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FIG. 1822. EARLY VICTOR.

THE CANADIAN HORTICULTURIST

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THE EARLY VICTOR GRAPE.

OF the one hundred and fifty varieties of grapes in our collection, there is no black grape which seems more worthy of notice than the Early Victor. After trying for years to satisfy himself that it was right to hoax the buyer with Champion, which has so nearly ruined the market for early black grapes, it is a real comfort to the fruit grower to find a grape that is about as early in ripening, and, at the same time, of really good quality.

We notice that it colors very early, fully two weeks ahead of Concord, and is fit to gather about ten days before, along with Hartford and Moore's Early. Watts, of the Tennessee Experiment Station, says of it, "A superior early black grape, valuable in the home collection. Moore's Early is more profitable for market." Campbell, of Ohio, said of it, "I know of no black grape so well fitted to take the place of all foxy abominations (Champion, Ives, Hartford, Janesville) which have been tolerated on account of their earliness.

"I am glad to recognize in this variety a really good, very early black grape, with a vine evidently of the healthiest and hardiest type of the Labrusca class."

The Early Victor was originated by John Burr, of Leavenworth, Kansas, in 1870. He was an advocate of natural fertilization, believing that nature selected, under the environment, the pollen most congenial to perpetuate its species. He planted in his garden Catawba, Bland, Isabella, Hartford, Delaware, Concord, Salem and Goethe, and permitted no others to grow near enough to pollinise them. First he selected the Concord, taking the seed from the finest bunches, but after trying seedlings from it and from Isabella, Hartford and others of the distinctly Labrusca type, he selected seeds from the Delaware, and the very first sprout was Early Victor.

Mr. John Burr passed away in 1892, being of the same age as the Century, after a life of much unselfish devotion to the interests of fruit growers.

The following is our description of this grape as it grows in Ontario.

ORIGIN: John Burr, Leavenworth, Kansas, from seed of Delaware fertilized with a vigorous grape of the Labrusca class.

VINE: Very vigorous, very productive and healthy.

BUNCH : 4 inches long by $3\frac{1}{2}$ broad, shouldered and very compact.

BERRY : Medium, round, black, with thick blue bloom, adheres well ; pulp tender, juicy, sweet and agreeable ; seeds, two.

SEASON : August 25th, (1899.)

QUALITY : Very good for dessert.

VALUE : Good for home market ; also very good for making claret wine.

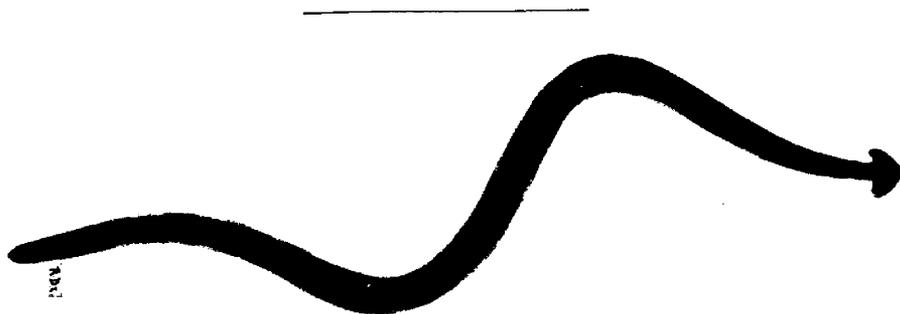


FIG. 1823. DRAWING OF LIVING WORM, ABOUT NATURAL SIZE, SHOWING THE UNUSUAL SHAPE OF THE HEAD, AND THE STREAKS RUNNING LENGTHWISE.

A PECULIAR GREENHOUSE WORM.

THE florist of the College greenhouses, and two or three of the students, have occasionally come across, among the broken tiles of flower-pots, a peculiar flatworm, which they submitted to me for identification. Through lack of time for a thorough study of this worm I delayed investigation until a few days ago, when a careful search was made in the forcing house for good live specimens. I procured six large worms without much difficulty from the under surface of a few old boards which were lying on the moist, warm ground.

When at rest these worms have the appearance of dead, partly collapsed creatures which have already entered the early stages of decomposition, but a change comes over the scene when they are disturbed from their rest. The body becomes filled out, and begins to move. A copious supply of slime is exuded from all parts of the surface of the body, and wherever it travels it leaves a streak of slime behind it to mark its path. (Fig. 1823.)

The largest of these worms which I have seen measured about nine inches in length when fully distended, while smaller ones scarcely exceeded five to eight inches.

A peculiar feature of this worm's structure is the sucker at its anterior end. This organ is semi-circular, or crescentic, in outline, and probably functions both as a sucker and as a sense apparatus. By means of the sucker the hind portions of the body are brought forward by the contraction of the muscles, and with the aid of the eye-spots and olfactory pits on the margin of the sucker the worm secures the information so desirable in traversing an unknown region.

The shape of the sucker varies considerably while locomotion is taking place. Occasionally the front edge is serrated, and at other times it is notched. (Fig. 1824, *e.f.g.h.*) The upper surface of the body is marked by three dark colored lines running lengthwise from sucker to tail, the middle line being darker and thinner than the two laterals. On each side is other dark lines similar to the middle one on the upper sur-

face. The under surface is also marked by dark lines which are wider apart on the anterior half than on the posterior half of the length of the body.

The mouth is situated on the under surface near the middle of the body. This feature is not readily seen in a living specimen, but is quite conspicuous in a specimen which has been dropped into dilute alcohol. The pharynx is then apparently everted as a white fringe of skin surrounding the opening. (Fig. 1824 a.)

The mode of locomotion is peculiar. The head seldom touches the ground, then only the lips, which are constantly changing shape, which are sometimes serrated, sometimes bifid. There is little of the sinuous movement so characteristic of the earthworm, but there is a muscular contraction which sends a wave backward from the head. According to a reliable authority, however, two rows of cilia, or fine threads, on the under surface of the body form the chief means of propulsion.

As to the position of this worm in the animal kingdom there seems to be little doubt that it belongs to the *Flatworms*, and on account of the presence of cilia on the lower surface of the body, and a three-branched intestine, it is classed among the *Triclad Turbellarians*, or more popularly, *Land Planarians*. This particular worm is known scientifically as *Bipalium Kewense*, a species indigenous to tropical regions, whence it has been carried to various countries with exported plants. It has already been found in hothouses in England, Germany, the Cape, and Sydney, Australia, but so far as I am aware, has not before been noted in Canada.

The Land Planarians are carnivorous, and feed on earthworms, slugs, wood-lice and insect-larvae. Lehnert states that "*Bipalium Kewense* pursues earthworms, seizes the upper surface of the anterior end by the glutinous secretion of its ventral surface,

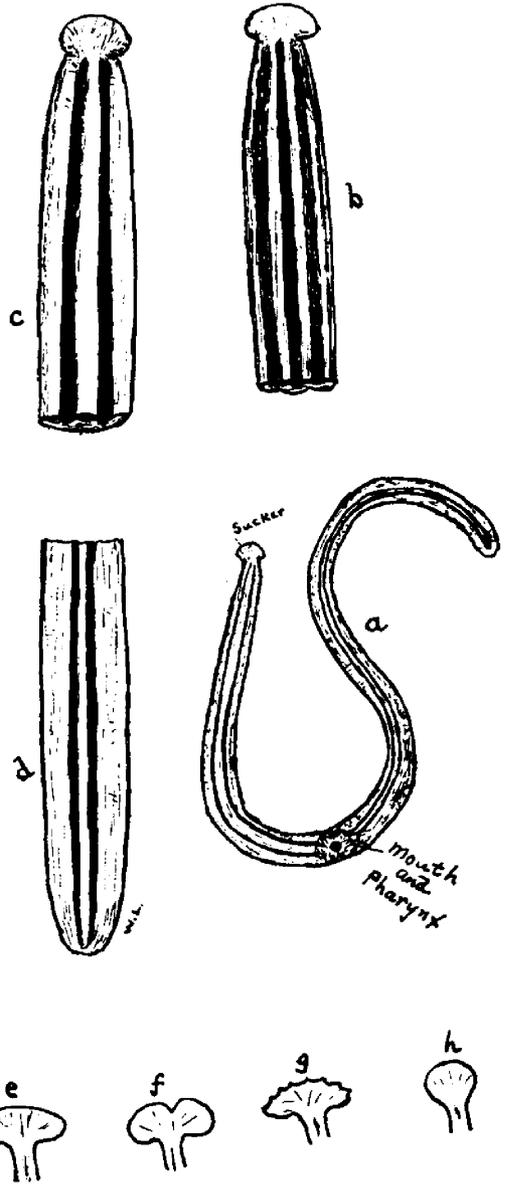


FIG. 1824.

(a) Worm in alcohol, contracted, showing the mouth on the under surface.

(b) Upper surface of front portion of worm, showing the three dark bands.

(c) Under surface of front portion of worm, showing the two dark bands and the intestine between the n.

(d) Under portion of hind portion of worm, showing the two dark bands closer together.

(e f g h) Different forms taken by the head when worm is alive.

and then proceeds to envelop part or the whole of the worm within its pharynx, which is stretched as a thin skin over the body of its struggling prey. The tissues of the latter pass into the intestine of the Planarian and distend it greatly. After such a meal, which lasts from one to five hours, a *Bipalium* may remain for three months without seeking food."

The specimens of *Bipalium Kewense* obtained in European greenhouses never attain sexual maturity, but reproduce by division into fragments, each of which can reproduce all the organs of the parent.

My principal reason for describing this worm is to draw the attention of all florists to it so that we may learn more about its introduction into America. The florist at

the College here tells me that he first saw this worm three years ago. It has been known in England for over eight years. It is not a worm to be feared, and hence there need not be any alarm in the matter. I wish, however, to hear from any person who has seen this worm in his greenhouse.

WM. LOCHHEAD.

Ontario Agricultural College.

Guelph, May 3, 1900.

