of flesh were satisfactory. As none of the growers interviewed made a practice of hand fertilization of melons intended for seed purposes, it is not at all certain that either of these types is fixed.

#### SEED SAVING

Interesting information regarding seed saving was obtained from one of the growers. This party removes the seed melon from the vine at about the time it begins to separate from the stem, and keeps it in an ordinary room temperature in a dry place until it is fully ripe. Then, to avoid the loss of the melon, a two inch square section is cut out, the seeds shaken out, the removed section refitted into place, and sealed in with a gum label, after which process it is ready for shipment. The

party to whom the shipment is consigned, being advised that seeds have been removed from one or more melons in certain packages, is on the lookout for them, and loses no time in placing them in the hands of the consumer. The grower receives full price for such melons and thus secures without loss to himself his future seed supply.

Seed from the earliest ripening melons are generally used for first crop plantings in the belief that an earlier ripening crop will be secured from the offspring of such seed. Attention is also paid to the selection of seed melons borne as near to the base of the plant as possible. Selection in this case is made on the assumption that in the offspring a greater proportion of the fruit will be borne near the base of the plant, a very desirable attribute, especially in the case of frame grown melons.

#### MELON PACKAGE

The style of package most commonly employed by the commission dealer in shipping melons to distant markets is that of a large wicker basket closely resembling what in some sections is termed a clothes basket. These baskets just hold a dozen melons, the melons being closely packed in rather short, fine-stemmed hay. The basket is ship-

ped without cover and no attempt is made to fasten the melons in place, the express company being held responsible for their safe delivery.

The only exception to this method of shipment noted by the writer was in the case of a grower who shipped his product direct to the consumer. A strong wooden case of sufficient depth to admit of a single layer of melons and of sufficient size in length and breadth to hold a dozen was used with satisfactory results. If an abundance of hay is employed the melons reach the consumer without bruise or injury of any sort.

## Munson System of Training Grapes

W. T. Macoun, Dominion Horticulturist, C. E. F., Ottawa

In Munson's "Foundation of American Grape Culture" there is described the Munson three-wire trough trellis system of training grape vines. Can you inform me whether this system is in use to any extent, and if there are any disadvantages in it from the point of view of a Canadian vine-grower? His system appears to me to be founded on good common sense, but as I have never seen any vineyards in which it is in use, I would like a little information from some outside source before considering it further.—A. F. W.

The Munson system of training grape vines is not used to any extent in Canada. The system may be described briefly as follows: Posts are put in the ground about twenty-four feet apart, with from four and one-half to five feet of the post above ground. A three-eighth inch hole is bored in each post about four feet from the ground and six inches from the top of the post to admit the lower wire. Crossarms of two by four inch wood (one by four is sufficient except for end posts) and two feet long are held to the side of the post near the top by wire, without nailing.

Within an inch of each end, and one inch from the upper side, of the cross piece is bored a three-eighth inch hole. Number eleven galvanized wire is run through the holes and securely fastened, thus making a three-wire overhead trellis. Only the wire through the post need be put on at first. A single cane is allowed to grow, and this is fastened to the lower wire when it reaches the desired height. Before the next spring this is cut back about two-thirds. It will soon reach the wire this season, and two canes are trained out, one in each direction, along the middle wire. The next year, and in future, there will be four arms, two in each direction, along the lower wire.

The new growth grows over the wires and hangs down, and it is claimed for the system that the summer pruning is very light.

The fruit is a little easier to pick on the Munson trellis, but not sufficiently so to offset other things. Cheapness in growing grapes is desirable, and on this account it is not likely that the Munson system will be generally used in Canada for some time.



## A Barrie Garden Possessing Novel Features

TWO of those who have assisted in keeping the Barrie Horticultural Society in a leading place among the horticultural societies of Ontario, are Mr. Donald C. Campbell and his

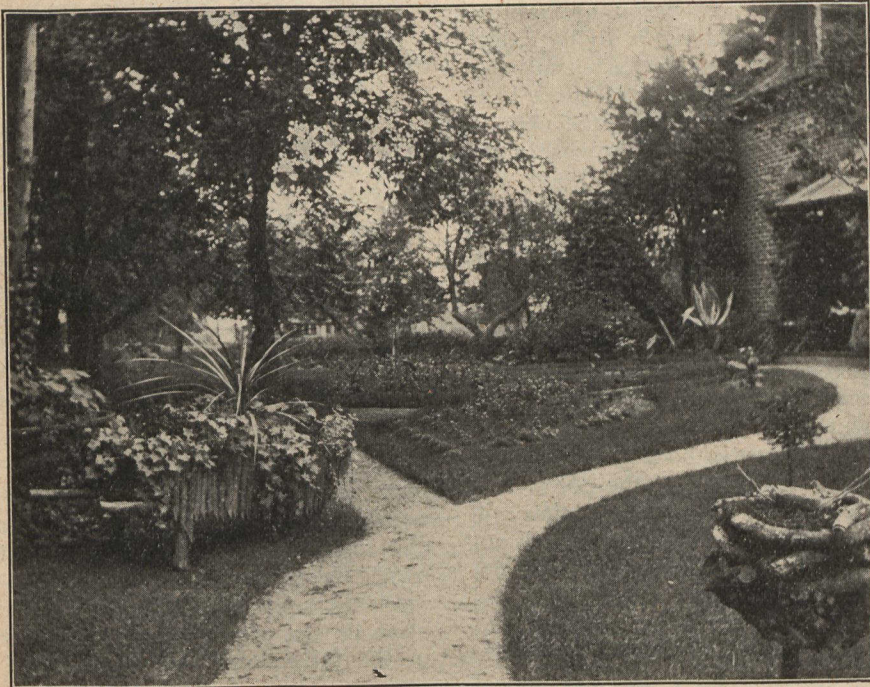
power from the stream, it affords Mr. Campbell a very unusual feature for his grounds in the shape of a trout pond, which is stocked with magnificent specimens of the speckled trout. A number

make the blood of an angler tingle, but lest any reader should plan to surreptitiously visit the place for a morning's sport, it had better be stated that this pond is very well guarded with a network of barbed wire fences. This precaution Mr. Campbell took after a couple of boys paid a daybreak visit and cleaned out the pond. The limpid waters of the little pond enframed in foliage is a charming spot and a favorite place of visit for the townspeople.

In cultural methods, Mr. Campbell follows much along the usual lines. He raises all his own plants from seed, using hot water pipes instead of manure to heat his hot bed. Beneath a bed of about four and a half by ten feet he has forty feet of piping, and uses no manure whatever. By this method he finds that it is not necessary to sow the seed so early, as four or five days is sufficient to bring it up. When the writer visited the garden, about the middle of May, all the first sowing had been transplanted into cold frames and another lot of seed imbedded in the soil.

Last year Mr. Campbell tried an experiment with some gladioli, leaving them in the ground all winter. Much to his surprise they furnished the finest bloom he had and won first prize at the society's flower show.

Sweet peas are grown very successfully without using the trench method. The ground is treated with a generous dressing of well-rotted manure and the seeds planted in single rows and at ordinary depth. Dead boughs are used



Some of the Walks and Floral Effects in Mr. Campbell's Garden

daughter, Miss Mary E. Campbell. From their garden at "Glen Almond" have come the largest exhibits and a big percentage of the prize-winners at the annual exhibitions held by the Barrie Society in recent years. Miss Campbell is vice-president of the society.

From his boyhood days at Dunblane, Scotland, Mr. Campbell has been a lover of flowers. Thirty years ago he bought a few acres of land at the westerly limit of the corporation of Barrie. Fine pines and other timber covered the property, and through it ran two sparkling streams of spring water. By patient industry Mr. Campbell and his family gradually converted the timber-clad slopes into what is to-day one of the best gardens in Barrie. The soil is sandy for the most part, and requires the use of considerable fertilizer as well as a liberal supply of water. The latter is furnished from a system of water-works planned and constructed by Mr. Campbell, the creeks being utilized to drive a ram and a water-wheel which force the water to a reservoir whence it is piped to different parts of the grounds. At practically no annual expense he thus has an abundant and convenient supply of water, the advantages of which many readers of *The Canadian Horticulturist* will possibly appreciate.

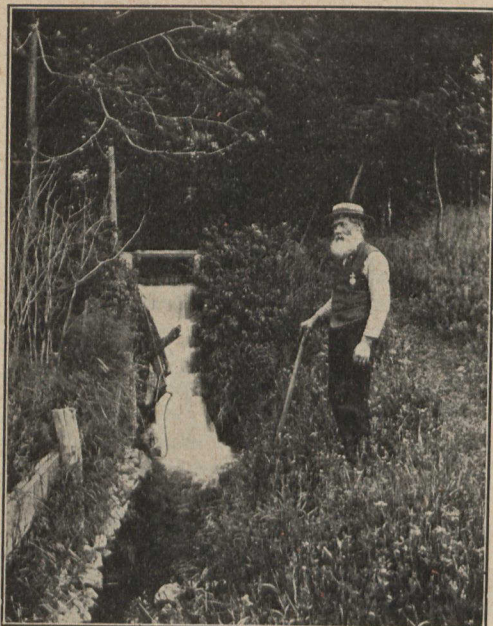
In addition to getting his water and his

of these are over sixteen inches in length, and they have become so tame that they will seize a finger and allow Mr. Campbell to lift them in that way. The sight of such a school of beauties is enough to



A Glimpse into the Garden from another point





Mr. Campbell and his Trout Stream

for training the vines and these are placed in the ground when the peas are planted. Tendrils lay hold of the branches much more readily than wire, which is also inclined to burn the tender plants in hot weather. Last year peas from this garden captured first prize.

Bird life abounds in this garden. Mr. Campbell has built bird houses and protected the birds, not only because he likes them but because he finds that they are good friends to the garden, in destroying insects.

Although Mr. Campbell is in his seventy-first year, there is a lightness and briskness in his step and a brightness in his eye that many a young man might envy.

### Summer Care of House Plants

Many people are in the habit of putting their house plants out of doors during the summer. Some turn them out of the pots and plant them into the open ground. Others sink the pots with the plant in it up to the rim in the ground.

These methods of summering plants are resorted to because the owners think they save trouble by them. They are under the impression that plants so treated will take care of themselves, and consequently they save a good deal of labor. This is a mistake, however, for if one expects to get the best results from one's plants they must have care and attention all through the summer.

It is true that a plant turned out of its pot and planted into the open ground will make a stronger growth than if kept in its pot, and it will make the growth without any attention from its owner. But when fall comes, and it is necessary to lift and pot the plants for removal to the house, a large proportion of the roots will be sacrificed during the operation. Notice a plant that has been

growing in the open ground all summer and then lifted and potted in the fall; the disturbance of the root system, and consequent loss of the vigorous growth which characterized it during the summer, gives you a very unpromising looking specimen. Such a plant will generally require all winter to recuperate, and more often no flowers, are produced. Therefore nothing is to be gained by putting it in the garden except that it takes care of itself. On the other hand a good deal is lost because the plant is in poorer condition than it was in the spring after having done a good winter's work. Taking these facts into consideration one is bound to admit that the labor of lifting and re-potting would offset all the attention that would have been required had they been left in their pots.

"Plunged" plants generally suffer from lack of moisture at the roots. The soil about the roots appears moist and from this one gets the impression that the soil at the bottom of the pot is in a similar condition. An examination will generally reveal the fact that such is not the case. The pot prevents the soil from absorbing a sufficient amount of moisture from the surrounding soil and unless one is careful to watch the plants and water them freely, they are almost sure to suffer from dryness at the roots.

It will be noticed that plunged plants never exhibit that vigorous, luxuriant growth which characterizes plants grown in the open ground. The chief factor in the difference of development is lack of sufficient moisture at the roots. To give them the water they need requires about as much work to take care of

them as it would require if kept in pots on the veranda, where they can be given shelter from strong winds and sunshine.