NOTE.—Since making this study, Miss Ormerod's reference to the same worm in her Report of Injurious Insects for 1899 has come to hand. The worm was evidently new to her, for she asked her correspondents to send it to the British Museum authorities for identification. In a footnote Miss Ormerod gives a valuable reference to the literature of Land Planarians: "Note of *Bipalium Kewense*, and the generic characters of Land Planarians" by Prof. F. Jeffrey Bell, M. A., in proceedings of the Zoological Society of London, 1886, part II., pp. 166-168. W. L.

HOME-GROWN FERTILIZERS.

 HE fertilizer season has arrived, and the farmer is wondering what he shall feed his crops this year.

Commercial fertilizers have to be bought in some cases, but they should be looked on as a last resort. The recent sharp advances in the price of crude stock used in the manufacture of fertilizers, notably those furnishing nitrogen, make it more important than ever that the farmer look after the manurial resources of his farm. He must take more care to avoid unnecessary losses of plant food through careless methods of handling manure.

Nitrogen is probably the easiest of the fertilizing elements to secure on the farm. It grows in clover, beans and similar crops;

it is prominent in all good barnyard manure and it is present in considerable quantities in some of the muck beds which are to be found in many parts of the country.

The liquid manure from cattle is richer in the amount as well as the quality of the nitrogen than is the solid. It follows that measures should be adopted whereby this portion can be saved and added to the solid manure, so that both may play their due part in keeping up the fertility of the farm.

Where the manure is not immediately applied to the land it should be so kept that it will not be exposed to the leaching or dissolving action of rain, as this necessarily causes a deterioration in value.

VERMONT EXPERIMENT STATION.

PLANT PARTNERSHIPS.

Οὐδὲν ἑαυτῷ ζῆ. - ΣΤ. ΠΑΥΛ.



FIG. 1825. MT. D. W. BEADLE.

THIS truth, enunciated by the great apostle is of wide application, it applies not only to man, but to all life, both animal and vegetable. Such is the interrelation of all living creatures that it is quite apparent that "no one lives to himself." From minutest infusoria to the largest animal, from the microscopic lichen to the royal oak this interdependence exists. That this fact has sometimes a very practical bearing upon the work of the horticulturist, this paper is intended to illustrate.

Careful students of plant life have ascertained that a considerable number of trees, shrubs and herbaceous plants are dependent upon the assistance of some other living plant to maintain life. Attempts to grow seedlings of beech and fir in soil from which

other plant life was strictly excluded, have always resulted in failure. For a short time they struggled on in a puny way and died. As in the fable, the lion, notwithstanding his great strength, was obliged, in order to save his life, to avail himself of the help of the feeble mouse, so the royal oak, that it may live, must accept the aid of the most feeble of plants.

Anton Kerner von Marilarun, Professor of Botany in the University of Vienna, in his Natural History of plants, states that all plants of Pyrolaceae and Vaccinaceae, wintergreen and whortelberry families; most if not all Ericaceae, Betulaceae, and Fagaceae heath, birch and beech families; a great number of the cone-bearing evergreens and some others, are dependent upon the assistance of a fungus partner for life and growth.

Readers of the Canadian Horticulturist will surely have made the acquaintance of some of the members of that extensive family of cryptogamous plants called fungi, and doubtless regard them as they do the San Jose Scale, enemies to be if possible exterminated. They will remember that fungi have no green color, neither roots, flowers, nor seeds; that their vegetative parts are usually hidden from observation, and only the organs of reproduction exposed to view. Some feed upon living plants, the parasitic; others upon decaying vegetable or animal matter, the saprophytic. Of the latter group some enter into a mutually beneficial arrangement or partnership with green-leaved plants, termed symbiosis; a word compounded from the Greek, which means living together.

In order that the process by which this partnership is formed may be clearly understood, let us recall the manner of growth of

these flowerless plants. We have said that fungi do not produce seeds, instead they produce great quantities of small bodies about one-twenty thousandth part of an inch in diameter called spores. These have no cotyledons, nor plumule, nor radicle as do seeds; but when a spore is deposited by a current of air on leaf or fruit of a flowering plant, or on decaying substances, and temperature and moisture are favorable, a thin-walled tubular cell emerges from the spore, which may either pierce the thin epidermis of the leaf or enter by some natural or accidental aperture. In the case of the saprophytic fungus there is usually no hindrance to its entrance. When once within it begins to draw nourishment from its host, to extend and to branch out. These tubular cells are called *hyphae*; those of the parasitic fungi have the power of decomposing the cell walls of the host plant, thus gaining access to the contents upon which they may be said to feed. When a network or mesh is formed by the branching and interlacing of the hyphae this network is called *mycelium*. Mushroom growers call it the "spawn."

The manner in which fungi assist the flowering plants and form the partnership with them that is to last for life is very simple. When germinating seed of a flowering plant sends its radicle into soil in which the appropriate fungus is growing the hyphae wrap themselves around the rootlet, soon covering it more or less perfectly with a mantle, a mycelial mantle. As this root grows, extending and branching in any direction, the fungus grows with it, wrapping it whithersoever it goes in its mycelium, continuing the process as long as the plant, be it herbaceous or ligneous, lives, even though that life endure for centuries. In some cases the mycelial mantle is but as a gauzy spider's web, in others a very thin evenly woven larger, or again it will be thickly woven, completely covering the root out of

sight. Mineral salts and other inorganic compounds requisite to the growth of the flowering plant are taken up by this mycelial mantle, and by it imparted to the epidermal cells of the root it enfolds, to be carried thence through stem and branches to the foliage where they are elaborated, digested as it were, changed from inorganic to organic, and go to build up the plant in all its parts. In return for this service the fungus receives from the flowering plant such organic material as is necessary to its growth, which, not having green leaves, it is unable to manufacture out of inorganic material, which organic matter is brought down from the foliage of its partner through the branches, stem and roots, and delivered to the absorbent cells of the mycelium. Thus a mutually beneficial copartnership is established between a flowering and a flowerless plant; this partnership is termed symbiosis, and the several members symbionts.

The discovery of this symbiosis has revealed to horticulturists the cause of the difficulty experienced in transplanting successfully plants of the families named above, and of propagating by cuttings oak, beech, whortleberry, rhododendron, laurel, trailing arbutus, etc. This has been found to be easily obviated by taking pains to obtain with the plant to be transplanted a supply of its symbiont. This can be done by securing a large ball of earth adhering to the roots proportionate in diameter to their spread, if possible to their minutest extremities and even beyond. Care must be taken to prevent the soil thus taken from becoming dry at all during the process of transplanting, for that would cause the death of the symbiont fungus. Also in propagating from cuttings, if a liberal supply of the mould containing the symbiont is abundantly mixed with the sand there should be no difficulty. It must, however, be constantly borne in mind that there will be no living hyphae in dry mould, the mould must be moist when

taken and kept moist, not soaking wet. In the spring of 1899 the writer saw thousands of plants of several genera of Ericaceae in healthy growing condition propagated from cuttings; and hundreds of oaks being transplanted, and conifers, each with its large ball of earth securely held in place by a warp of coarse sacking large enough to hold the ball securely in place and be brought up and tied at the base of the trunk.

The woods of Ontario can supply our flower gardens with many handsome and interesting flowering plants hitherto neglected because we did not know how to grow them. The round leaved wintergreen, *Pyrola rotundifolia*, with nodding very fragrant white flowers, grows in dry woods and in swamps. The bog wintergreen, *Pyrola uliginosa*, has purple flowers. The liverleaf wintergreen, *Pyrola asarifolia*, also grows in bogs, swamps and wet woods, flowers rose color.

Labrador tea, *Ledum*, *Greenlandicum*, grows in swamps, the white flowers abundant in terminal umbels.

Sheep laurel, *Kalmia angustifolia*, is exceedingly showy when laden with its purple or crimson flowers. It is very abundant in swamps and wet places in Muskoka and Northern Ontario.

Swamp laurel, *Kalmia glauca*, flowers borne in simple umbels, light purple, is common in the swamps around Gravenhurst.

Trailing arbutus, *Epigaea repens*, known to many as the beautiful, sweet scented Mayflower, delights in sandy soil and rocky woods. A few years ago it was common in the vicinity of Toronto, but is becoming scarce. These members of the wintergreen and heath families could be grown in the flower garden by giving attention to their requirements in the matter of soil and partner.

D. W. BEADLE.

307 Givens street, Toronto.

SPRAYING OF CHERRY TREES.

 THE Bulletin of the Hatch Experiment Station, Massachusetts, for March, 1900, states that wormy "fruit has grown less in amount each year since regular spraying has been practised, and the crop has been one of considerable profit. Careful experiments show that the *Monilia*

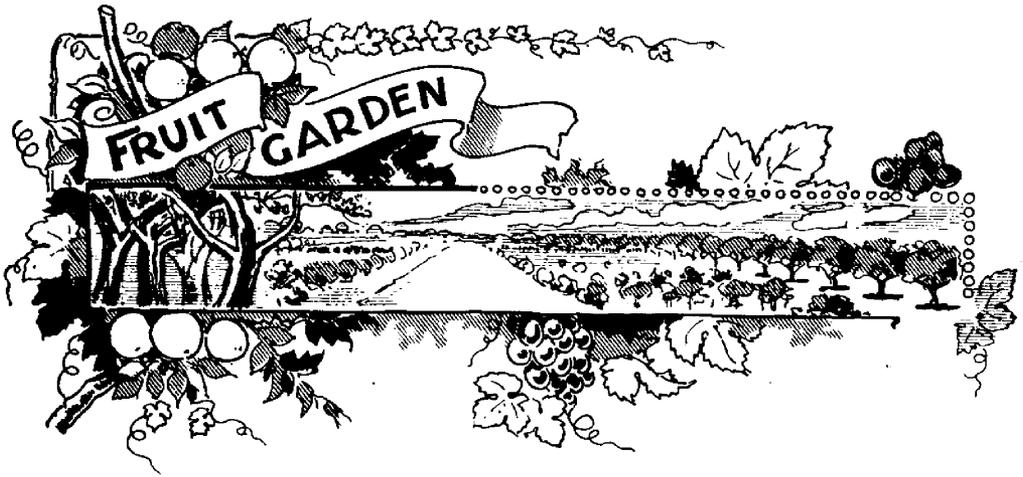
which sometimes causes the fruit to rot on the trees, or very soon after picking, can be largely prevented by spraying *after every rain* with the copper sulphate solution, ounces to 50 gallons of water."

D. W. BEADLE.

307 Givens street, Toronto.

PRUNING.—In the pruning of pyramidal fruit trees of all sorts care should be taken to encourage the formation of natural fruit spurs in preference to artificial ones; this is the rock on which many a young gardener and amateur has split by following the orthodox system of summer-pinching, as it is called. If a free growth is allowed during the summer and the branches kept thin, admitting a free circulation of sun and air among them, the wood will ripen properly,

and at the base of every leaf a bud is formed which will ultimately become a natural fruit spur. In the case of some varieties, such as the Jargonelle and Williams' Bon Chrétien Pears, it will be found that the terminal bud of one year's growth will be a fruit or bloom bud; in such a case it will be advisable to pinch it out, which will strengthen the side buds, and in the following year they will become natural fruit spurs.—*Journal of Horticulture*.



FRUIT CULTURE.—V.

THE PEACH.

WHILE a few hardy varieties may achieve a partial success in colder districts, the culture of the peach is not likely to be satisfactory where the thermometer habitually registers more than 10 degrees below zero. In Ontario the counties of Lincoln, Welland, Monck, Wentworth, Essex and Kent include the areas where peach growing is likely to be permanently profitable. A winter like the past, when, during February (1899), the thermometer in these districts several times touched a lower point than that mentioned, plainly demonstrates the truth of the statement.

PLANTING AND PRUNING.—The trees to be planted should be thrifty and straight, one year old from the bud. The process of planting has already been described. The mark, where the old stock was cut off and the bud grown from, should be at a level with or slightly below the surface of the ground. Before setting, the young tree should be carefully examined for the peach borer, which may often be found on nursery stock; and for root galls, which are somewhat similar

to those on the raspberry and apple. See Figs. 90 and 14. Trees with galls should be rejected. The head of the young trees should be started at from $2\frac{1}{2}$ to $3\frac{1}{2}$ ft. from the ground. If lower than this, there will be difficulty in cultivation, from the inevitable spread of the lower limbs; and if higher, picking will be less easy, and a top-heavy tree will be the result, which will be put to a severe test in high winds and under a heavy load of fruit. There are two systems of pruning the peach, both of which have strong advocates. In the one case the previous year's growth is shortened in one-half every season, a bushy and comparatively low head being attained. In the other system the inner wood is thinned out and the head is more open, with the branches following their natural growth. Whatever system is followed, the pruning is the same the first year or two, while the head is being formed. Figs. 25 and 26 show the method of treating the tree when planting. Fig. 27 illustrates the second year's pruning, enough branches being left to form a spreading vigorous head. Occasionally a top will die back or fail to pro-

duce good growth from the upper buds. In such a case it is better to select the strongest of the young shoots and make a fresh trunk. Figs. 28 and 29 will illustrate the point. The shortening in system has a tendency to produce a stocky growth with a greater amount of bearing wood. The shortening in, however, is in itself a thinning process, and when a comparatively small proportion of live buds remain after a severe winter, too much of the crop may be thus pruned off. After the trees attain a considerable size the practice is seldom followed, partly from the expense and partly because of the vigorous growth of the tree. As long as dead wood is removed and broken, and crowded limbs pruned out, the actual method of pruning is of far less importance than the

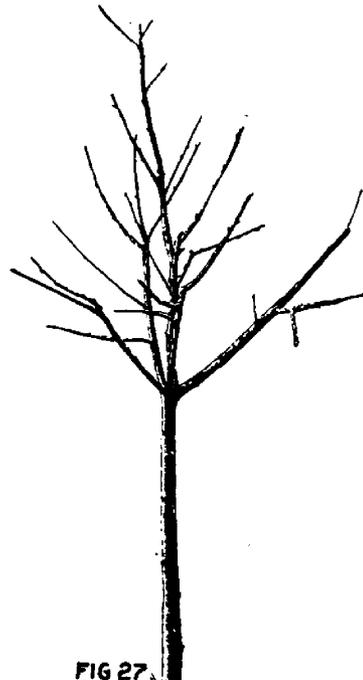


FIG 27
MICHIGAN BULLETIN
PRUNING AT END OF TWO YEARS.

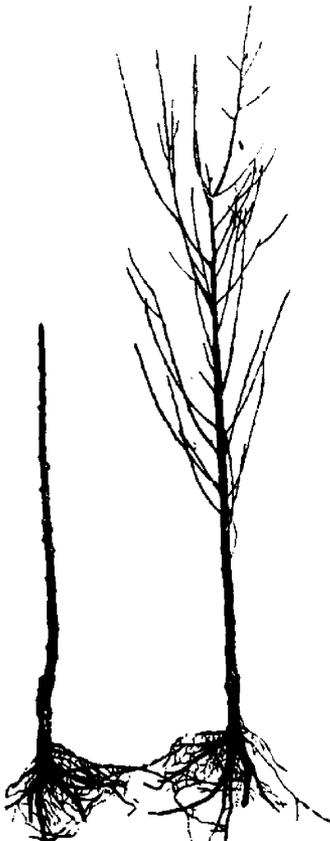


FIG 25 PRUNED
BULLETIN A COLL MICH
FIG 26 UNPRUNED

proper manuring and cultivation of the orchard.

Fig. 30 is an example of the open-made tree, with branches following the natural growth.

In Fig. 31 is illustrated the system of pruning by shortening in. This forms a photograph of a three-year old tree of the variety Hyne's Surprise.

In Fig. 32 is seen a three-year old peach, taken on July 26th. These trees have also been regularly shortened in.

SOIL AND LOCATION.—Many of the remarks made under "General Principles" will hold good in the case of the peach, but proximity to a body of water is of more importance than the kind of exposure. The ameliorating influence of a large body of water is so great and, with the peach, a few degrees of winter temperature one way or the other is often so important a matter, that the point should be allowed great weight in the choice

of location. Speaking generally, a soil that is very good for corn is the best peach soil. A fairly light, warm and deep sand is probably most suitable, and especially if the subsoil is gravelly or of a fairly porous character. The peach, of all trees, demands a well drained soil, and with no kind of fruit will underdraining pay so well.

DISTANCE OF PLANTING.—Growers differ widely as to the appropriate distance between peach trees; as near as 14 feet, and as far as 20 feet apart being advocated. The trees in the famous Hale orchard are only 13 feet apart, but the most thorough pruning and manuring are practiced, and the plan is not generally advisable. When spraying, cultivating, proper ripening and coloring of the fruit are all taken into account, it will be found that a generous space

between the trees is preferable. At least 18 feet each way is strongly advised.

CULTIVATION.—To secure the best results the cultivation of the peach must be thorough and constant. No tree will so soon suffer from neglect in this respect. Hoed crops alone should be allowed in the peach

orchard, and these should be discontinued after the third year. The practice of growing berries between the trees can only be followed at the expense of the trees. For the first two years strawberries might be allowed, but the amount of moisture evaporated by the plants and fruit is incredible to those who have not studied the matter, and there is always the tendency to crowd in on the tree rows. If raspberries are placed amongst the peach trees one row is enough with a row of roots or potatoes each side. The root

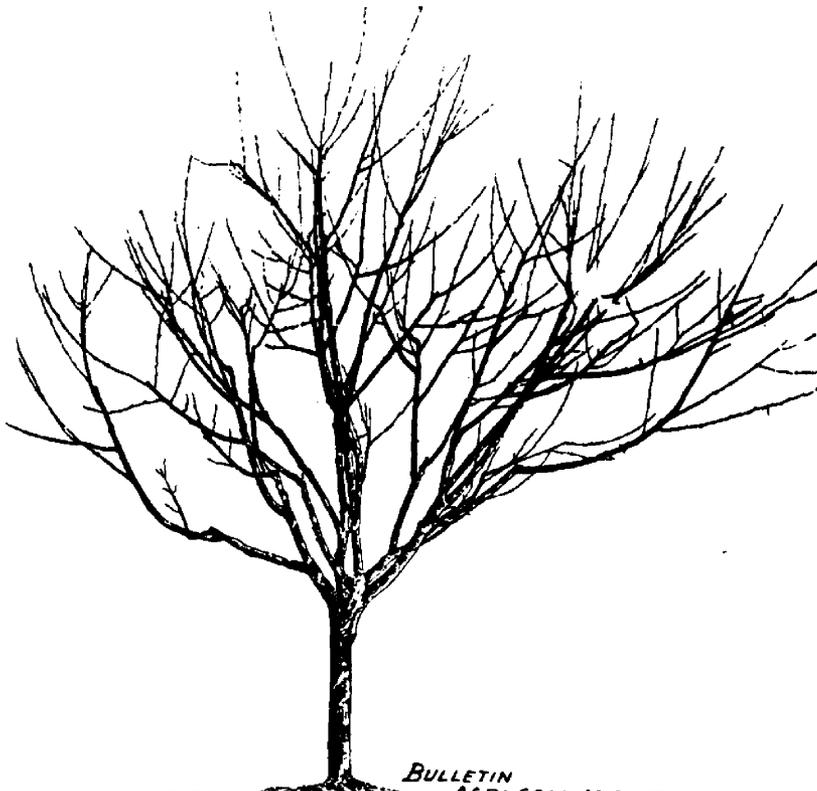
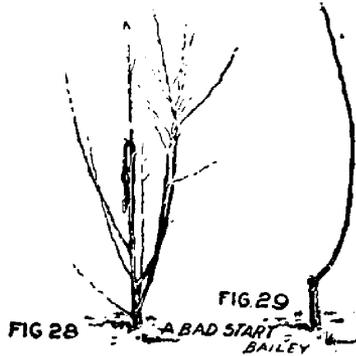