#### KEEP THEM IN POTS

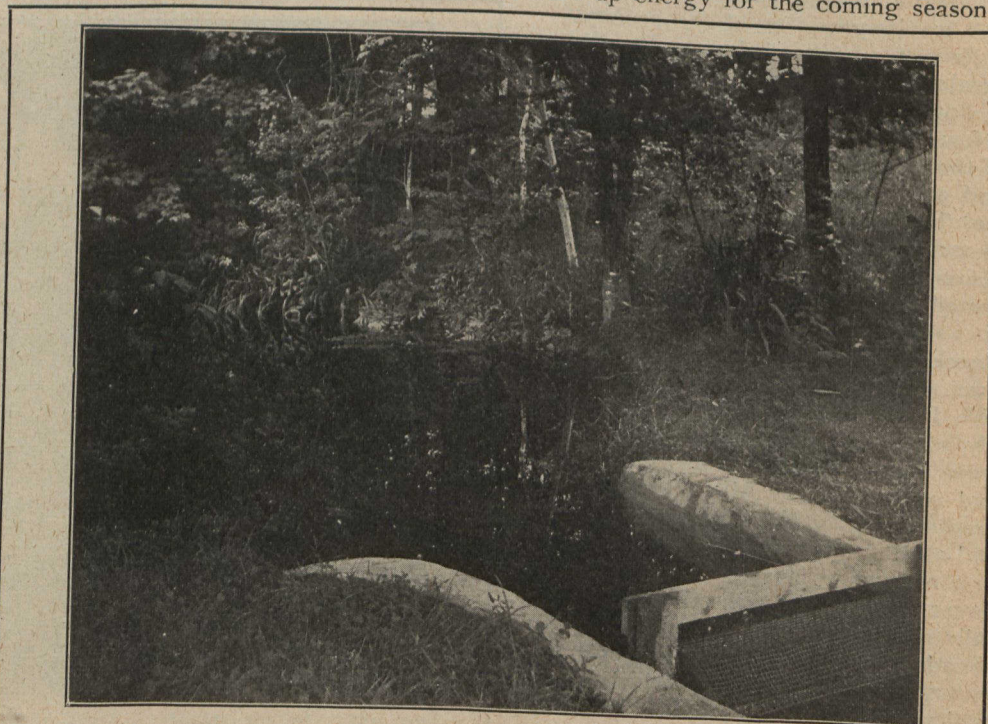
It is advisable therefore to keep plants intended for next winter's use in pots during the entire season. Give them a place on a partially shaded veranda, or under a shed with a slat roof. Kept in either of these places they are to a great extent under control. Water can be freely given to those whose growth it is advisable to encourage and withheld from those requiring a resting spell, thus keeping them almost dormant. The sunshine can be tempered to the needs of each specimen. Little attention can be paid them which if put in the garden they would go without; and the secret of successful plant growing depends to a great extent (and to a much greater extent than is dreamt of in many an amateur's philosophy) on these little attentions.

#### ENTHUSIASM NEEDED

To be a successful plant grower one must go about it enthusiastically but carefully, for each plant has certain characteristics and requirements of its own, which cannot be ignored.

Plants summered as suggested very often do not require complete re-potting in the fall, simply the removal of the upper portions of the soil in the pot and the substitution of good rich fresh earth. The result will be that they will come to the season of removal to the house in the best condition possible to stand the trying change.

Plants intended for winter use should never be allowed to bloom during the summer. They should be encouraged to store up energy for the coming season.



The Trout Pond and Weir in Mr. Campbell's Garden



## Success with Sweet Peas

H. M. Lay, Walkerton, Ont.

**M**OST authorities urge the early planting of sweet peas in heavy soil. My garden has a solid clay foundation, and I find it advisable to prepare the ground in the fall. This has been done by digging trenches as deep as the clay substratum will permit, and manuring heavily with good rotten stable manure.

Sowing in the spring is done as soon as the snow is off the ground, and varies according to weather conditions. It has been effected as early as March 24th, and is usually completed before the fifteenth of April. The best results have been obtained with American seeds, although I have tried both Canadian and English. Sowing is done very thinly, at least four inches between each seed. Supports are put in position before the seed is up as this avoids injury to the young seedlings.

The young plants seem to take most kindly at first to wire netting, but I have largely used two by two inch posts, about seven feet long, inserted about a foot in the ground and about ten feet apart in the row. Double headed tacks are driven into the posts, about four inches apart, before they are planted, and through these strong twine is strung. The end posts in the row should be substantially guyed.

During the growing season constant attention is required in tying the haulms to the horizontal strings with raffia. This keeps the bloom sprays straight. After the plants are up frequent cultivation and weeding is persisted in ac-

companied by a good dressing on both sides of the row, of good short barnyard manure. Towards the end of July feeding with liquid manure is commenced. Changes are rung on nitrate of soda, sulphate of potash, ammonium sulphate, soot water, Rex fertilizer, and infusions of poultry manure. These have the best results if given after rain or watering. A sprinkling of wood ashes along the rows is given early in the season.

Flowering usually commences about the end of June. In order to keep a constant succession of bloom until well on in October the flowers must be gathered so frequently that no pods are formed. In the very hot weather blooms intended for exhibition are kept from burning by some growers by being shaded with widths of cheese cloth stretched on frames above the rows. If one had time to take this precaution I believe that they would be well repaid, as some of the red and crimson varieties especially are soon spoiled by the mid-day heat. Partial experimenting on this line last summer convinced me of the benefit of shading.

The sweet pea is one of the most charming of flowers responding in the most generous fashion to the care of the gardener. After a lavish and brilliant display of blooms, some of which gained recognition at the Toronto and London fall exhibitions, throughout the months of July, August and September, the warm days of the late autumn still found many a beautiful spike of pink, lilac,

crimson and white gracefully nodding above their gray green hedges.

### Angel's Trumpet

Bernard Baker, Whitby, Ont.

About the middle of May, 1912, I brought from the cellar a tub which contained the skeleton of a big nine-year-old Angel's Trumpet. I pruned back the bare branches and gave it some fresh soil. Soon it began to show signs of life, and leaves started to come out, long entire leaves of a rather light green color. The plant gradually grew until in September it reached the height of six and one-half feet.

Buds began to form in August and grew steadily. The flowers, tightly closed, broke through the gamopetalous calyx and extended to full length before opening. On the tenth of September, the first flower opened, and on the twenty-fifth there were at least fifty perfect flowers out at one time. The average flower was about twelve inches long and from five to six inches across. Inside they were a beautiful waxy white, with long whitish stamens and pistil. Without, the corolla was not nearly so waxy in appearance and not quite so pure in color.

One could best realize the full beauty of the big flowers at night when they were fully expanded. The waxy centre sparkled in the lamplight and the purity of the whiteness seemed then most striking. At night, too, the many flowers gave forth a pleasing spicy fragrance which permeated the air. In the daytime some of this beauty was lost, for then the flowers, with the exception of the very oldest, closed and the fragrance was not nearly so noticeable.



The Sweet Pea Beds in Mr. Lay's Garden, which produced the First Prize Blooms at the Toronto and London Exhibitions



## Mushrooms out of Doors

John Gall

**M**USHROOMS can be grown as successfully out of doors as they can in houses or under the protection of sheets; but it is a crop that the grower must take special pains in preparing for, or failure will be the result. Mushrooms may be grown in meadows by inserting pieces of the spawn in the turf at distances of about six to seven feet apart. The proper way to do this is to cut a hole about one foot deep and one foot wide in the turf, taking care to save the top sod to place down again.

Fill up the hole with fresh horse manure and the short, littery straw which accompanies it in equal quantities. The manure should be exposed to the weather for a fortnight for the purpose of drying, and must be protected from rain. At the end of this period put it up in a good-sized heap to ferment. Open it out in about eight days to let out foul steam, then put up again for eight days, and open afterwards in the same manner in another eight days. The manure then will be ready to place in the holes and the spawn can be inserted in it.

When filling the holes with manure, bear in mind that room must be left for the sod to be placed back at the same level as it was before. Press the manure into the holes as hard as it is possible to do so, and always bear in mind it must be in a fairly dry condition.

Break each cake of spawn with the hands into about a dozen equal parts, burying one piece in the manure in each hole, using also the fragments which may happen to fall from the pieces. Plant deep enough to allow a quarter of an inch of the manure to cover the spawn; then place over the manure half an inch of the soil which came out of the hole, pressing it hard down, and finishing by placing the sod of earth with the grass on back in its place, treading it firmly down. The best time to do this is in the month of July.

### OUTDOOR BEDS

For mushroom beds out of doors the manure is prepared in the same manner, but it must be from corn-fed horses. The beds should be placed in some well-sheltered, shady position, as mushrooms are difficult to produce during the summer months on account of the heat then usually prevailing; therefore, have the beds placed where they can be kept shady and cool. They should be built in round-topped ridges two and a half feet wide and the same in height.

In building, tread down as firmly as possible. Insert a thermometer in the bed about eight inches deep as soon as it is completed. The heat will probably

rise to about ninety degrees Fahrenheit in the course of about nine days, after which it will begin to fall. Immediately it falls to seventy-five degrees it will be time to spawn the bed.

The spawn should be prepared in the same way as for the turf, and the pieces inserted ten inches apart all over the surface of the bed. The beds must be protected from rain by covering with straw, mats, or some such material. In the course of a week after the spawn has been inserted it will start to run, meaning that tiny white threads will radiate from it into the manure, and a sort of mildew mould appear round it. It will now be time to apply a coating of loamy soil to the surface of the bed to the depth of about half an inch when well beaten down hard with the back of the spade. The work is now completed, excepting that the bed must be kept dark and protected from rain by being covered over.

I have found it a good plan to place a thermometer on the surface of the bed under the covering. An effort should be made to keep the temperature as

nearly as possible to about sixty degrees Fahrenheit. If it is found below this figure, more covering must be added; if above this, some must be removed. The beds should be uncovered in about five weeks' time, brushing away any mould or dirt which may have gathered on the surface. If the soil should at any time appear dry, give the bed a watering with tepid water (not cold), and cover up again as before. In about ten days' time mushrooms will make their appearance in good numbers.

### HOW TO GATHER THE CROP

When gathering mushrooms, do not cut the stalks, but give each one a gentle twist with the fingers, pulling up with it the whole of its stalk and the small pieces of roots usually attached to it. A good mushroom bed remains in profit from eight to ten weeks. Afterwards it should be taken up and used for greenhouse purposes or applied to the land. If a constant supply of mushrooms be desired a new bed should be made up about every six weeks. Your first bed should be ready for spawning early in July. In purchasing spawn from your seedsman, you should stipulate for it to be at least less than a year old.

## Cabbage and Cauliflower Culture

Geo. Baldwin, Toronto, Ont.

**C**ABBAGE and cauliflower are two of the most popular and wholesome vegetables that we have. Both are of the one family. They are not appreciated as they should be, for two reasons: First, because when growing them for ourselves we do not give them sufficient attention, and, second,

because we cannot always get them fresh from the corner grocery or vegetable waggon.

The cabbage is used in three different forms, namely, sliced raw cabbage, the ordinary boiled cabbage, and the salted or sauerkraut, the German nation's fancy dish. The first form, raw cabbage, is



Raspberries with Beans growing in between. A Peterborough garden photographed in June





A Corner of St. Catharines Fruit and Vegetable Market. Mr. W. H. Bunting may be seen.

the most wholesome form of vegetable, and healthful, and while the cabbage and cauliflower are popular, we do not see as many back gardens with a few rows of them as there should be. A few timely hints as to seed, soil and cultivation may be of interest and helpful to some.

As the time is past for sowing seeds for early cabbage and cauliflower, get seeds at once for your main or fall crop, taking your choice from the three best varieties which are for cabbage—Henderson's Summer, Danish Ballhead, and Glory. The latter is my favorite. Sow the seeds thinly in a warm corner of your garden a half inch deep, in rows four or five inches apart. Leave the seedlings until they show their second pair of leaves, before planting them into the space allotted for them.

#### PREPARING THE SOIL

The preparation of the soil is vital, although, be it understood that cabbages like corn, will grow in almost any kind of soil, but not to the perfection they will on good soil. Clay loam is the most suitable. In the event of your soil being of a clay nature, endeavour to get some sand to incorporate with the clay, or if of a sandy nature try to get a load or two of heavier soil. In any case it is essential that you have some well decayed manure to dig in. Dig the soil the full depth of your fork or spade and turn in as much as three inches of manure if possible, because it improves the texture of the soil, while the fertilizers do not. It also is invaluable for supplying the necessary humus.

In the event of your being unable to procure manure, use one pound of nitrate of soda to every four hundred square feet of soil. Throw this on

broadcast, raking it in before setting out the plants. Set your plants out about two feet apart each way so as to give them a chance to get lots of air and enable you to use the hoe for cultivating until you are stopped by the cabbages touching one another. It is very necessary to continually cultivate, especially in dry weather.

#### INSECT ENEMIES

The greatest drawback to cabbage growing is the many different insects which invariably attack the plant at different times. The principal ones are three in number, and include the cutworm, the cabbage maggot, and the green caterpillar. The first two attack the plants in their infancy and both at the roots. The first gnaws the stem right through and the second eats off the fibrous roots, causing the plant to wilt and die. Last of all comes the green caterpillar, and just at a time when the heads are fully formed and you think that you are going to have a good crop.