FIG. 30

BULLETIN
AGRI. COLL MICHIGAN
PRUNING BY THINNING OUT.

system of the raspberry has been illustrated in Fig. 4, and with two rows of raspberries between trees, even eighteen feet apart, it will be found that by the third year the roots of the trees and the berries are fighting in the same soil for moisture and food. Nothing but the highest manuring and cultivation under such circumstances can put the

MANURES.—The manuring of the earlier years of a peach orchard should be similar to that of the apple orchard. When the fruiting time comes the tree takes up large quantities of potash, and a dressing of seventy to eighty bushels per acre of unleached ashes will be profitably applied. If ashes are not conveniently obtained, muri-



trees in first-class condition. Towards the end of July the ground may be plowed to the trees and a clover crop, preferably mammoth clover or crimson clover, sown. The writer has had excellent results with the latter, even a severe winter like that of '98-'99 leaving enough of the clover to plow down in May and add much humus and direct plant food to the soil.

ate of potash will be the best form to apply the potash in. The commercial muriate usually contains about 50% of actual potash, and a dressing of some 400 pounds to the acre would be a fair equivalent to the amount of ashes suggested. If the muriate is used a dressing of phosphoric acid in the shape of bone meal or phosphate should also be applied. The grower must decide these

questions for himself. Briefly, when the trees are fruiting and at the same time the foliage is a healthy green and a fair growth of new wood is being made, the orchard has enough nitrogen and the manuring should be in the direction of potash and phosphoric acid. If, however, the growth is at all feeble and the foliage sickly, nitrate of soda—150 lbs. to the acre—or barnyard manure should be immediately applied.

tree would cover the expense, and if the tree is not thinned there is the extra labor to be faced in picking the additional number of peaches at the time of maturity. The fruit should be thinned when the size of small hickory nuts and left not less than three or four inches apart. The profits from such a process are large and undoubted, as all growers who have tried it will testify. For fuller information on this point readers are



THINNING.—This is so important a feature of successful peach culture, and the practice of thinning is so little followed, that a few remarks on the subject will be in order. Thinning lessens the strain on the vitality of the tree, the strength of the tree going not to the pulp but to the seed. It allows of a more even distribution of the fruit and thus saves a frequent break-down. It increases the size of the fruit. It diminishes the danger from rot. As far as the labor of thinning is concerned it is a comparatively small affair. From ten to twenty cents a

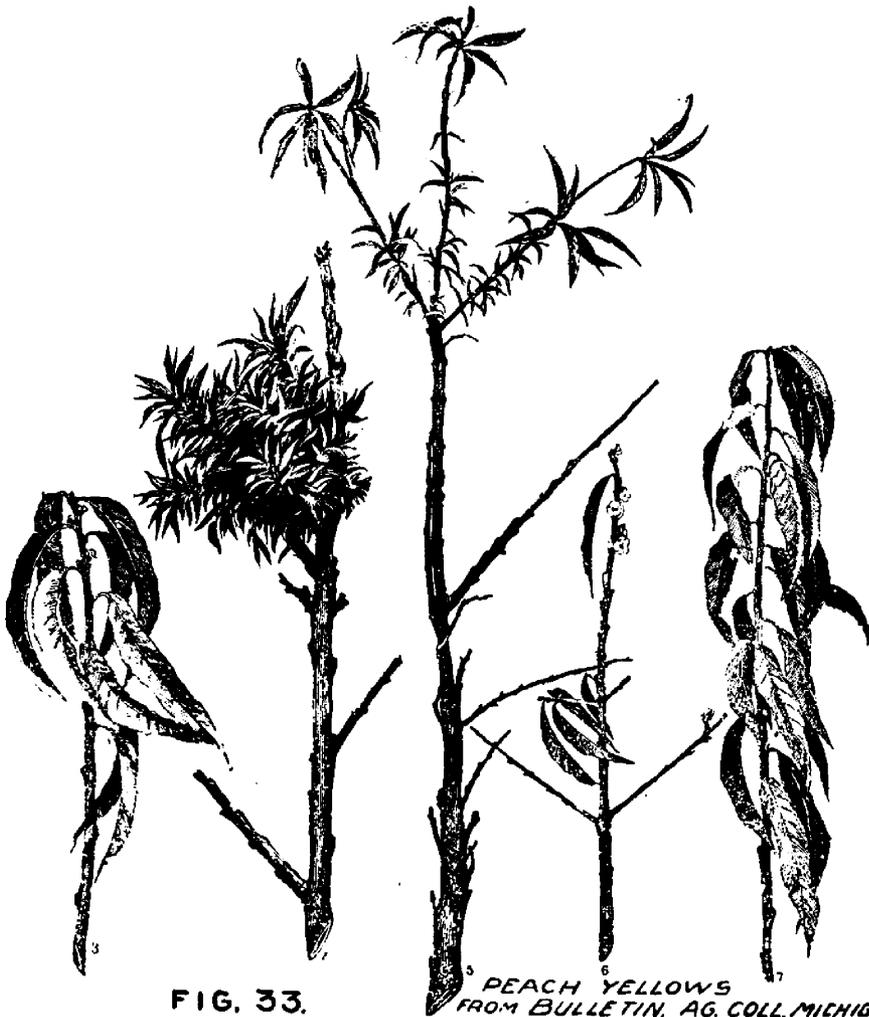
referred to the excellent bulletin by Prof. Craig, No. 1, Second Series, of the Central Experimental Farm.

VARIETIES.—Local conditions must decide the variety question to a large extent. Of the earlier kinds two of the best commonly planted are *Early Rivers* and *Hyne's Surprise*. Next in order of season come *Yellow St. John*, *Mountain Rose* (white), *Early Crawford*, *Reeve's Favorite*, *Elberta*, *Old Mixon*, (white), *Late Crawford*, *Wager*, *Smock* and *Steven's Rareripe* (white).

DISEASES AND INSECTS.—Chief among the diseases in point of destructiveness comes the "yellows." The origin and exact nature of this disease are unknown. It is highly contagious, and will ordinarily destroy a tree in three years. Though an On-

and wiry growths shown in the three central twigs in Fig. 33 will enable the grower to diagnose the case. Each outside twig in this figure is a normal twig.

Leaf-curl is a highly injurious fungous disease affecting the peach. Fig. 34 shows



tario statute provides for its destruction the law is often a dead letter owing to the apathy of the local authorities. The wise man will take out at once and burn any tree showing symptoms of this disease. The premature ripening and spotted appearance of the fruit is a sure sign, and the sickly yellow foliage

the typical appearance of a diseased twig. Three remedies exist for this trouble. Spraying with Bordeaux mixture, once before the blossoms open and once after will do much to control it. Whale oil soap, one pound to the gallon, has been thoroughly effective in Ohio, applied immediately before the

bursting of the buds; and using a white-wash as a winter spray. For the last remedy readers are referred to the Bulletin of the Ontario Agricultural Department "Instructions in Spraying."

Rot or Monilia. This fungus, which also affects the plum and cherry, is worse on early varieties and in a wet season. In gar-

dens where only a few trees are grown the affected specimens should be picked off and destroyed. A systematic use of the Bordeaux mixture will check it to a considerable extent.

The two most injurious insects to the peach are the curculio and the peach-borer. Paris green, four ounces to forty gallons, with a pound of lime added, will check the former. A thick wash compound of cement and skim-milk applied early in July will also be effective, and will prove more adhesive than any other wash.

M. BURRELL.

St. Catharines, Ont.

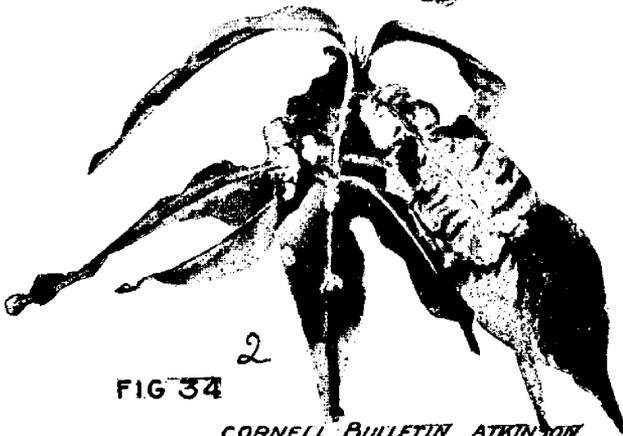


FIG 34

CORNELL BULLETIN ATKINSON



FIG. 35

Effect of soft rot. *Monilia*.

CENTRAL EXPERIMENTAL FARM NOTES—VIII.

UP to the 13th May there was very little warm weather at Ottawa; the latter part of April and early part of May being exceptionally cool and dry, and the frost late in leaving the soil. So cool did it become on the 10th and 11th May that the thermometer registered four and five degrees of frost, respectively, on these dates. Owing to the backward spring and the cool weather which preceded these severe frosts, there had not been very much growth, and what there was had been pretty well hardened; the result being that very little injury was done. A few apple and plum blossoms were injured at the Experimental Farm, but the majority appear to have been unhurt. On the 8th May there was a much needed rain, but the weather continued cool until the 13th, when it became warmer. On the 14th the thermometer registered 86° Fahr., and one felt for the first time this year that the growing season had begun.

Nearly everything that is usually hardy came through the winter in good condition, and the prospects at present are that there will be an abundant crop of apples, plums, cherries, and small fruits.

The Ontario apple is evidently not going to be hardy at Ottawa, unless it succeeds when top grafted. Several young trees were killed to near the ground last winter in the orchard here. An older tree also died last year. Most of the apple trees are looking well, and many varieties have been found to be of no value in this part of the country, the fruit being of an inferior quality, the trees have been removed to make way for other kinds. In order, however, not to lose sight of these varieties they have been top grafted, a number of sorts being on one tree. The majority of these varieties are of Russian origin.

The fine collection of American plums which is now in the orchard at the Experi-

mental Farm should be particularly interesting this year. It is time that these plums were more widely grown in the colder parts of Canada. Some of them are very large, and many of them are of good quality and heavy bearers. It is to be hoped that our nurserymen took advantage of the recent opportunity for importing stock from the United States to get a supply of some of the best varieties of these plums. The American plums would be much appreciated in those districts where the native wild plum is affected with blight, which has been so persistent for many years past that there is very rarely a crop of good plums unless the trees have been sprayed.

From present indications the crop of cherries should be large this year. A few more trees died last winter, root-killing being the cause in most cases. As far as we know, none of the trees which died were grafted or budded on the native bird cherry—*Prunus Pennsylvanica*. Trees budded on this stock in 1891 are still vigorous, the union is perfect, and we believe that for the colder parts of Canada this is one of the best, if not the best, stocks in use. The cherry orchard has been practically replaced during the past three years by trees worked on this stock, and this will afford a good object lesson as to the value of the bird cherry for this purpose.

As has been mentioned in previous notes, extensive experiments have been carried on in the Horticultural Department during the past few months to determine the value of lime as a remedy for the oyster shell bark louse. From results obtained last year we were convinced that lime, spread on the trees, would remove nearly all the scales from the trees, if the scales were covered by it. Our experiments this year are confirmatory. No injury to apple trees from the use of lime can be discovered. While the necessary data to determine the most econ-

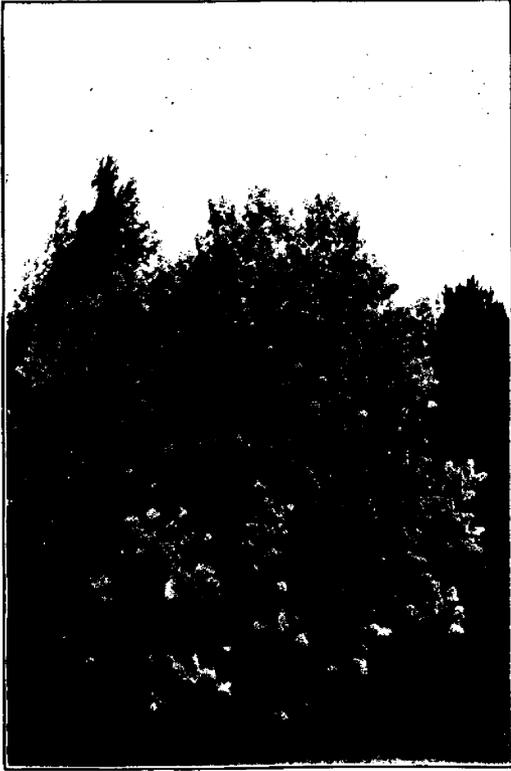


FIG. 1826. CHARLES X LILAC, AT CENTRAL EXPERIMENTAL FARM.

some of the best of these, also of those which are required if a succession of bloom is desired. The double and single varieties and the dark and delicately tinted purple ones are especially fine.

One of the best hardy spiræas is comparatively new species called *Sarguta*. This is a very early flowering sort, being in bloom about the same time as *Spiræa Thunbergii*, but is hardier than that species and of more graceful habit. Following this is *Spiræa Von Hcuttii*, which is a beautiful shrub of pendulous form bearing a profusion of dainty white flowers. Although this shrub is being more extensively planted, it will probably be a long time before there are too many of them. The Japanese quince, which bears a profusion of bright red flowers, is one of the best flowering shrubs where it can be grown successfully, but at Ottawa it is not very satisfactory, as the wood is not perfectly hardy and the flower buds are winter-killed to within a short distance of the ground every year. There is another species called *Pyrus (Cydonia) Maulei*, the flowers of which are also fine, which is quite hardy at Ottawa, the flower buds and the wood being seldom injured by winter. It is one of the most desirable of the shrubs which bloom in May.

omical formula will not be available for some weeks yet, we feel confident that spraying trees in the autumn when the trees are dormant, with a lime mixture, will prove the best, simplest and cheapest remedy for the oyster shell bark louse yet known.

The latter part of May and the first half of June is the season during which most of the flowering shrubs are at their best. At the Experimental Farm there is a collection of more than one hundred species and varieties of lilacs alone. These begin blooming during the third week of May, and there is a succession of these beautiful and popular flowers from that time until the end of June. In the Canadian Horticulturist for May, 1899, there is an article by Mr. Wm. Saunders, in which descriptions are given of

The following is a list of some of the best perennials which bloom in June :

Alum-root (*Heuchera sanguinea*) ; German Iris (*Iris germanica*) ; Oriental poppy (*Papaver orientale*) ; Oris root (*Iris florentina*) ; Gas plant (*Dictamnus albus purpureus*) (*Fraxinella*) ; Jacob's Ladder (*Polemonium coeruleum*) ; Double flowered Dropwort (*Spiræa Filipendula fl. pl.*) ; Large flowered Gillardia (*Gillardia aristata grandiflora*) ; Double Sneezewort (*Achillea Ptarmica fl. pl.*) ; Lance-leaved Tickseed (*Coreopsis lanceolata*) ; Yellow Day Lily (*Hemerocallis flava*) ; Dumortier's Day Lily (*Hemerocallis Dumortierii*).

W. T. MACOUN,
Central Exp'l Farm, Horticulturist.
Ottawa.

THE QUARTER ACRE LOT OR ORCHARD.



THE quarter acre lot and orchard, I think, is a fit subject for my paper, as in towns and also a large area of the cities we either own or rent a house with a quarter or half acre of land; therefore, I think this paper should demand a considerable amount of discussion. But before I enter into the quarter acre lot and orchard, I would say to the young men of both city and town that there could not be any nicer or better, or, perhaps, any more profitable study than the orchard. Let a schoolboy in his early 'teens take the seed of the apple, pear or plum; let him sow them, and what a delight it will be to him when he will first see the tiny little leaflets peep through the soil. Then he becomes interested as he watches the growth, until the time comes for to graft or bud that stock with his favorite fruit, and there he does assist nature in her grand design; and still he watches its advancement, and before he is through with his study he receives his reward, for the tiny little leaves that he first watched coming through the soil is now a large tree loaded with delicious fruit. Oh, what a happy thought and what pleasure for that young man when he grows to be an old man to think that he assisted nature to some degree! But I fear I have lost sight of my quarter acre lot and orchard. And now, by way of illustration, say a quarter acre of land contains, as most lots are laid out, 112 x 56 feet. Now, take the site of our house and yard; of the quarter acre, what is left for the orchard? The house will be 15 feet from the street line, house and shed 40 feet, which will leave about 57 x 56 feet, on which can be planted 10 fruit trees—1 early apple, 2 late apple, 2 plum trees, 2 pear trees, 1 cherry and 2 winter apple trees; and beside these say 6 goose-berry, 6 currant, a few raspberry bushes and

some grape vines and a small bed of strawberries, and yet there will be room for a few rows of early potatoes and other vegetables. Certainly as the trees grow in size the ground will be covered by them, and it will not be fit for vegetables. And if we only knew the benefit of good ripe fruit to our health, we would use more of it. But, sir, we are told that when they are got from the store the fruits are half ripe and wilted after lying in the shop window for several days, and I do believe that is one reason why the people do not use more fruit. But the quarter acre orchard will get over all that. What nicer amusement can the merchant wish for, after being all day in his store, or the mechanic after leaving his work; it may be some dusty workshop. Yes, and even the hard-toiling laborer will find pleasure in going into his little garden and spend a short time among his fruit trees and vegetable beds. It is much better than loafing at some street corner or tavern door. In his garden he will reap his reward, for early in the season when the good wife goes into the garden and gathers in the nice fresh vegetables, which we all long for at this particular time of the year, we can truly say it is the reward of his labor. And when the fruit season has come, and again she takes a trip into the garden and plucks the first plate of strawberries or raspberries, and, how tempting, those few lovely apples, plums for preserve, or those nice cherries for the little children. And of a winter's evening, after supper, the wife brings up a nice plate of apples from the cellar, will not the husband and children be delighted? And all this from the quarter acre lot!

T. CONOLLY.

A paper read before the Lindsay Horticultural Society.

THE BEN DAVIS CONTROVERSY.

IT WAS not really my intention to add another word to the controversy on the Ben Davis which has been carried on in *The Horticulturist* for many months past. But on communicating with Professor Craig, whose opinion was cited by Senator Ferguson as against the longevity of this particular tree, I find that he in nowise bears out the Senator's view. On the contrary, he fully justifies my own contention that the deterioration he spoke of at Halifax must apply in a commercial sense to the fruit and not to the tree. "A misapprehension will not down until it is plainly corrected," writes the Senator, in the April number, and as there has evidently been a misapprehension of Professor Craig's words on somebody's part (not mine), I beg leave to state the case in dispute clearly and terminate with the authority which practically settles the case.