One or all of the following remedies, while harmless in themselves, are sure death to the three pests mentioned: A dusting of lime (air slacked) mixed with equal parts of powdered sulphur, put on with an old pepper box about three or four times during the season will do the trick. Scatter it on and around the plant. Another good remedy is a half-pound of pyrethrum powder mixed with two pounds of common flour, sprinkled on and around in a similar manner. These remedies are equally good for savoys and cauliflower. Should you desire to grow some savoys, Drumhead is the best.

The cauliflower is the most highly appreciated of the whole cabbage family

owing to its most delicate flavor. There is no reason why you cannot have as good cauliflower as cabbage. The secret, if it be a secret, of a most delicious and tender cauliflower is to keep it growing all the time by constant attention in the way of cultivating and watering in dry weather. The cauliflower is the most moisture-loving of the whole family.

To make it an ideal head, it must be properly blanched or bleached by tying or pegging the leaves up over the top to keep the sun's rays off. You will then have a beautiful snow white curd, even, uniform texture, and the absence of small green leaves sprouting between the sections comprising the head.

### Spraying Potatoes

M. B. Davis, B. S. A., Bridgetown, N. S.

Spraying potatoes is an important subject. This operation must be conducted in a thorough manner to control the potato bug and the potato blight. The following spray is a good combined fungicide and insecticide: Lime, four pounds; copper sulphate, six pounds; water, forty gallons, arsenate of lead, two pounds.

The foregoing mixture is made the same as the four four forty Bordeaux, and should be applied as soon as the plants attain four or five inches in height. Spraying must be continued as the plants grow and produce new surface for the ravages of the bug and the blight. If you spray often and well, nothing need be feared from either of these diseases.

### A Simple Garden Tool

O. L. Haviland, Boston, Ont.

The accompanying illustration shows a berry pruner which I have used with comfort and satisfaction. Upon thinking it out, I had one made by the blacksmith. It suits me better than the rasp-



berry hook which is generally used, as there is more draw to the blade and it does not pull the cane enough to loosen the roots of the adjoining cane.

I had the shank turned up so as to let the knife set flat to the earth, thus leaving shorter stumps. The blade is six to eight inches long, and is sharp for its whole length. It can be made any length.

Currant bushes should be dusted with white hellebore or paris green; or sprayed with a decoction of hellebore, at the first appearance of currant worms. Thorough cultivation should be practiced at all times.



**The Canadian Horticulturist**  
 COMBINED WITH  
**THE CANADIAN HORTICULTURIST**  
**AND BEEKEEPER**

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1. The Canadian Horticulturist is published in two editions on the 25th day of the month preceding date of issue. The first edition is known as The Canadian Horticulturist. It is devoted exclusively to the horticultural interests of Canada. The second edition is known as The Canadian Horticulturist and Beekeeper. In this edition several pages of matter appearing in the first issue are replaced by an equal number of pages of matter relating to the bee keeping interests of Canada.

2. Subscription price of The Canadian Horticulturist in Canada and Great Britain, 60 cents a year; two years, \$1.00, and of The Canadian Horticulturist and Beekeeper, \$1.00 a year. For United States and local subscriptions in Peterboro (not called for at the Post Office), 25 cents extra a year, including postage.

3. Remittances should be made by Post Office or Express Money Order, or Registered Letter.

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**CIRCULATION STATEMENT**

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1912. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies from 13,000 to 15,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1912.....	9,988	August, 1912.....	11,148
February, 1912.....	10,437	September, 1912.....	10,997
March, 1912.....	10,877	October, 1912.....	10,971
April, 1912.....	11,788	November, 1912.....	11,162
May, 1912.....	12,112	December, 1912.....	11,144
June, 1912.....	10,946		
July, 1912.....	10,986		132,556

Average each issue in	1907, 6,627
" " " "	1908, 8,695
" " " "	1909, 8,970
" " " "	1910, 9,067
" " " "	1911, 9,541
" " " "	1912, 11,057
June, 1913 .....	12,003

Sworn detailed statements will be mailed upon application.

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We guarantee that every advertiser in this issue is reliable. We are able to do this because the advertising columns of The Canadian Horticulturist are as carefully edited as the reading columns, and because to protect our readers we turn away all unscrupulous advertisers. Should any advertiser herein deal dishonestly with any subscriber, we will make good the amount of his loss, provided such transaction occurs within one month from date of this issue, that it is reported to us within a week of its occurrence, and that we find the facts to be as stated. It is a condition of this contract that in writing to advertisers you state: "I saw your advertisement in The Canadian Horticulturist."

Rogues shall not ply their trade at the expense of our subscribers, who are our friends, through the medium of these columns; but we shall not attempt to adjust trifling disputes between subscribers and honourable business men who advertise, nor pay the debts of honest bankrupts. Communications should be addressed

THE CANADIAN HORTICULTURIST,  
 PETERBORO, ONT.

**EDITORIAL**

**BETTER PACKING NEEDED**

The time has come for a change in the packing methods of some Ontario fruit growers. A number of unscrupulous, or to say the least, careless packers, are damaging the reputation of Ontario fruit as a whole.

If Ontario fruit is to hold its own on the rapidly growing market of the West, Ontario growers must adopt more extensively the box pack, especially for number one fruit. But with either the box or barrel packs honest packing methods are a fundamental necessity.

In a letter recently received by The Canadian Horticulturist, Rev. J. A. Andrew, a Manitoba subscriber, says in part:

"A year ago last fall I purchased a barrel of Ontario Fallwaters. All were badly bruised, three-fourths were wormy and many were punctured by having fallen on stubble. A barrel of Golden Russets also was small, wormy and bruised. The entire carload was of about the same quality. Last fall I got some Spys. These were small, unevenly colored and bruised. They had evidently been picked too soon. These apples were from western Ontario, were branded with the shipper's name, and as number one apples. When such fruit is received here I feel ashamed to say I am from Ontario."

P. W. Hodgetts, Director of Horticulture for Ontario, speaking before the Northumberland and Durham Fruit Growers' Association, quoted a Western market commissioner as saying:

"There are just enough bad packers in Ontario to give it a reputation as a second rate fruit country."

N. B. Ireland, now of Saskatoon, Sask., states:

"Having had years of experience on the market at Hamilton, Ont., I feel safe in saying that Ontario can send us as good fruit as comes in from any other place. What is wanted is a strict law that will make dishonest packing impossible."

These opinions, coming as they do from widely divergent points in the west, should convince Ontario growers of the need of an immediate improvement in packing methods. The status of Ontario fruit on the western market is at a critical stage. British Columbia growers are organizing on a large scale and are making every effort to better their chances on that market. Their enterprise deserves to and will meet with success. Nova Scotia growers are now competing for the same markets. It is time for the Ontario grower to be up and doing.

**PACKING LATE VARIETIES**

There is an old saying, "It is better to take pains than to let pains take you." This axiom possesses additional significance when applied to the fruit grower. Judging from a recent report of E. H. Wartman, Provincial Fruit Inspector, possibly some consumers, who this past spring purchased late keeping varieties, wished that the packers had taken a little more pains and saved them the painful feeling of having been "done" on their purchases.

Referring to the packing of late keeping varieties, Mr. Wortman says:

"During early May, while examining Golden Russets, Spy, Ben Davis and other varieties, I found all the way from ten per cent. to fifty per cent. in number one barrels of these varieties in a rotten condition. Upon taking up specimens I could see that each one had received an injury when placed in the barrel or box, such as a puncture caused by handling, a diseased spot or an insect mark. I put this condition to the credit of a little oversight or carelessness on the part of the manipulator."

A lack of good judgment on the part of the packer is responsible for the presence of most of this damaged fruit. Instead of saying, "This apple is practically as sound as a dollar; a little blemish like that doesn't amount to anything," the packer should ask himself the question, "What effect is that blemish going to have on that apple six or seven months from now?"

In the packing of late varieties directly from the orchard, the most rigid care is necessary. It needs a sharp eye indeed to detect all the slight injuries that will afterwards cause decay. Many growers prefer, when possible, to store the fruit until about the Christmas season and pack them. Slight bruises, which at picking time were hardly noticeable, will then be easily detected. By eliminating all fruit so affected and by careful packing, the keeping qualities may be assured as well as greater satisfaction on the part of the buying public.

**SMALL PARCELS BY POST**

The Federal Government has promised the early adoption of a parcels post system for the Dominion. The enormity of the business transacted through the medium of the parcels post in the United States since its adoption at the first of the year, justifies the Government in moving slowly. It will take time to evolve a system that will be adequate to cope with the large amount of business that will undoubtedly be forthcoming.

There is no reason, however, why we should not have an early installment of this much needed addition to our postal facilities. A parcels post for packages weighing up to five pounds would not unduly tax the present facilities, and would serve as a guide to the Government when arranging for the extension of the system. It is on small parcels that the express companies' charges, both in Canada and the United States, are the most extortionate. The following figures show the comparative parcels post and express rates existing in New York in January last. We quote three "zones" that are representative of the eight:

(1) Not over 50 miles—	1 lb.	5 lbs.	11 lbs.
Express Rate .....	25c	30c	35c
Parcels Post .....	5c	17c	35c
(4) 300 to 600 miles—			
Express .....	25c	55c	75c
Parcels Post .....	8c	32c	68c
(7) 1,400 to 1,800 miles—			
Express .....	30c	80c	\$1.50
Parcels Post .....	12c	60c	\$1.32

As the table shows, the difference between the express and postal rates on large parcels is not great, but the minimum express charge of twenty-five cents for carrying a small package a few miles is unreasonable. The Government should adopt as expeditiously as possible a parcels post for small parcels at least, and give the public a measure of relief from existing conditions.



### Ad. Talk

There is a law of average. A prominent authority has summed it up in the following simple and conclusive manner. He says:

"Nothing is so uncertain as the duration of the life of an individual.

"Nothing is more certain than the average duration of the life of a thousand individuals.

"We know for example that the average duration of the human life is about thirty-three years. We also know that one-quarter of the people on the earth die before the age of six, one-half before the age of sixteen, and that only one person in every hundred born, lives to be sixty-five years old.

"The operations of the 'Law of Average' are not confined to the field of vital statistics. Of one thousand men, so many smoke; so many attend baseball; so many like strawberries."

You will, of course, admit the foregoing.

Did it ever occur to you, however, that there is a like law operating in connection with your advertising. If you could tell how many persons in a hundred or a thousand would like your product or would be interested in your line, you would have a pretty solid foundation on which to build. This is not so easily found out. You can at least tell roughly the class of people who would be most interested in your goods.

When you come to place your advertising, with this in view, you will consider the medium that will reach the class of people whom you are seeking. If everyone likes your product, any medium of general circulation will be good. If not one person in a hundred likes it, advertising in a medium of that kind will be of very doubtful value. You must, therefore turn to a publication, every subscriber of which is interested in your product; in other words, a class publication. In such a publication one hundred people out of one hundred are interested. The greater value of advertising in it is readily admitted.

The Canadian Horticulturist, combined with The Canadian Horticulturist and Beekeeper, is such a medium. Taken for its all-round practical value in the horticultural field, where it stands alone, it occupies a position of more than ordinary importance to the advertiser who has a product of interest to fruit men, flower and vegetable growers and beekeepers.

The growth and increasing interest along all horticultural lines will mean greater opportunities for business for you this coming year; more people will seek your products if you are willing to seek them—by advertising.

When planning your advertising this fall just keep in mind that the "Law of Average" will be decidedly in your favour, if you include The Canadian Horticulturist.

Readers state daily: "We buy articles advertised in The Canadian Horticulturist because they are reliable." That is because we guarantee the reliability of our advertisers.

### PUBLISHER'S DESK

Did you notice our front cover illustration this month? You could hardly miss it. We consider it one of the most unique ever published in The Canadian Horticulturist. You will there recognize two of the humbler forms of life. In the centre appears the common and extremely virulent toad stool. Under it, sheltered from the rays of the noonday sun, with his solemn, calm, meditating eye and dignified mien, is our humble but useful garden friend, the toad, whose assistance in fighting all kinds of insect pests we are too apt to underestimate. Surely in this setting he is a subject worthy of the painter's palette!

We know that Horticulturist readers appreciate the usefulness and attractiveness of a conservatory or greenhouse attached to the home. About this time of year many of you are beginning to form hazy plans in your minds in the line of conservatory or greenhouse construction. We are preparing to give you information that will enable you to make those hazy ideas definite.

The month of August will usher in the season when greenhouse construction is at its height. The August number of The Horticulturist will be largely devoted to this subject. We have arranged for several timely articles on such subjects as "The Greenhouse for the Amateur," and "Greenhouse Preparation for Next Winter's Crops." These articles will be given additional value by being well illustrated. Whether you want a greenhouse for pleasure or for profit, you will find something of special interest to you in our August issue.