In an article in last year's *Horticulturist*, I marvelled at an opinion expressed to me by Senator Ferguson, who had recently returned from a trip to Nova Scotia, that the Ben Davis tree was a "slow grower" and of "short duration" in that province, and also in Eastern Prince Edward Island. The estimable Secretary of the F. G. A. of Nova Scotia immediately took the matter up, and declared that the tree was as great a grower in his province as I found it to be here, and as to duration, that was a question for time to determine. I rejoined that this must necessarily be so; but that a portion of a discussion in the N. S. report for 1899 conveyed the same impression as did the Senator's words. Professor Sears was concerned in the citation, and he comes to the rescue by saying that the Davis was not intended by the parties to the discussion to be regarded as a "slow grower," but the Gravenstein a more rapid grower, and, therefore, not desirable as a top graft on

such stock. And he modifies this somewhat by adding that this is not so much so because the Gravenstein can outgrow the Davis (which is questioned very generally), but because the former has the habit of making comparatively few large branches, whilst the latter divides up into numerous small ones. Senator Ferguson also invokes his splendid paper, read at the late annual meeting of the F. G. A. of P. E. I., in which he says "that Professor Craig does not regard it (the Ben Davis) as a tree that will, as it grows old, continue to bear the best fruit"; still holding, all will observe, to the idea that this tree must be short lived. I could never discover the data on which such an opinion was based. When the Senator read the passage in question before the association, I made bold to interrupt him and say: "Did Professor Craig really declare that the tree would not last, or did he say the present place of its fruit in public favor would not last when it became better known?" "He said, in his opinion, the tree would be of short duration," the Senator replied. "Well, we ought to know," I added, "on what he bases this opinion." Now, it transpires that with those gentlemen the tree and its fruit have been interchanged with undue freedom. No mortal man ever contended that the fruit, especially as grown with us, could ever be regarded as No. 1. It will grow well, keep clean easily, fill the barrel surprisingly, suffer all the incidents and accidents of transit, and go on the market at Liverpool at a time when fruit is scarce, in splendid shape, and thus secure a good price; that is all. But the tree, as a tree, is grand. It grows like "a-house-a-fire," if you permit me a boy's phrase; stands extreme climatic changes admirably; is free from the enemies which beset other sorts, and wants less attention than any other tree we plant. Why it

should soon run its course, when it now gives every evidence of a fresh old age, I could not see. Professor Craig was cited as having issued its death warrant, and it had to die. The Professor was altogether misunderstood, and as his opinion, or a misconception of it, led to all this discussion, it was of prime importance that we should have it clearly expressed by himself. I have therefore great pleasure in appending the kind letter of the learned Professor herewith. It is in reply to a note from me asking for a categorical statement on the subject, and will be read with interest by even those Upper Province horticulturists who may perhaps betimes be bored by the iteration of maritime difficulties in these columns :

DEAR FATHER BURKE,—After a very long silence, I am glad to hear from you again. I have noticed one or two references to some remarks which I made somewhere regarding the Ben Davis apple—its present value, and its future prospects.

The Ben Davis apple tree is more at home in the Ozark regions of Missouri and Arkansas than anywhere else in the apple belt. It is extremely productive there. The apples grow to a fine size, and really are quite eatable when thoroughly ripe. The quality is better in that region than anywhere else that I know of.

The Ben Davis is being planted very freely all over the apple-growing region. The point is this—that it is an apple of very poor quality at the best, that it is much better adapted to this western country than to the east, and finally, that when its true merits are recognized upon the British and foreign markets the price is sure to fall, and people will discriminate between well-grown apples of this variety and other Ben Davises less handsome and of inferior quality. According to

my observation, the Maritime Provinces cannot compete—nor can New York—with Missouri and Arkansas, in growing the Ben Davis. I did not say that the apple, when widely grown, would deteriorate in quality, but I intended to convey the impression that its true quality would eventually become generally recognized, and that in time it would take its proper place in the markets of the world, and this, from the quality standpoint, would be near the bottom.

As far as the tree itself is concerned, I am of the opinion that it would be longer lived in Nova Scotia and on the Island than here in the west; but it originated out here, and it requires the warm suns and intense heat of our summers to improve the quality of the fruit and give it plenty of color.

I thank you for sending me a copy of your Annual Report, which is most interesting, and also for doing me the honor of placing me among your honorary members. I think your society is entering upon an era of prosperity, and I feel sure that it will do much to advance the fruit interests of the Island.

I have pleasure in sending you a copy of a bulletin on plums recently issued here, with the hope that you may find in it something of interest.

Yours very truly,

Ames, Iowa, April 20.

JOHN CRAIG.

It will thus be seen that the Ben Davis' "short duration," according to Professor Craig, is altogether of a commercial character, and even upon this point, many will agree to differ with him, while of the tree itself, the indications are that it will be enjoying as great an immunity from the ravages of time as it will do from the depredations of sneak thieves, without a change comes over present tastes—and *de gustibus non est disputandum*—when we are all gathered to our fathers.

Alberton, P. E. I.

A. E. BURKE.

Number of Trees or Plants on an Acre at Various Distances.

At	4 feet apart each way	2729
"	5 " "	1742
"	6 " "	1200
"	8 " "	680
"	10 " "	430
"	12 " "	325
"	15 " "	200
"	18 " "	135
"	20 " "	110
"	25 " "	70
"	30 " "	50

The number of plants required for an acre, at any given distance apart, may be ascertained by dividing the number of square feet in an acre (43,560) by the number of square feet given to each plant, which is obtained by multiplying the distance between *rows* by the distance between the *plants*. Thus, strawberries planted three feet by one foot gives each plant three square feet, or 14,520 plants to the acre.

THE APPLE AND PEAR MARKS ACT.

IN response to the request of our Association the Hon. Sidney Fisher has introduced an act to provide for the marking and inspection of packages of apples and pears for export, which reads as follows :

1. This Act may be cited as *Apple and Pear Marks Act*, 1900.

2. This Act shall come into operation on the first day of July, 1900.

3. Every person who, by himself or through the agency of another person, packs apples or pears in a closed package, intended for export, shall cause the package to be marked in a plain and indelible manner before it is taken from the premises where it is packed,—

(a) with the initials of the Christian name and the full surname and address of the packer ;

(b) with the minimum size of the fruit in inches;

(c) with the name of the variety, and

(d) with a designation of the grade of the fruit.

4. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export unless (a) the name and address of the packer and (b) the diameter in inches (or fractions thereof) across the core of the apples or pears, as the case may be, are marked upon the package in a plain and indelible manner.

5. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export upon which is marked the grade "A No. 1 Canadian," or any similar designation, unless such fruit consists of well-grown specimens of one variety, of normal shape and not less than ninety per cent. in each package free from scab, worm holes, bruises and other defects, and properly packed.

6. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export upon which is marked the grade "No. 1 Canadian," or any similar designation, unless such fruit consists of specimens of one variety, sound, of fairly uniform size and not less than eighty per cent. in each package free from scab, worm holes, bruises and other defects and properly packed.

7. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export which are disqualified from being marked "A No. 1 Canadian" or "No. 1 Canadian," unless such package is marked "No. 2 Canadian" in a plain and indelible manner.

8. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export upon which is marked any designation of size, grade or variety which falsely represents such fruit ; and it shall be considered a false representation when more than ten per cent. of such fruit are substan-

tially smaller in size than, or inferior in grade to, or different in variety from the marks on such package.

9. Every person who, by himself or through the agency of another person, violates any of the provisions of this Act shall, for each offence, upon summary conviction, be liable to a fine not exceeding one dollar and not less than fifty cents for each package which is packed, sold, offered, exposed or had in possession for sale contrary to the provisions of this Act, together with the costs of prosecution, and in default of payment of such fine and costs, shall be liable to imprisonment, with or without hard labor, for a term not exceeding one month, unless such fine and the costs of enforcing it are sooner paid.

10. Whenever any apples or pears packed in a closed package are found to be falsely marked, any inspector charged with the enforcement of this Act may efface such false marks and mark the words "falsely marked" in a plain and indelible manner on such package.

11. Every person who wilfully alters effaces or obliterates wholly or partially, or causes to be altered, effaced or obliterated, any inspector's marks on any package which has undergone inspection, shall incur a penalty of forty dollars.

12. The person on whose behalf any apples or pears are packed, sold, offered or had in possession for sale, contrary to the provisions of the foregoing sections of this Act, shall be *prima facie* liable for the violation of this Act.

13. It shall be lawful for any person charged with the enforcement of this Act to enter upon any premises to make an examination of any packages of apples or pears suspected of being falsely marked in violation of the provisions of this Act, whether such packages are on the premises of the owner, or on other premises, or in the possession of a railway or steamship company ; and any person who obstructs or refuses to permit the making of any such examination, shall, upon summary conviction, be liable to a penalty not exceeding five hundred dollars and not less than twenty-five dollars, together with the costs of prosecution, and in default of payment of such penalty and costs, shall be liable to imprisonment, with or without hard labour, for a term not exceeding six months, unless the said penalty and costs of enforcing it are sooner paid.

14. In any complaint, information or conviction under this Act, the matter complained of may be declared, and shall be held, to have arisen, within the meaning of Part LVIII of *The Criminal Code*, 1892, at the place where the apples or pears were packed, sold, offered, exposed or had in possession for sale.

15. No appeal shall lie from any conviction under this Act except to a superior, county, circuit or district court, or the court of the sessions of the peace having jurisdiction where the conviction was had ; and such appeal shall be brought, notice of appeal in writing given, recognizance entered into, or deposit made within ten days :

the date of conviction; and such trial shall be heard, tried, adjudicated upon and decided, without the intervention of a jury, at such time and place as the court or judge hearing the trial appoints, within thirty days from the date of conviction, unless the said court or judge extends the time for hearing and decision beyond such thirty days; and in all other respects not provided for in this Act, the procedure under Part LVIII of *The Criminal Code*, 1892, shall, so far as applicable, apply.

16. Any pecuniary penalty imposed under this Act shall, when recovered, be payable one-half to the informant or complainant, and the other half to Her Majesty.

17. The Governor in Council may make such regulations as he considers necessary in order to secure the efficient operations of this Act; and the regulations so made shall be in force from the date of their publication in *The Canada Gazette*, or from such other date as is specified in the proclamation in that behalf.

STUB ROOT PRUNING.

WE HEAR a good deal of late about the Stringfellow method of pruning trees, trees, which is the result of some experiments in close root pruning by H. M. Stringfellow, of Texas. He cuts off the top of a transplanted tree to say 12 to 18 inches high, and cuts off nearly all the roots, leaving only stubs an inch or two long. The ideas assumed by Mr. Stringfellow are that: (1) Seedling, non-transplanted trees are longer lived, hardier and healthier than the trees of orchards; (2) that this superiority is largely due to the presence of a tap root system, and (3) that the nearer a transplanted tree is reduced to the form of a young seedling or cutting, the greater is its tendency to develop a tap root system.

We do not believe in the theory nor in the assumption upon which he grounds it, and experiments made at Cornell University do not support it. The fact that a tree that has had its roots closely cut off may live and throw out fresh roots, is no argument that it would not have done better if the roots had not been cut.

Mr. Stringfellow, however, is very persistent in his theory, and means to put it into practice, as may be seen from the following clipping:

Orchardists and nurserymen everywhere have

been intensely interested in the revolutionary method of fruit-tree planting, advocated by Mr. H. M. Stringfellow, who, with the courage of his convictions, is now putting his theory into practice on his recently purchased land near Lampasas, Texas. The following extract from a letter to President Ramsey, of the Texas Horticultural Society is, as the latter says: "The first chapter in the history of an orchard that is going to be talked about and watched closer than any that has been planted since the days when Adam was superintendent of a truck patch and home orchard."

Mr. Stringfellow writes, in part: "I laid off my rows with a strong line and tags tied securely where the trees were to stand. I then measured and marked the ends of the rows, the rows being just long enough to allow of stretching the line nicely. This was all on virgin, unbroken prairie sod. I then got a two-inch iron bar, sharpened at the end, and three and a-half feet long and also a ten-pound sledge hammer. I had two men; one held and carried the bar, setting it at each tag, while the other man drove it down about one foot. It was heavy work and they had to alternate every five or six holes. Well, the first day I wore that iron bar off to 18 inches and drove 900 or so holes. The next day I tried a one and a-half inch bar and battered that away by night and drove about as many; the third day I got a one-inch steel bar, and that stood much better and drove about 1,200 holes. I then root-pruned all the trees and stuck them down to the bottom, pears in the larger holes and apples in the smaller. I had a wagon with a barrel of water and a half load of fine silt from a creek bed, with a boy to drive and wait on us. I dropped the trees, carrying two buckets, one of the earth and the other water, and a small tin cup. After sticking the tree in the hole they took and poured them slowly into the holes at the same time until filled up. This settled the earth nicely about the roots and stem. We set the whole 3,000 in less than three days. Every tree is growing fine. * * * Now, you just look out for the finest, healthiest and most productive orchard in the country."

MORE ABOUT THE PAPAWS.

THE species of Papaw mentioned by Mr. R. Cameron in the March issue of *The Canadian Horticulturist* as being native to Southern Canada is an old friend of my boyhood in Southern Ohio. It grows there to great perfection, some of the trees being fully a foot in diameter, although six inches is a large one; it is usually a bush. I have gathered fruit from the wild trees near my old Ohio home and also in Kentucky, Indiana and as far west as eastern Kansas that was more than six inches long and about half as thick. The aroma was sometimes so strong that I have been led to stop and hitch my team by the roadside and follow the scent of the ripe fruit through the thick woods for a hundred yards or more, and where I could not see the Papaw bushes until I got very near them. Many a rich feast have I had on such occasions. This fruit is worthy of culture.

But the Papaw mentioned as being found in South Africa is a very different fruit, both botanically and in point of flavor, size, shape, etc., of fruit. This is *Carica papaya*, which is an annual and is strictly tropical. It is properly called Melon Papaw, because the

fruit is about the size, shape and color of an average yellow muskmelon or cantaloupe. These large fruits are borne at the axils of the leaves, which are also very large and something like those of the castor bean plant. The stalk is straight and has no branches.

When cut open the fruit shows a flesh about an inch thick, and there are numerous small round seeds fastened to it. The flesh is yellow, very juicy and about as soft as that of a very ripe cantaloupe. The flavor is somewhat sweetish but rather insipid, and I always thought a little salt or sugar or both together added character to it. It is not so rich and agreeable, to my taste, as the true Papaw of America.

So far as the effect of the juice of the Melon Papaw in tendering beefsteaks is concerned I have never tried it, but this is said to be true. It may also be anti-dyspeptic, as Mr. Allan, of Africa, says, but anyone who would undertake to "grate" a ripe Melon Papaw would have a sloppy mess. Moreover, this fruit cannot be grown outside of tropical regions.

H. E. VANDEMAN.

Parksley, Va., March 20th, 1900.

ARRANGEMENT OF HOME GROUNDS.

SIR,—In looking over the last number of the *Canadian Horticulturist* (I am a constant reader of all the numbers) my attention was held closely to the first item in the "Question Drawer," entitled—"Arrangement of Home Grounds." Replying to the letter of inquiry, Mr. W. H. Manning says: "It is usually unwise to locate a house on the summit of a ridge for it makes the building unduly intrusive, etc." And further on he continues: "It is generally better to locate

at the side or at the base of a slope, reserving views from a higher level for occasional enjoyment or for enjoyment from upper windows." Looking back to "Subscriber's" letter, he says: "The view from position marked for house is grand, especially to the north." Let me ask a question: is subscriber more interested in presenting a picture for his neighbor to look at and down upon, or in being in a position where he can command a grand view at all times, and can

offer his neighbor the same privilege when enjoying the hospitality of his home? Who wants to climb a flight of stairs and to gaze from a bedroom window in order to get a grand view, when the same might be obtained from the first floor from the windows of the parlor, the library, the living room, where the whole family and visitors gather so many hours of the day?

If subscriber has sufficient land so he can afford to take seven acres for a lawn, putting his fruit trees in the background where they will not obstruct his view, he will be planning for great beauty and happiness in the future. He will secure for himself and family a restful breathing spot that will intensify the love for home. A lawn of that size is not difficult to care for; going over it three times a season with a scythe is sufficient to keep it in shape for walking over it. The more frequent portions could have a lawn mower run over them, leaving the cut grass on the ground for a mulch. A few years will give a turf so thick that constant running over it would make no impression.

Let me assure subscriber that he will never tire of his grand view, for he will never see it twice in exactly the same way.

The conditions in Canada are no doubt similar to those in Minnesota, and a scene that is grand in summer, borders on the sublime in winter, when seen in the peaceful purity of perfect rest only possible in regions of heavy snow.

The impressions of early childhood (the writer lived in Canada in those days "just over the line") are imbedded deeply in memory, almost as much so as Mother Earth herself is in the snows of winter.

Set out a few trees in an irregular group of five to seven, near the house—say the nearest about thirty feet from it, that will relieve the too great prominence of the house.

Then trim the trees as they grow so they will not interfere with views from the house. The bodies of the trees will form living frames for the beautiful pictures furnished by grand old nature. With evergreens and the hardy flowering shrubs, the prosy part of the home grounds—kitchen garden, barn and clothes reel may be made so many adjuncts to a harmonious whole.

Yours truly,

ANNA B. UNDERWOOD.

Lake City, Minn.

SUCCESS AND FAILURE.—During the autumn of 1899, there were sent forward from Grimsby to Great Britain in cold storage, for experiment, 127 cases of peaches, 3746 cases of pears, 1456 cases of apples, and 82 cases of quinces. Of the peaches, one lot of 28 cases sold at \$2.46 each; another of 30 cases sold for \$2.99; good prices surely for about half a bushel of fruit! Pears also have done well in every case in which they have arrived in good condition.

In one instance 145 cases of Bartletts (less than half a bushel each) were sold in Manchester, for \$1.97 each, and netted in Grimsby \$1.54 per case. Another successful instance was a shipment of 242 cases of Duchess pears sent forward by A. H. Pettit & Sons, which were sold at \$1.97 in London, and netted \$1.40 in Grimsby. Our readers will find Mr. Robertson's full report in the Report of our Association for 1899, which is being sent out.



TIMELY TOPICS FOR THE AMATEUR—IV.

JUNE! floral June! the rose-month of the year, when the Rose with its fragrant, queenly blossoms, demonstrates, with more than its usual attractiveness, the right to retain among its many beautiful floral associates, the proud title so universally accorded it, as "The Queen of the Garden."

The Rose, however, has by no means the entire monopoly just now in the garden; as the fragrant blossoms of tree and shrub, as well as of many other plants, demand their share of admiration, from all lovers of the beauty so lavishly displayed at this time of the year, in the floral world around.

June also brings us many of the useful and healthful first products of the fruit and vegetable garden, that are so acceptable at this early summer season; and that so well repay the comparatively small amount of care and labor required to produce them.

Pests as well as pleasures, however, usually come with the good things that June brings us in the garden, the increasing warm weather causing greater activity amongst injurious insects and similar pests. Constant and close watchfulness, and an

early application of the remedies and preventives recommended in the formulas published in horticultural journals, is very necessary to successfully combat these ever increasing enemies to plant life. The old maxim that "Prevention is better than cure," may be applied with as much force now as it ever was, especially in the garden; not only to the attacks of injurious insects and similar pests, but also to the successive crops of weeds that appear so rapidly during the summer months.

THE GREENHOUSE: June is the moving-out month in this department; as most of the plants that have occupied the greenhouse all the winter and spring, have to be gradually introduced, as the weather permits, to their summer quarters.

Geraniums and the hardier class of bedding plants, such as verbenas, petunias, and pyrethrum should be planted out in the beds or borders as early as possible. Coleus, achryanthes, and the more tender plants may be planted out after all danger of frost is over.

Palms, cordylines, Ficus elastica and most hardwooded plants can be stood outside; plunge the pots in, or stand them on coal

ashes if possible, in a partially shaded position; they will require much less attention, and do better than if left in the greenhouse.

Azaleas may be stood out, or plunged outside in ashes; too much shade is not good for them, syringe daily, and keep the roots moist, but not soddened with water.

Young plants of abutilons, *Aloysia citriodora* and similar plants raised from cuttings should be potted in rich soil, and plunged outside in the open and given plenty of water. Old plants of abutilons are seldom a success as pot plants, they do better planted out permanently in the greenhouse. Carnations should be planted out at once. Chrysanthemums that are to be grown outside should be in their flowering pots by this time, and plunged out in the open; pinching back, staking and tying, will have to be attended to as required; give them plenty of water. If single stemmed specimens of these are required, the pinching process must be omitted; these will succeed best in the greenhouse; they require a great deal of attention when grown inside, with plenty of air and water, and syringing often.