Our Second Annual Exhibition and Fall Packing Number, issued last September, was so well received by our readers that we are taking a long look ahead, and are making a special effort to give you something this year in the September number that will entirely eclipse last year's effort. Fruit picking and packing will be right to the fore in our September issue. You will be pleased to know that we have been successful in securing special articles on these two subjects by the very best authorities in the land.

A strong feature of the September issue will be the illustrations. Each article will be profusely illustrated. A special feature that will please everyone of our readers is the new cover design that is now being prepared. Watch for this issue. We know it will please you.

We would like this special September Exhibition Number to reach every fruit grower and gardener in the land. Your friends, who are not already Horticulturist readers, would appreciate your interest in them did you call this number to their attention. You have been intending to add a few names to our list of readers for some time. Why not make a special effort before our September number is out? You know, the more readers we have the bigger and better we can afford to make The Canadian Horticulturist.

Will any of our readers who have finished reading and who do not require their April copy of The Canadian Horticulturist for fil-

ing, kindly forward same to us. We have received several requests for copies of this issue, and owing to our supply having been exhausted, have been unable to fill these requests. If there are any readers who can grant us this favor it will be much appreciated.

### SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

#### Hamilton

Messrs. McCulloch and Kneeshaw, of the Hamilton Horticultural Society, visited all city schools in May and distributed fifteen hundred packages of seeds for the Children's Aster Show, which will be held about September fifth. Besides this, four hundred packages were given to the county schools to assist in the work of encouraging the school gardens throughout the county of Wentworth. Besides the public schools, the Boys' Home and the Girls' Home and Separate Schools were not overlooked.

#### Smiths Falls

The Smiths Falls Horticultural Society, among other things, has entered upon an educational campaign, and has arranged for monthly lectures by horticultural experts. So far three have been given with gratifying results. Nine hundred papers of seeds have been distributed to the school children, park improvement is going on, and there is the usual lawn and garden competitions, to be followed by a flower show in the fall.

It is encouraging to note that the interest of the citizens is becoming fully awakened to the benefit and importance of the work of the society. Several citizens have volunteered to give substantial prizes in the various competitions, in addition to those offered by the society.

#### Toronto

The first exhibit of the Toronto Horticultural Society for the year 1913 took the form of a flower show held in Foresters' Hall. Owing to the unusually early spring the showing of bulbs was large. Several collections that were exhibited are worthy of some comment.

That of the Allan Garden adorned the platform. Behind it an orchestra was placed, adding to the pleasure of the evening. The specimen of double cherry in the collection of J. D. Hayden, of Cobourg, was much admired. T. A. Manton and Mr. Jennings had especially fine collections. Miss Blackstock showed some beautiful perennials.

#### St. Catharines

This year Miss L. A. Radcliff and Mrs. Perry Blain, secretaries, made a visit of the city schools, as well as Port Dalhousie and Merriton Central, where they placed in the hands of every pupil who desired it a package of aster seed. With the growth of population and the added interest in the seed planting, upwards of about three thousand packages were needed to fill the demand this year. Previously two thousand were sufficient. In the fall prizes

(Continued on page 182)



## Reasons for Fruit Company's Failure

Editor, The Canadian Horticulturist.—In the June issue of The Canadian Horticulturist there appeared an article in reference to the failure of The National Land, Fruit and Packing Company. The failure of this company is attracting considerable attention, and the daily press is inclined to belittle the business ability of those who were in charge. As I was at one time general superintendent of the company, I wish to explain that those in charge of the operating end of the concern were not responsible for its failure.

As you know, the company was promoted and floated in the Old Country over two years and a half ago. In September, 1911, I was managing the Wentworth Fruit Growers' Association at Hamilton, and had quite large interests there in the orchard business. Mr. T. R. Rolph, acting for Mr. Evans, president of The National Land, Fruit and Packing Company, wrote and asked me to take charge as general superintendent, at a salary of \$2500 a year. I soon discovered that the general superintendent was not to be given full sway, as Mr. Evans himself took full charge of the finances. In spite of the fact that I sent numerous protests to the executive showing the impossibility of some of the schemes which they were advancing, matters did not mend.

As soon as the crop of 1912 was safely harvested I tendered my resignation. Mr. Evans had gone to the Old Country and left us with practically no money on hand for handling the output of about one hundred and fifty thousand barrels of apples from the orchards that had been leased. The situation is self explanatory.

One of the main factors contributing to the downfall of the concern was, I believe, the method in which the six hundred and sixty orchards throughout the country were leased. A local man in each district was offered a royalty of ten cents a tree for ten years on all orchards rented by him. The result was that such a man would go out and rent everything in sight, and the company found themselves with some pretty mean deals on their hands. Even with these drawbacks there were many of the orchards that would have paid well under proper management.

I will cite an example of some of the peculiar ideas that I was expected to carry out: I was instructed by the executive to buy two hundred carloads of culls for the evaporator at Mimico. As the evaporator was only partially constructed at the time, I protested against this course, but to no avail. By the first of December there were as many as seventy car loads of these apples on the track at Mimico at one time. Most of these were badly frozen and in addition the railway company sent in a demurrage bill of over two thousand dollars. The result was that these apples cost the company about ninety cents a barrel on the track at Mimico. This will give an idea of the difficulties I had to face in trying to make this venture a profitable one.

It now appears that the reorganization of this company will not be possible, but it is not the impracticability of the scheme itself that should be found fault with, but the extreme extravagance in operative methods. I would have left the company sooner than I did had it not been I thought I should stand by the company until the enormous crop had been gathered. I do not wish to criticize too harshly Mr. Evans or other members of the executive, as they evidently did not realize just exactly what

they were up against. The fact that this company was operated in two of the worst years known in the apple business for some time past, is no doubt partly responsible for its failure. The farmers, however, from whom these orchards were leased are better off to the extent of thousands of dol-

lars because of the greatly improved condition of their orchards.

I am writing you because I think that in all fairness to myself, I should not be criticized for the failure of a company that was due not to poor management on my part, but to extravagant financial methods."

Hamilton, Ont.

Roy A. Carey.

## A Successful Association

The success of the Wentworth Fruit Growers' Association (Ontario) has been such as to attract considerable attention, and has led to a demand for information as to how it is managed. It is conducted on the true cooperative principle. The object of the association, as one of its by-laws states, is "to encourage the fruit growers in the County of Wentworth, who are interested in the improvement of the quality and quantity of fruit, to cooperate for the purpose of securing a better and more uniform system of packing and marketing their fruit."

This organization is not a joint stock company. It has no stock and is so managed that no capital is needed. An annual fee of one dollar entitles the members to all the privileges of the association and to one vote.

At the annual meeting, an executive of seven members is elected by ballot. The executive appoints a member to act as manager and secretary-treasurer. The manager is paid by commission on a sliding scale basis. He receives twenty cents a barrel up to five hundred barrels, the commission dropping to twelve and one-half cents on more than one thousand barrels. He attends to all arrangements for marketing and selling the fruit. He procures good packers, who are sent out to the various orchards. He also gets quotations on barrels, spraying materials, and all orchard supplies that the members require. It is also his duty to visit the members, give advice on spraying and cultural methods, and oversee the packing.

When we state that the association is operated without capital, the question naturally arises, how is money obtained for payment on supplies? The firms from whom supplies are obtained, invoice each member and collect from him for his purchase. The packers that are sent out are paid by each member for the time that the packer spends on the place. The association has no warehouse, the fruit being shipped directly from the orchards. In case money is required to be advanced for packers or for supplies, the executive signs notes at the bank, to be paid back when the returns for fruit come in.

To ensure the production of the highest quality of fruit possible, each member is obliged to prune, fertilize, and cultivate as recommended by the manager, and must spray at least three times. The manager oversees the packing, which must be up to the standard set by the association.

To safeguard itself, the association requires the members to make all shipments exceeding five barrels through the association. An exception is made of such early varieties as Astrachan, Duchess, and St. Lawrence. In case a member wishes to make an independent shipment of more than five barrels, he must receive the permission of the manager, and must also pay the association fifty cents on every barrel so shipped. Should a member not comply with these requirements, he would be asked to withdraw from the association. So far the association has never

had to ask a member to do so.

The Wentworth Association also controls the Oakville and Ancaster Associations. Last year over fourteen thousand barrels were packed and shipped, most of the fruit going to the western and Old Country markets. The larger proportion is sold to wholesalers and retailers. Shipping through commission men is avoided as much as possible. At the end of the season the apples are prorated and members paid according to actual value. Numbers of complimentary letters have been received by the association from western and Old Country fruit houses, commenting on the excellence of the pack.

The success of the Wentworth Association is materially strengthening the cooperative movement in the district. It has been due largely to the efficient work of its manager, Lorne H. Carey.

## Poor Orchards Being Hit

A correspondent from that splendid apple region along the east coast of Lake Huron says: "Markets in 1912 were no good for apples. Three-quarters of the crop was left to rot on the ground." This correspondent must be considered as speaking only for a very limited area in giving the quantity of apples left to rot, yet the truth remains that throughout western and southern Ontario in 1912 large quantities of apples were sold at an exceedingly low price or not sold at all.

The reasons for this are not far to seek. First and foremost was the complete breakdown of the old system of itinerant buyers who, since the inception of the apple trade, have been the recognized means of disposing of the crop in Ontario. This failure of the itinerant buyers to appear upon the ground was caused partly by the Old Country firms refusing to make large advances, which they had always done in former years, leaving these buyers without money to finance their purchases. Second, even in the case of buyers having funds, the cooperative associations have become so numerous that they cover the ground, especially in the better apple districts, leaving only the inferior orchards for the outside buyer. Third, there was a distrust in the minds of many of the old buyers with reference to the condition of the apple market.

The net result was that in many districts where there are comparatively few orchards and where the orchards for the most part are very poorly cared for, no buyer deemed it worth his while to visit them. Canadian apple dealers, with capital of their own, preferred to deal directly with the cooperative associations, where they could purchase large quantities of fruit of uniform grade, and with the grade marks guaranteed. It is not at all likely that any buyer with capital of his own to risk will, in the future, care to handle the small, ill-kept orchards, containing many varieties, of the ordinary farmer engaged in mixed farming. With individual selling it is not probable that these orchards will ever again become really worth while.—Report of the Dominion Fruit Division.



**Central Packing Houses \***

Alex McNeill, Chief of the Fruit Division, Ottawa

In the earlier history of the cooperative fruit growers' associations the central packing house was not usually adopted. It was the almost universal custom for each grower to take his fruit, graded and packed by himself, to a warehouse at the railroad station, where the manager of the association assembled the different varieties and grades and shipped in carload lots or quantities to suit his purchasers. It was very soon found, however, that while this improved the uniformity of the pack somewhat, it still left a great deal to be desired. This is not due always to fraudulent intent on the part of the members, although it must be admitted that there were few associations practising this method that did not count among their members some who were fraudulently inclined. Nevertheless, with the best intention, it was simply impossible to get ten, fifteen, or perhaps fifty growers to observe the same standard, with a sufficient degree of uniformity to meet the needs of the market. To overcome this difficulty the central packing house system has been adopted by practically all the newer cooperative associations.

The central packing house system consists in having a common warehouse, usually at a shipping station, where the apples can be loaded on a siding. The apples are brought from the orchard in barrels unheaded, or if unheaded, unpressed. It is absolutely necessary that they should be drawn to the packing house on spring wagons, although a few of the smaller growers substitute for a spring wagon the

ordinary hay rack filled level with hay or straw. On this the apples are placed and carried with comparative safety. These are delivered to the central packing house and a receipt is taken. In the central packing house a gang of expert packers are employed who have no knowledge of whose apples they are packing. The result is that the apples of the whole association pass through the hands of a single set of graders and uniformity is secured.

Many growers who have not given this matter proper consideration object to having the grading of their fruit taken out of their hands. Nevertheless, it must be admitted that few men can be trusted to pack their own fruit. Of course, the more intelligent the fruit growers are the more capable they are of packing their own fruit. Yet even among growers so intelligent as those in Hood River, Oregon, the expert packers of the association grade and pack all the fruit. I need not go into the reasons for this. Upon the moral side, I think it will be admitted that fruit growers, on the average, are constituted with enough selfishness to induce them to look out for themselves, and the line between looking out for themselves and giving the buying public a properly packed box of apples, is so indistinct that people who pack their own apples often yield to the temptation of overstepping the mark. On the other hand, men who are employed to pack up to a certain standard and who are working day by day with apples belonging to many different owners, whose fruit they do not distinguish and in whom they have no special interest, have no temptation to grade below the proper limits. There is also a purely economic reason for adopting the central packing system; individuals who pack and do nothing else

\*Extract from Bulletin No. 33, entitled Co-operation and Fruit Growing, recently issued by the Dominion Department of Agriculture.

**Douglas Gardens**  
Oakville, Ontario

**IRISES**

The Iris has been a neglected flower. It is now coming to its own and becoming more popular every year. Its hardiness, its beauty of form, texture and coloring, its sureness to bloom, and its easy culture commend it to all flower lovers. It blooms the first year and every year.

**IRIS GERMANICA**

- No. 15. Mrs. G. Darwin, white, reticulated gold and violet, each 25 cts.; 10, \$2.00.
- No. 21. Sappho, S. rich blue; F. dark velvety purple, 2 1/2 ft., each, 15 cts.; 10, \$1.25.
- No. 26. Mandraliscae, S. and F. rich lavender purple, 3 ft., each, 25 cts.; 10, \$2.25.
- No. 29. Mme. Chareau, S. and F. white frilled with blue, 2 1/2 ft., each 15 cts.; 10, \$1.25.
- No. 33. Jacquesiana, S. coppery crimson; F. maroon, 2 1/2 ft., each, 25 cts.; 10, \$2.25.
- No. 65. Iris, Monspur, violet-blue, 4 ft., each, 25 cts.; 10, \$2.00.
- No. 66. Iris, Ochroleuca, white, with yellow blotch, 5 ft., each, 25 cts.; 10, \$2.00.

**IRIS LAEVIGATA (JAPANESE)**

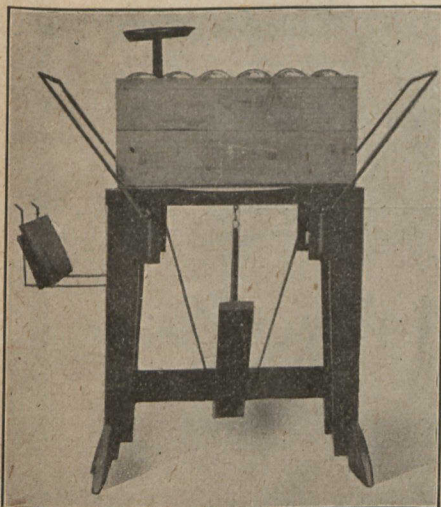
- No. 57. Osho-Kun, Tyrian blue, with yellow blotches, late, each, 25 cts.; 10, \$2.25.
- No. 59. Sano-Watashi, silvery white, with golden band in petals, each 25 cts.; 10, \$2.25.
- No. 60. Shiratki, white with primrose blotches, beautiful, each, 25 cts.; 10, \$2.25.

These prices include carriage prepaid.  
Be sure to plant some Irises.  
Plant in July and August.

**JOHN CAVERS**

**Quick and Easy**

That is the way the DAISY APPLE BOX PRESS works. A simple pressure of the foot brings the arms up over the ends of the box, automatically draws them down and holds them in place while being nailed. The fastest and only automatic press on the market.



Pat. No. 104,535

If you pack apples in boxes, this machine will be a great convenience to you and will save you time and money. Write for prices to

**J. J. ROBLIN & SON**  
Manufacturers Brighton, Ontario

**Sweet Wholesome Bread**

THE kind that gives zest to every meal is made from **REINDEER FLOUR** which is a special bread flour. Housewives who use **REINDEER FLOUR** know the pleasure of baking because of the gratifying results obtained. Make a loaf with the ordinary flour on hand. Then try **REINDEER FLOUR** and ask the family which they like best. **TRY IT.**

The best grocers supply Reindeer Flour

**Peterborough Cereal Co.**

Simcoe St. - - Peterborough, Ont.



Good to Bake and Good to Eat,  
Makes the Loaf that's Light  
and Sweet.

**THE WESTERN FAIR**

LONDON, ONTARIO

The Popular Exhibition of Western Ontario  
**SEPTEMBER 5th to 13th, 1913**

\$2000.00 in Cash added to the Prize List

**FRUIT AND FLOWERS**

List Specially Attractive. Special County Exhibit, write the Secretary for particulars. Special Railway Rates.

Prize Lists, Entry Forms and all information from the Secretary, London, Ont.

W. J. REID, President

A. M. HUNT, Secretary



become extremely expert at this work and can do more and better work, and so not only reduce the cost of production, but actually improve the grade of the product.

In the case of early apples and soft fruits that will not admit of being readily taken to a central packing house, an alternative plan is adopted, namely, sending the central association expert packers to pack the fruit in the orchard of the grower. A combination of the two systems is found to work satisfactorily in the Norfolk Fruit Growers' Association, where the greater part of the fruit is packed in the central warehouse, but, in addition, expert packers from the central packing house are sent to put up the fruit of growers in certain outlying orchards.

**St. Catharines**

*(Continued from page 179)*

will be given for the best flowers raised by the pupils of every school. It may be said that the aster seed supplied by the society this year is of a very superior class, the colors of flowers chosen being violet, rose, and white.

During the first week in June a distribution of gladioli bulbs was made in the schools, and for five cents pupils were furnished with bulbs which sell for thirty cents. These bulbs are of excellent named varieties: America, Brenchleyensis, Attraction, and George B. Remson. For every bloom of these brought to the fall exhibition, pupils will receive as a prize four tulip bulbs.

Wouldn't that friend of yours with the garden or orchard like to see THE CANADIAN HORTICULTURIST? Show him your copy, or send us his name and we will send him one.

**Agricultural Appropriations Increased**

The appropriations for carrying on the various branches of the Department of Agriculture, sanctioned during the past session of Parliament, show a decided increase over those of last year. The following table shows the amount of money voted for the present and the past fiscal years:

	1913-14	1912-13
Civil Government .....	\$ 406,525	\$ 445,400
Experimental Farms .....	630,000	395,000
Dairying, Fruit and Cold Storage .....	433,000	368,500
Improvement of Farm Seeds ....	115,000	80,000
Live Stock .....	200,000	102,000
Health of Animals and Meat Inspection .....	710,000	525,000
Tobacco .....	30,000	20,000
Exhibitions .....	433,000	233,000
To administer Insect and Pest Act .....	30,000	25,000
Publications and Int. Institute..	32,000	15,000
To administer Agr. Instruction Act .....	25,000	
<b>Total .....</b>	<b>\$3,444,524</b>	<b>\$2,389,400</b>

The decrease in the amount voted for civil government is accounted for by the transfer of the Census and Statistics and Archives branches to other Departments. To administer the Fruit Division requires about seventy thousand dollars. During the session the Fruit Marks Act was amended to place foreign fruit on the same basis as home grown in so far as inspection is concerned. Twenty-eight thousand dollars are set apart for experiments in cooling fruit before shipment, while two hundred thousand dollars is set aside to bonus cold storage warerooms. Of those receiving grants twenty are in operation, and two are being commenced.

Besides the fifty thousand dollars which will give to Brandon Fair this year the title of Dominion Exhibition, the Depart-

ment is spending a good deal on an exhibit at the international exhibition at Ghent, Belgium. Preparations are also under way for making a good Canadian display at the Panama Exposition to be held at San Francisco in 1915.

In connection with the administration of the Insect and Pest Act an active campaign is in operation in the Maritime Provinces in fighting the Brown Tail moth, which has caused great havoc in the bordering states.

**British Columbia Markets**

There is a possibility that a larger portion than usual of the British Columbia fruit crop this year will be marketed in Australia. Speaking on this point recently, Provincial Fruit Inspector W. H. Lyne said: "Last year the fruit growers had a good crop, but they suffered from the congestion in marketing their crop. They were not represented in many of the markets, as were the United States growers. This year, special efforts have been put forward to improve the system of marketing. Wherever possible, the Provincial Government has lent its assistance in this direction, and we look not only for a successful crop, but also for success in marketing it to good advantage.

"It is expected that a large quantity of our fruit will find its way to the Australian markets. The Australian laws prohibit fruit being imported from districts infected by codling moth, or even from orchards within many miles of an infected district. British Columbia, being free from codling moth, is able to comply with the drastic laws of Australia, and we are planning to take advantage of them."

**FRUITS AND ORNAMENTALS**

Last Fall we sold a large quantity of Fruit Trees and Shrubbery, which gave the best of results. One orchard of 500 Cherries planted at Oakville in late November contains to date but one dead tree. Results like this prove that fall planting pays.

Order Now for November Delivery

**THE AUBURN NURSERIES, Ltd.**

Head Office: 95 King St. E., TORONTO

Nurseries: QUEENSTON, SIMCOE, OAKVILLE

*Apple Boxes*

*Made-up or Knocked down*

*Any Quantity*

*Firstbrook Bros. Limited*

*Boxes and Shooks*

*Toronto, Ont.*



## SCHELLENGER MODEL C

# Apple Sorting Machine

THERE are hundreds of Schellenger Fruit Sorting Machines in use in the Western Fruit Districts. The results these machines have given is best told in our customers' own words:

J. E. RUNDLE,

Wholesale Dealer in Apples and Produce.  
Car Lots Only.

Craig, Mo., Nov. 17, 1912.

Schellenger Fruit Sorting Machine Co.:

Gentlemen,—Your letter of the 14th at hand. Will say in reply A. G. Zulfer of Chicago says my apples that were packed by the Grader were worth 50 cents more a barrel than the apples that were packed without it, and I wish to say that I would not take a thousand dollars for my grader if I could not get another. I am sure a man could not say enough for your grader—it is all right, and when it suits me it will please any good packer.

Yours truly,

J. E. RUNDLE.

FAIRVIEW RANCH COMPANY

C. A. Leedy, Manager.

Wenatchee, Washington, Nov. 20, 1912.

Schellenger Fruit Sorting Machine Co.;

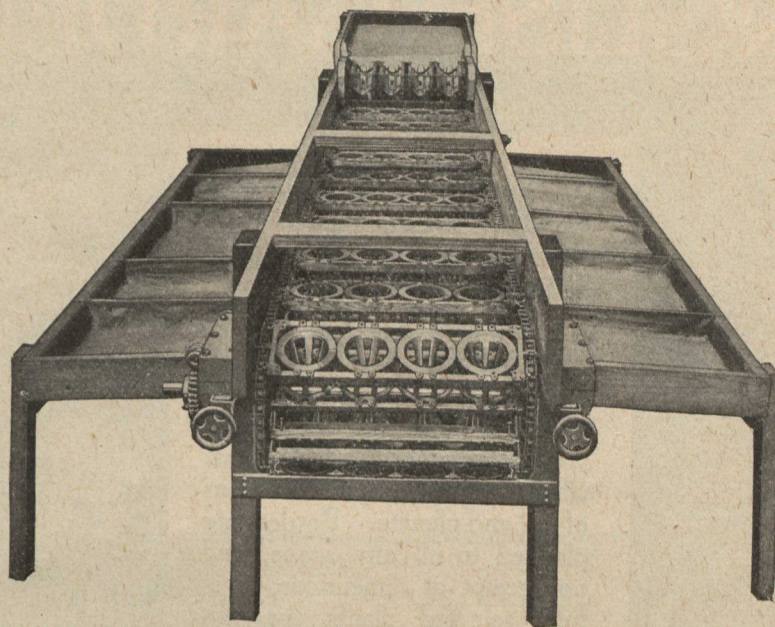
Gentlemen,—We have used one of your fruit grading machines this season to pack about twenty thousand boxes of apples, and we are all pleased with them. We are positive the machine does not bruise the fruit. We find by using this machine that we can use unskilled packers, thereby solving the packing question. We are also able to pack from a third to a half more with the aid of the machine. You surely have the apple grading solved. Of all the people that looked at our machine at work there wasn't a single person but what pronounced it a success.

(Signed) LEEDY BROS.,

(per C. A. Leedy.)

A complete list of Letters of Endorsement from our customers, together with our Catalogue, will be mailed to you upon request. The information regarding the sorting of fruit which is contained in our catalogue is of great value to every grower, and should be carefully read by all before packing season begins.

OUR MODEL C MACHINE will sort apples, peaches, pears, etc., etc., into any desired number of sizes, ranging from  $1\frac{1}{4}$  inches to  $4\frac{3}{4}$  inches Cheek-to-Cheek diameter. Changes in the sizes can be made instantly and accurately to the hundredth part of an inch.



Huntington, Oregon, Jan. 23, 1913.

Schellenger Fruit Sorting Machine Co.;

Gentlemen,—In reply to yours of November 14th, will say that the machine shows no wear any place. It works perfectly. I used it to grade apples and pears. It does its work better than it is possible for it to be done by hand, and one person can grade more than five persons can by hand, and do it better. It is a great labor saver, and growers that do not have one are doing themselves an injustice. Everybody needs one that grows apples and pears in any quantity.

Yours truly,

(Signed) J. C. ROGERS.

Dryden, Washington, Jan. 14th, 1913.

Schellenger Fruit Sorting Machine Co.;

Gentlemen,—The grader is a success. I put three thousand boxes of apples through ours this season and we are pleased with it. It paid for itself in one kind of apples alone where we sold the five tier only, as you know we had only to run them through the grader and pack the five tiers—it was a big saver in labor. We would not try to pack without a grader.

If you are in the Wenatchee Valley this coming season I hope you will give us a call.

Yours truly,

(Signed) J. G. PETERS & SONS.

## Schellenger Fruit Sorting Machine Co.

609-611 SOUTH PAULINA ST.

- CHICAGO, ILL.



This is the Book that will show you  
how you can have a  
**BEAUTIFUL OLD  
ENGLISH GARDEN**

**THE OLD ENGLISH GARDEN** owes much of its charm to the beauty of its simple herbaceous plants.

**KELWAY'S COLOUR BORDERS** of Paeonies, Delphiniums, Pyrethrums, Gailardias and the like will enable you to reproduce this picturesque effect under almost all conditions of soil and climate. Borders are planned to fill any space, and on receipt of dimensions, carefully selected plants are sent beautifully packed, labelled and numbered in order for planting.

The cost is \$6.00 for every 10 square yards.

Full particulars and illustrations are given in the Kelway Manual of Horticulture mailed Free on receipt of 60c, by

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Write for a copy of this useful book.  
It comes to you by return mail.

Kelway's Perennials  
For  
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**KELWAY & SON**  
The Royal Horticulturists  
LANGPORT ENGLAND

### Fruit Crop Conditions

The Niagara Peninsula Fruit Growers' Association has issued the following report on fruit crop conditions:

Reports were received from about one hundred fruit growers from Hamilton to Niagara. General conditions of trees, vines and plants are good. There is only one report of strawberries winter-killed; a few tomatoes are reported killed by frost at Niagara; grapes are slightly frosted in low-lying localities, and cherries partly frozen at Welland. Leaf Curl is reported from Niagara township, and Bud Moth from Welland.

Spraying was, as a whole, done on time, and cultivation is generally sufficient, except in the case of apples, which have not received as much attention. Nearly all apples and many cherries and plums have been sprayed twice. There has been practically no injury from frost in the fruit sections.

The average set of crop is as follows:

Strawberries, (48 reports) 67%; two total failures.

Raspberries, (30 reports) 66%.

Red Currants, (33 reports) 72½%.

Gooseberries, (29 reports) 70%.

Cherries, (75 reports) 71½%.

Sweet cherries when reported separately (10 reports) showed 90%; sour only 51%.

Japanese Plums, (58 reports) 65%.

European Plums, (60 reports) 68%.

Early Peaches, (84 reports) 68%.

Late Peaches, (91 reports) 74%.

Pears, (75 reports) 79%.

Apples, (61 reports) 63%. Baldwins and Spys reported light.

Too early to estimate Tomatoes or Grapes.

It must be remembered that it is rather difficult to form an accurate estimate of the future crop at this early date, but later reports will give better indications, and may alter percentages. Attention is drawn to the fact also that 100% means a full crop from all trees and varieties, while 75% stands for a good average crop from all trees and varieties.

Later reports will be issued as the crop develops.—P. W. Hodgetts, Director Fruit Branch.

### Eastern Annapolis Valley

Eunice Buchanan

This year promises to be one of enormous apple crops in spite of the May frost which injured quite a number of blossoms and tender shoots. The fruits are setting well with the exception of Ben Davis in places, and Spys are, owing to the frost, setting one in a cluster. It is generally an off year for Kings, but Gravensteins are very full.

Spraying is receiving greater attention than ever in the Berwick district, mostly commercial lime-sulphur and arsenate of lead being used. Usually the quantity is five pounds of arsenate of lead (though some put six and seven) to one hundred gallons of spray in which there is 1.01 of lime sulphur. This is applied before and after the blossoming. Some growers spray three or four times, while others are making two heavy applications only.

Growers in districts west of Berwick have

### Import Your Bulbs FOR FALL PLANTING

At Less than Wholesale Prices

Write for prices and particulars

**C. MORTIMER BEZZO, Bulb Importer BERLIN, Ont.**



neglected to spray early and thoroughly enough, and the consequence is that orchards in Auburn are badly damaged by the Forest Tent Caterpillar (*Clisiocampa disstria*). Late spraying does not have very much effect on them as they are busy preparing to spin cocoons, but it is most important to spray before the buds open if these pests are to be destroyed.

There is quite an epidemic of gasoline engines in this district and the hand pump will soon be obsolete in the spraying of orchards. Two very progressive men have purchased an Owen's compressed air outfit, which seems to give satisfaction, and will probably supplant the other power sprayers.

Thinning is also receiving much attention. Growers realize that number threes cost as much to market as number ones, and as it only costs about five cents per barrel, the increase in returns is considerable.

Owing to the poor prices received for apples last year (chiefly due to neglect in spraying) money is scarce this year, and the demand for nursery trees slackened off towards the end of the season and many orders were cancelled. Barrels are now twenty-nine cents—a cent more than last year. The young trees have done well, owing to so much rain and cool weather. In many orchards the cover crop of clover

to be turned under is about three tons to the acre. Growers are seeding down alternate spaces every year so that one space is kept cultivated and the other green. Much nitrogenous fertilizer, as nitrate of soda and dried fish, is being used.

Cultivated strawberries and wild blueberries will probably be plentiful. Early sown seeds, such as corn, cucumber and beans, rotted and continued west winds have been hard on young garden stuff. Fruit trees have magnificent leaves.

### National Fruit Growers' Officers

At the last Dominion Conference of fruit growers a movement was started having for its object the organization of a Canadian National Fruit Growers' Association. A draft constitution and provisional bylaws were adopted by the conference, and J. A. Ruddick, Dominion Dairy and Cold Storage Commissioner, was requested to undertake the organization. The election of officers has been carried on by letter ballot, and the list is now complete.

Membership in the Association is limited to the officers of the provincial fruit growers' associations and such other persons as may hereafter be named by the association on recommendation of the executive. The provincial officers who have been elected are: President, Robert Thompson, St. Catharines; Vice-President, S. C.

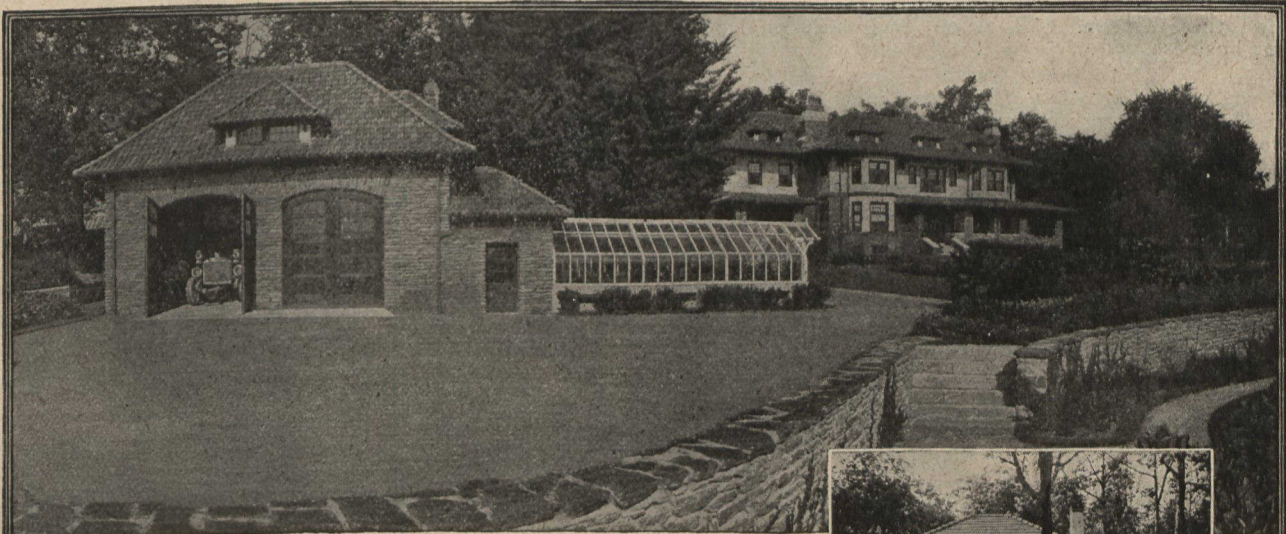
Parker, Berwick, N. S.; Secretary-Treasurer, P. W. Hodgetts, Toronto; members of committee: W. C. Ricardo, Vernon, B.C., R. M. Winslow, Victoria; Manning K. Ellis, Port Williams, N.S.

The fruit division will now turn the matter over to the officers-elect.

In the June issue of *The Canadian Horticulturist* an error occurred in Mr. Peart's article, "Picking Strawberries." In the first paragraph, instead of "precooking the strawberries before sending them to market," the idea is to "precool them."

A splendid publication is the 1913 Annual Report of the Fruit Growers' Association of Nova Scotia, a copy of which has been received by *The Canadian Horticulturist*. This report, in addition to a full resume of the work carried on through the Association, contains valuable contributions from practical fruit growers and orchard experts dealing with orchard problems, cultural methods, fertilizing, spraying, thinning, packing. Markets and fruit exhibits are among the subjects treated.

When an advertiser spends money to tell you about his goods he likes to know what returns he is getting. When writing advertisers say, "Saw your ad. in *THE CANADIAN HORTICULTURIST*."



## Attach a Greenhouse to Your Garage

TWO most delightful of hobbies. The two things a man owns that contribute more genuine pleasure and right down practical satisfaction than any other two things on his place.

How natural then it is, to join the two—your garage and your greenhouse.

It's a compact handy arrangement.

It saves you money on building.

It saves you money in running expenses — one boiler heating both with but little additional coal.



This subject—erected at Glencoe, Ill., shows how decidedly attractive such a combination can be.

The idea is so every way good, why not talk it right over with us?

Arrange the time and place to suit your convenience and one of us will be there.

## Lord & Burnham Co.

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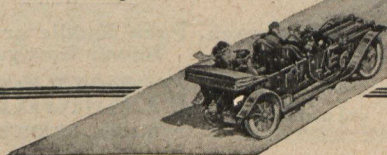
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**T**HIS business was organized to manufacture telephone equipment for independent local and municipal systems. Right from the start our equipment made records for efficiency. It did not take long for our goods to acquire a reputation for quality and reliability. As a result our business has grown by leaps and bounds.

It is a well-known fact that we have been securing over 80 per cent. of the new telephone business in Ontario. The business, too, has been secured with less effort than business secured by competitors. The satisfaction our telephones and equipment have given under all conditions has paved the way for easy business getting.

To judge how fast our business is growing, you'll remember we stated in a previous announcement that our business last year doubled that of the year before. Well, this year the first two months' sales total more than twice the 1912 sales for the same period. More and more is it being recognized by those in the local telephone business, that we are the legitimate people to deal with. There are those in the telephone business who are interested in depreciating the success of the independent telephone movement and the development of municipal systems. On the other hand, our business lies wholly and directly with the independent telephone systems, and it is to our own best interests to look after these systems well, as on their success depends the growth of our business.

If you would like a list of the large independent telephone systems built in Ontario during the last twelve months, just drop us a line. We would be glad to send you a list of the systems, with the make of the telephones they are using. In fact, if you'll name over the large independent systems built during the last year in Western, Northern and Eastern Ontario you'll find that nine out of every ten are using our telephones and equipment.

You are absolutely safe in equipping your system with our telephones. We guarantee them as regards material and workmanship. In fact we guarantee all our equipment and materials. And in addition, we offer to send our telephones for **FREE TRIAL**. So you can test and compare them with others right on your own lines before risking a dollar.

Ask for our No. 3 Bulletin—containing latest information about building telephone lines. Also No. 4, describing our magneto telephones, is free on request.

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**Canadian Independent Telephone Co., Limited**

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### Sulfur Dusters

For Fighting Every Disease of Cultivated Plants

Knapsack, Pack Saddle or Horse Drawn  
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Send for Catalogues  
and particulars to: **VERMOREL** Manufacturer,  
**VILLEFRANCHE**  
(Rhône), FRANCE

### A Felicitous Choice

Mr. E. D. Smith, of Winona, Ont., is now a Senator. In this choice the Government honors Mr. Smith, the fruit growing industry, and itself.

Senator E. D. Smith is known either personally or by reputation to every fruit-grower in Canada. He has met with equal success as a nurseryman, as a fruit grower, in buying and distributing fruit, and in fruit canning and preserving. It is probably as a nurseryman, however, that Mr. Smith has made his greatest achievement. It requires a man of a good deal more than ordinary ability to manage nearly one thousand acres of high priced land under a system of intensive cultivation.

### "A Last Opportunity for Our Readers."

Did you answer the questions asked on page 167 in the June issue of The Canadian Horticulturist?

Many of our readers did and will receive in return their choice of one of Gordon Thompson's Famous Life Songs. The offer was good only to June 25th. In order, however, to give every reader a full opportunity to get one of these songs we now extend the offer to July 15th.

Perhaps you thought the questions too personal? Remember that we treat your reply as entirely confidential. We merely wish to compile statistics re Canadian Horticulturist subscribers to show our advertisers what a desirable class of readers we have.

Look up the June issue right now, fill in the coupon (it will only take a couple of minutes) and mail to us to-day. Don't forget to mention which one of the songs you prefer.

In addition to the large acreage devoted to fruit and nursery stock, Mr. Smith operates his own jam factory and preserving plant. He also has his own cold storage plant, telegraph office and express offices, and pays out half a million dollars a year in wages.

The Canadian Horticulturist joins in the congratulations to Senator Smith. We feel that the fruit growing industry is fortunate in having as its representative in the Senate a man of his calibre and ability.

Mr. Reginald Beale, F.L.S., author of "Practical Green Keeper," is visiting this continent. Mr. Beale's itinerary includes Toronto and Montreal. He will give consultations on the making and maintenance of golf courses and will meet the greens committees of most of the important clubs. Mr. Beale is a grass expert of James Carter & Company, of London, England, seedsmen to His Majesty, King George, who are represented in this country by Patterson, Wylde & Company, of 133 King street East, Toronto. Mr. Beale's time has already been booked up and he cannot make any new appointments but anyone having difficulty in growing grass on lawns, bowling greens or tennis courts is at liberty to write to the Toronto address for free advice.



PACKER'S "SAFETY"  
**FRUIT WRAPPER  
PAPER**

Recommended by Government Inspectors  
Used with Perfect Results by Largest Growers

Take No Chances with  
**Untried Papers**

Large stock, following sizes  
always on hand:

10 x 10	10c. per ream (480 sheets)
20 x 30	55c. " " "
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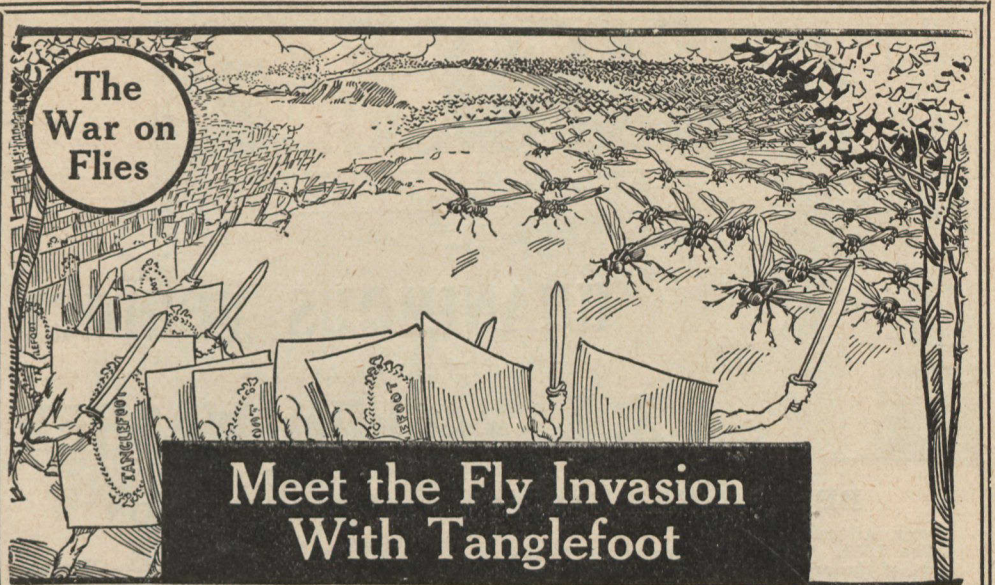
In addition to Fruit Wrapper, following supplies necessary to the modern Fruit Export Business are carried in stock at our Hamilton warehouse. Prices supplied on application.

- Wrapping Papers
- Twines
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Mention THE CANADIAN HORTICULTURIST



Every summer ten million families find freedom from flies through the use of Tanglefoot.

It is the most effective fly destroyer yet devised.

In thirty years nothing has proved so sure, so cleanly, so safe to use.

**Kills the Germ**

When a fly alights on Tanglefoot it is coated over with a varnish that destroys the germ as well as the fly.

Thus it puts an end to the greatest menace of the fly. Your household is doubly protected by Tanglefoot.

**Poisons Are Dangerous**

Every summer fatalities are reported from their use. In several states the sale of poison is forbidden except by registered pharmacists.

The poison does not kill the germ on the fly. Poisoned flies drop into your food, into baby's milk, are ground to dust in the carpet.

Fly-traps, too, are unsanitary, and disgusting to care for.

**Made Only by THE O. & W. THUM CO., Grand Rapids, Mich.**

(13) *A little gasoline will quickly remove Tanglefoot from clothes or furniture*

**Countless Unborn Flies**

Each early fly breeds millions if you wait.

Put a sheet of Tanglefoot where you see the first fly and prevent myriads of unborn flies this season.

**Kills Fleas, Too**

Tanglefoot quickly rids you of this pest. It is a boon to thousands in flea-infested sections. Don't be without it this summer.

**This Trademark on Original**



Millions know the original Tanglefoot. It contains one-third more sticky compound, hence lasts longer than the no-name kinds sold merely as fly-paper or sticky fly-paper. Get a supply to-day for this season's war on flies.

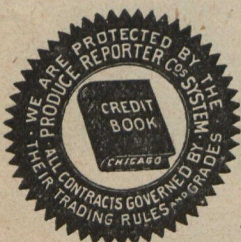
**IT'S COMING!—The Big Special Exhibition and Fall Packing Number out Sept. 1**

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**WE GET YOU 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.

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



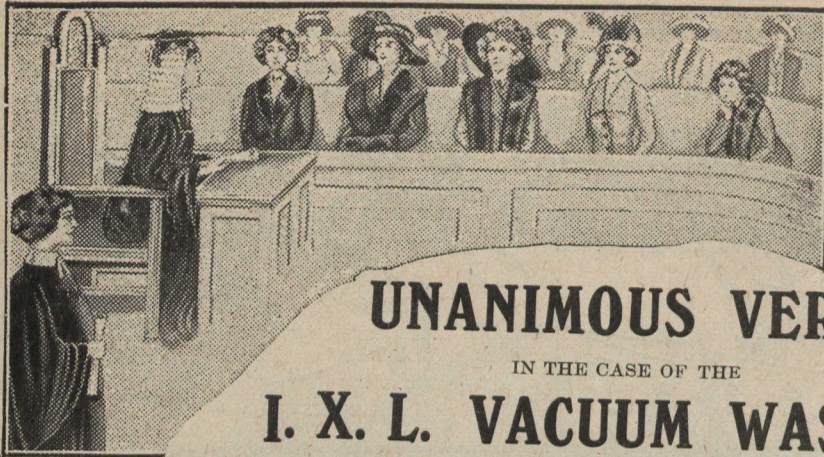
Branch Warehouses:  
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IN THE CASE OF THE

## I. X. L. VACUUM WASHER

Price - \$3.50

### BEFORE THE COURT OF PUBLIC OPINION

Taber, Alberta.

The I.X.L. Vacuum Washer which formed part of the prize which I won at the Seventh International Dry-farming Congress at Lethbridge, I find to be a real labor saver. I have done four washings with it, and it is an unqualified success, cutting the time of washing one half with less labor.

Mrs. R. McAllister.

Wapella, Sask.

I enclose a coupon for an I.X.L. Vacuum Washer and \$1.50. Will you send one to the name and address enclosed. I got one for myself a little while ago and I never used such a handy good little washer in my life. I have recommended it to about a dozen people in Wapella. Yours truly,

Mrs. R. R. Hutchinson.

Thousands of women who are using them have rendered an unqualified verdict in favor of the I.X.L. VACUUM WASHER, and these women have used every make of Washing Machine, and are fully qualified to judge merit.

THE COUPON below gives you an opportunity to test it in your own home and

## SAVES YOU \$2.00

If you do, YOU WILL concur in the verdict, as it WILL demonstrate to YOU that it will wash anything and everything, from a horse-blanket and overalls to the finest and most delicate lares without injury, as THERE IS NO FRICTION.

YOUR CLOTHES WILL WEAR THREE TIMES AS LONG

Washes a Full Tub of Clothes in Three Minutes—No Severe Exertion Required

It's so easy to operate, a child can do an ordinary family washing and have it ready for the line in one hour.

SENT YOU UNDER A MONEY-BACK GUARANTEE

It is the most popular Washer on the American Continent. Its popularity is the reward of merit.

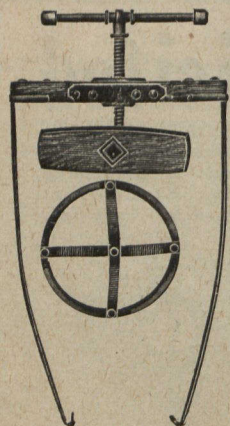
USE THIS COUPON

Send for one to-day and "Blue Monday" will be robbed of its terrors for ever. You will never regret it. You will be delighted.

CANADIAN HORTICULTURIST COUPON. Present or mail this Coupon and \$1.50 to Dominion Utilities Mfg. Co., Ltd., 482½ Main Street, Winnipeg, Man., and you will receive one I.X.L. VACUUM WASHER.

All charges prepaid anywhere in Canada on condition that your money is to be refunded if the Washer does not do all that is claimed. 4-2-13

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Used by all leading apple packers in Canada, United States and England.

Write for prices and complete information to—

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## ITALIAN QUEEN BEES



Quality of the best. Bred especially for gentleness, hardness and honey-gathering qualities.

Prices: \$1, \$1.50 and \$2 each with discounts for quantity orders.

Orders Filled Promptly

Catalogue of Bees and Queens, Hives, Comb Foundation, and full line of Bee-Keepers' Supplies, free upon request.

F. W. JONES, BEDFORD, QUE.

## Reserve Space Now

in our Big Special Packing Number, out Sept. 1st.

## British Columbia

That cooperation spells success is the belief of the fruit growers of Summerland who last spring organized for mutual benefit. Following the lines laid down by the new Agricultural Act, passed especially to assist cooperative organization, it was decided to place the authorized capital at one hundred thousand dollars. The fifteen thousand dollars of working capital required is secured from three hundred shares of fifty dollars each, ten dollars of each share being paid by the subscriber, the remaining forty dollars being advanced by the Government at four per cent.

Eight members were elected as provisional directors. A large proportion of the growers of the district have signed for shares and the number is steadily increasing. The organization will be known as the "Summerland Fruit Union."

The organization of a central selling agency for the Okanagan district was the subject of a series of addresses delivered by M. R. Robertson, of Vancouver, at different points in the early part of the season. Mr. Robertson spoke at Salmon Arm, Enderby, Vernon, Armstrong, Summerland, Penticton, Peachland, and Kelowna. At most of the meetings, Mr. Scott, Deputy Minister of Agriculture, was also present. The plan of organization as suggested by the Government was fully explained, as was also the extent to which the Government would assist the growers in the formation of such an agency. At all the meetings resolutions were passed favoring the movement and delegates were appointed to the organization meeting to be held at Vernon, April 30.

After deliberating three days, beginning on April 30, the delegates representing the different centres throughout the Okanagan Valley, who met at Vernon to discuss ways and means for organizing a central selling agency, prepared a set of working rules and constitution. These were then sent out to the local associations for adoption. The following is a brief outline of the proposed constitution: The agency shall be incorporated as the Okanagan United Growers, Limited. Nominal capital is ten thousand dollars in one dollar shares. Each local association shall take sufficient shares to give it a vote for each fifty cars up to three hundred cars shipped, the minimum to be one vote, maximum six. There shall be eleven directors who will appoint an executive of three members. To ensure sufficient funds for the first few years, each association shall loan a sum at four per cent. in proportion to the number of its shares. All fruits and vegetables shall be pooled. Inspectors will be appointed and growers must abide by their recommendations for packing. A charge shall be made on all fruit sold.

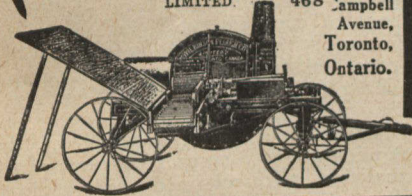
The plan as proposed by the delegates was set before the various local associations for their approval. All the associations adopted it and appointed representatives to act as directors in the central organizations. The Okanagan United Growers, Ltd., is now established on a business basis, the necessary capital being derived from some twenty-six shares held by the respective local associations through twenty-six representatives. The officers have been chosen as follows: President, J. E. Reekie, Kelowna; Vice-President, F. B. Cossitt, Vernon; Manager, R. Robertson. The Okanagan United Growers is now an established organization. The Okanagan fruit men are to be congratulated on the success of their efforts.



TRADE MARK  
**Wilkinson** (PNEUMATIC)  
 REGISTERED **ENSILAGE**  
**and STRAW CUTTERS**

Our Climax "A" mounted is the only successful combination machine of this capacity on the market. It will cut and deliver green corn into the highest silo, or dry straw or hay into the mow. 13" mouth, rolls raise 8 inches and set close to knives, making solid compact cuttings surface. Requires less power than any other of same capacity. No lost power. Direct pneumatic delivery, no worm gears or special blower attachment. Knife wheel also carries the fans. No lodging on wheel arms, everything cut, wheel always in balance. Steel fan-case. Supplied with pipe enough to reach any silo, also pipe rock, tools, etc. Ask your dealer about them and write for catalog. We also make a "B" machine unmounted.

**THE BATEMAN-WILKINSON CO.**  
 LIMITED. 468 Campbell Avenue, Toronto, Ontario.



**Fruit Machinery Co.**  
 INGERSOLL, ONT.

Manufacturers of **Sprayers** and a complete line of

**Apple Evaporating Machinery**

Installing Power Evaporators a specialty  
**OUR LEADERS**

**Ontario Power Sprayer**  
 Model 2-B, and the

**Improved Pacific Apple Parer**

Write for catalogue on *Spraying and Evaporating*

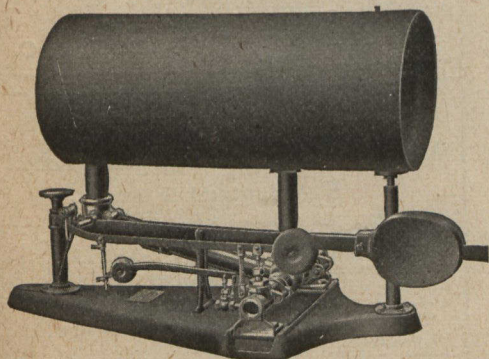
**Eleven Acre Fruit Farm**  
**FOR SALE**

Good buildings, eight-room house, good fruit cellar, good water; near school and two churches; 2½ miles from R.R. station, good gravel roads.

300 apple, 25 peach, a few plum, cherry and pear trees. Also a few berries for family use.

For further information, apply to

**M. G. BRUNER, OLINDA, ONT.**



**The Massey-Harris Spraying Outfit**

**Makes Fruit Growing Profitable**

An efficient and reliable Sprayer which enables you to spray effectively and get the best possible returns from your fruit land.

Every point in both design and construction has been worked out with the utmost care, and the record they have made in the great fruit districts of Canada and the United States is one of which we are justly proud.

The Massey-Harris Gasoline Engine is just the thing for your farm. Many and various are the different kinds of work to which it can be hitched, and when not in use costs nothing. Massey-Harris Gasoline Engines are simple, reliable and economical—the most satisfactory on the market to-day.

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**Where There is Condensation**

—there is need for a Morehead Steam Trap. Condensation in steam lines is akin to matter out of place—means wasted energy.

If your lines are sluggish—if your houses are not of uniform temperature, write us. We guarantee to drain your lines perfectly—return the pure, hot condensation to your boiler without pump or injector, or make no charge for the trial. Obey that impulse—write now. Ask for Trial Trap.

**CANADIAN MOREHEAD M'F'G CO., Limited**  
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CANADIAN REPRESENTATIVES:—George W. Cole, Woodstock, Ont.; Robert S. Bickle, Winnipeg, Man.; H. E. Kirkham, Montreal, Que.; Robert Hamilton, Vancouver, B. C.



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**ALL KINDS OF FARMS**—Fruit farms a specialty.  
—W. B. Calder, Grimsby.

**BEEES FOR SALE**—I will have a few colonies in chaff hives for fall delivery.—G. A. Deadman, Brussels, Ont.

**IMPORT YOUR BULBS** for fall planting at less than wholesale prices. Write for prices and particulars.—O. Mortimer Bezzo, Bulb Importer, Berlin, Ontario.

**NIAGARA DISTRICT FRUIT FARMS.**—Before buying it will pay you to consult me. I make a specialty of fruit and grain farms.—Melvin Gayman & Co., St. Catharines.

**HONEY WANTED**—Will contract at once for this season's first class clover or basswood honey. I can supply this or use yours. I ship early.—G. A. Deadman, Brussels, Ont.

**RELIABLE HELP, SKILLED AND unskilled,** supplied horticulturists and others. Canadian Employment Bureau, Proprietor member of B. G. A., London, England, 65½ James St South, Hamilton, Ont.

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**ASK DAWSON.** He knows.  
**IF YOU WANT** to sell a farm consult me.  
**IF YOU WANT** to buy a farm consult me.  
**I HAVE** some of the best Fruit, Stock, Grain and Dairy Farms on my list at right prices.  
H. W. Dawson, Ninety Colborne St., Toronto.

**SALMON ARM,** Shuswap Lake, B.C., has the finest fruit and dairy land in B.C. No irrigation necessary; mild winters, moderate summers, no blizzards, or high winds; delightful climate; enormous yields of fruit, vegetables and hay; good fishing; fine boating amidst the most beautiful scenery, and the Salmon Arm fruit has realized 25 cents per box more than other fruit in B.C. Prices of land moderate, and terms to suit. Apply to F. C. Haydock, Salmon Arm, B.C.

**QUEENS QUEENS**  
**THREE BANDED and GOLDEN ITALIANS**  
Vigorous Queens from clean, healthy colonies. Safe delivery at your Post Office guaranteed.  
Write for prices  
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**THE EVERYDAY VACUUM CLEANER**  
Best hand-power machine on the market. Will sell by hundreds this spring. Write  
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on fowls and in the houses, use  
**PRATT'S POWDERED LICE KILLER**  
25c and 50c per package  
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35c quart; \$1 gallon  
Each the best of its kind  
"Your money back if it fails"  
**THE PRATT FOOD CO., OF CANADA, LTD.**  
TORONTO, ONT.

**Items of Interest**

"Making the Farm Pay," by C. C. Bowsfield, is the title of a new book received by the The Canadian Horticulturist. It includes chapters devoted to the raising of vegetables, fruit, flowers, and poultry, and discusses both intensive and diversified farming.—\$1.00 net, Forbes & Co., Chicago.

The Dominion Department of Agriculture is issuing a new bulletin, entitled "Cooperation and Fruit Growing," by A. McNeill, chief of the Fruit Division. It is Bulletin Number 38, and is to some extent a revision of Bulletin 18, entitled "Cooperation in the Marketing of Apples," but also contains much new matter. In addition to showing the need for cooperative effort, what cooperation has done in leading fruit districts and different methods of cooperation, it includes copies of the constitution and by-laws of leading successful fruit growers' associations.

Last fall, a United States nursery company sent an agent through the Niagara District. A large number of growers signed orders for stock, for which special qualities were claimed and high prices charged. The stock was purported to be first-class. It is now alleged that the company is really a jobbing concern and is unloading some inferior stock on the growers. Three car loads of this stock have arrived in the district. Those who signed orders for stock have made up their minds not to accept it. About fifty growers met recently at Beamsville and signed an agreement to supply funds to stand any legal action, if such became necessary. They have sent a representative to the States to investigate the standing of the firm.

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August 23rd TORONTO September 8th

Increased Prizes and Classification  
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**ALL ENTRIES CLOSE AUGUST 15th**

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Beautiful Scenery, Mild and Equable Climate, Excellent Boating, Fishing, and Shooting, Good Hotels and Schools, and Excellent Opportunities for Investors of Capital.

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Out September 1st

Are you planning to be represented in this big special number?

Editorially, it will be one of the most up-to-date and practical numbers ever issued, dealing with the fundamentals of the profitable handling of the fruit crop.

The Cover will be especially designed for this number.

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Space reserved before August 1st will be accepted at present rate of \$37.50 per page.

**THE CANADIAN HORTICULTURIST, PETERBORO, ONT.**



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One of our large customers last year used thousands of our boxes for the export trade. Such trade demands a strong, durable box. Our boxes gave every satisfaction.

*Our Boxes are Right  
The Price is Right  
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If we have overlooked notifying any of our advertisers by letter regarding the change in our advertising rate, kindly note that on and after August 1st, 1913, the rate for advertising in The Canadian Horticulturist will be \$1.40 per inch flat.

# Special Offer

New or renewal contracts calling for a specified amount of space to be used within one year ending July 31st, 1914, will be accepted up to August 1st at our present rate of \$1.25 per inch flat.

*Sample Copies and Contract  
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Consolidated Greenhouse Glass is of more even cut and is minus the imperfections common to European Greenhouse Glass.

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# Greenhouse Glass

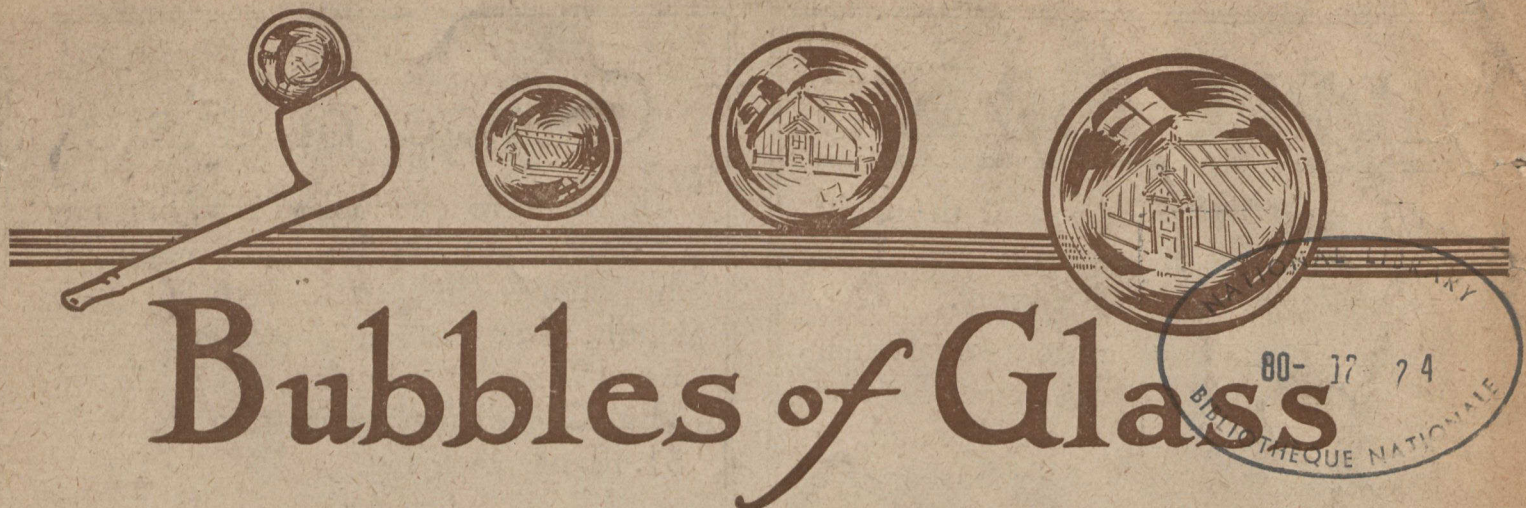
We manufacture a special line for greenhouses. It is of good quality, flat, squarely cut and even thickness, virtues which cannot be dispensed with for lapping or butting.

Shall be pleased to quote prices on application to any of our Canadian depots:

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Busby Lane	Mercer St.	Market St.	Powell St.

**Pilkington Bros., Limited**  
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# Bubbles of Glass

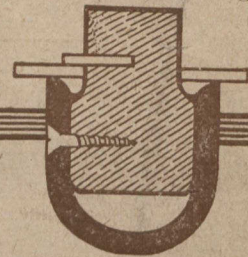
**B**UBBLES OF GLASS—that was the nickname given to the U-Bar greenhouses when we first started to build them over a decade ago. They were called that because of their extreme lightness and graceful, glassy airiness.

The more light the construction of a greenhouse allows to reach the plants, the quicker and stronger will be the growth.

Although various attempts have been made to make other greenhouses constructed other ways, look like U-Bar Greenhouses, by adopting the curved eave, U-Bar houses are still the lightest

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You cannot afford to be without this box because it has all the utility points of a good package and one that will deliver the Fruit in good condition.

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If you haven't we will be pleased to hear from you, and supply you with shipping stamps and pads, and any information you may require regarding Toronto market.

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