Winter flowering begonias are best stood outside in a shaded position during July and August.

Stevias and eupatoriums should be potted liberally, as they require lots of root room, plunge them out in the open and give them plenty of water when established in the pots.

Seedling primulas and cyclamen can be kept in the greenhouse or in a cold frame, shade well, give air and water as required. Old plants or corms of cyclamen will do best out in the frame, in a cool shaded position, give them very little water during summer.

Tuberous begonias will do better and continue in flower longer in a frame outside, keep the sash over them, shade fairly well, and give plenty of air night and day, water well at the roots only; these plants may be

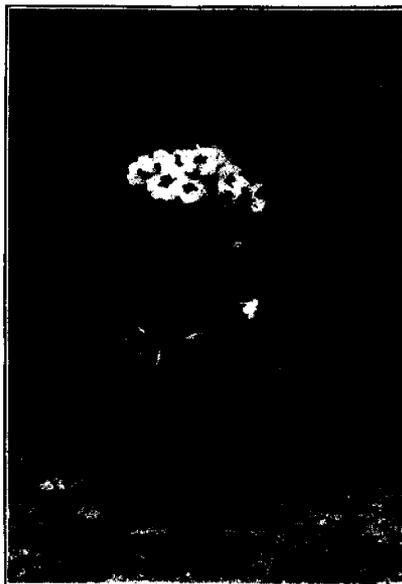


FIG. 1827. POLYANTHUS PRIMROSE.

plunged outside in a shaded position during summer.

Gloxinias, gesneras and achimenes, are best left in the greenhouse, water them well at the roots until they have done flowering, when water can be gradually withheld.

If early cinerarias and calceolarias are required for next winter's flowering, seed may be sown about the end of June, in pots or shallow boxes in light soil; put the pots or boxes out in a frame in a cool shaded place; sprinkle some tobacco dust or tobacco stems, around and under the pots, renew the stems every week or two, this will keep down green fly; water the seed carefully and often; the sash must be kept over them, but give plenty of air by tilting the sash. (See Fig. 1829.)

Put a few *Ficus elastica* cuttings in the cutting bed, they will make nice plants if grown on in pots until winter.

Genistas should be pruned into shape, repotted and plunged outside, or planted out in the open border.

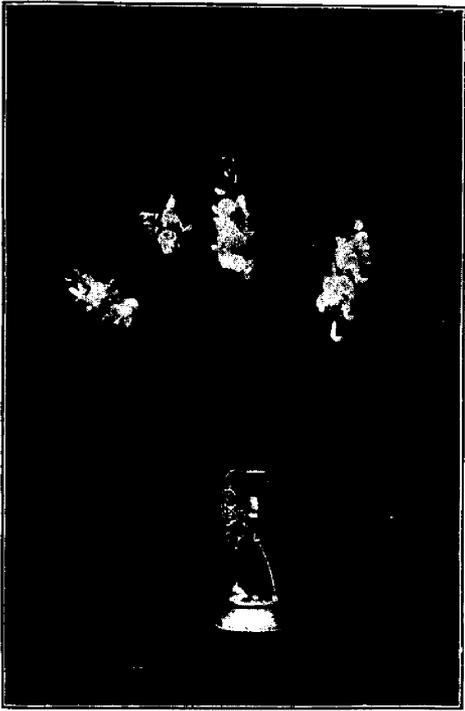


FIG. 1828. SWAINSONIA GALEGIFOLIA ALBA.

Pot roses for winter flowering should be stood outside in partial shade, and given only sufficient water to keep the soil barely moist, so as to induce a period of partial rest.

Fancy pelargoniums that have done flowering can be treated the same as the pot roses; a few cuttings of pelargoniums may be put in the cutting bed to grow on for next season, young plants of these give the finest blooms.

Pot a few geraniums and grow on as recommended in last month's journal.

Fuchsias require plenty of shade, air and moisture; syringe often.

Swainsonia galegifolia alba is a pretty and useful plant for winter and spring flowering in the greenhouse, it requires rich, loamy soil, plenty of light, but very little hot sun; it succeeds well planted out in a border in the greenhouse, or on a bench.

The cuttings of this plant are not easy to strike, they require a close, moist heat to be successful with them. (See fig. 1828.)

Ferns require plenty of shade and moisture. Keep the floors of the greenhouse well dampened, especially for exotic ferns, this is better for them than syringing.

Watering can be done in the evening as the weather gets warmer.

Renew the shading if required. Ventilate freely. The top ventilators may be left open on very warm nights.

WINDOW PLANTS: Palms, cordylines, Ficus and similar plants will do best stood outside in a partially shaded place. Repot them if necessary. Plant out geraniums and all border plants not needed for next winter's use in the window. Cactus will do best stood outside after flowering, a little shade at midday will benefit them, they must not be over watered during summer. Rex and summer flowering begonias, oxalis, cyperus (umbrella plant), ivy-leaved geraniums, fargium grande, and a few native ferns in pots will help to keep the window bright and attractive in the hot weather. Syringe the plants, except the Rex begonia, as often as convenient every two or three days at least. Watch out for green fly and red spider, especially the latter. Window boxes, in positions not exposed to the sun at midday, look very pretty in summer. Cordylines, palms, strong growing geraniums, and coleus do well for the centre of these; for the edges of the box use lobelia, cuphea, othonna crassifolia, variegated or green tradescantia, variegated vincas, nasturtiums, double white allysum, ivy-leaved and Madame Salleroy geraniums and perhaps a few single petunias; these, if tastefully arranged and planted in rich loamy soil, and given plenty of water when the plants are established, will make a gorgeous display for the window during summer and early autumn.

FLOWER GARDEN: Planting the flower beds



FIG 1829. CINERARIA; 3 ft. high; and had 400 flowers at one time.

and borders will occupy the early part of June; leave coleus, cannas, and *Caladium esculentum* until the last.

Dahlias, if not already planted, should be put out at once; light soil and an abundance of water agrees well with dahlias.

Mowing lawns, hoeing weeds, staking and tying plants, must be constantly attended to.

Many of the flowering shrubs will be in their full beauty now; by judiciously thinning out the most prominent sprays or spikes of bloom, a supply of cut flowers may be

secured for the house, as well as give the plant all the pruning it may possibly require. Care must be taken when cutting these shrubs not to thin out too much in any one place. Perennials will keep the garden looking gay until the very hot weather sets in. *Antirrhinums* and *Gaillardia grandiflora*, will continue flowering during July and August, if kept well watered.

Phlox drummondii, delphiniums, coreopsis, cornflower, zinnias, stocks, and other annuals, will brighten up the garden until the asters come in later on.

If there is a dry, sandy spot, fully exposed to the sun, where nothing is supposed to grow, fork up the soil and rake it fine; then sow some portulacca seed on it broadcast, cover the seeds very lightly, it will probably be the brightest spot in your garden during the hot days of July and August.

Polyanthus primroses and cowslips should be divided up and transplanted as soon as they are out of flower; these plants that are such favorites in English gardens are quite hardy in this part of Ontario, and make very pretty border plants; they grow readily from seed. Fig. 1827.

FRUIT GARDEN: Gooseberry and currant bushes will still require watching to keep down the caterpillars; a little dry hellebore applied carefully where needed is the safest remedy, now the fruit is so far advanced.

Spray apple, pear, peach and plum trees

with Bordeaux mixture, when the blossoms have fallen. Plums often suffer from attacks of curculio, shaking these pests into a sheet spread under the tree, and then destroying them, seems an effectual method of disposing of these destructive insects. Grape vines should be gone over and the shoots pinched off about two joints above the small bunches of grapes; this should be done just before or immediately after the grapes are in bloom.

Strawberries, and later on, raspberries, will be welcome delicacies at the table. Thin out the fruit of gooseberries and currants if heavily cropped, it will help the fruit left on the bushes, as well as relieve the anxiety of the housewife in supplying the table, when, as a rule, empty preserve jars are more plentiful than full ones.

VEGETABLE GARDEN: Early peas and spinach will soon be plentiful. Spinach is not as generally appreciated as it deserves, as it is a most healthful vegetable, easily grown and very productive, it should be sown very early in the season, late sowings are as a rule valueless.

Asparagus should not be cut after the middle of June, keep down the weeds on the beds, and let it grow until fall; you will have better asparagus than by cutting it late in the season for table, very late cutting weakens the crowns for next year's supply.

Plant winter and savoy cabbage about the 20th, or as soon after as possible. Cabbage

worms will soon be troublesome, several remedies for these are recommended. Persian insect powder (Pyrethum) mixed with equal quantities of fine air-slacked lime, as recommended in March, 1898, No. of Horticulturist, I have found to be very effective; the great difficulty is to get the powder fresh and strong. For cut worms get a pointed stick and search just under the surface of the soil, near where it is carrying on its work of destruction, or it can be caught on the plants at night with the aid of a lantern. Plant out leeks as soon as the plants are large enough, treat the same as for celery.

Plant corn, melon, cucumber, vegetable marrow and squash seeds, the two last named may be planted here and there in the corn hills.

Plant out tomato plants, the cut worm is very partial to these.

Sow a few chinese, rose and the white variety of radish for summer use. Radish seed, of early varieties, may be sown with white turnips, the black fly prefers the radish to the turnip; this method may save your crop of turnips, as well as perhaps give you a few nice radishes for a relish in hot weather. Keep the hoe busy, "a stroke in time will destroy more than nine." Surface stirring of the soil in very dry weather helps the crops very materially.

HORTUS.

Hamilton.

TAMARISK AFRICANA.



THIS pretty June flowering shrub has a decidedly beautiful and unique appearance on a lawn, being so different in its habit of growth to any of our early flowering shrubs. Its long spikes of delicate pale pink flowers so densely produced have earned for it the fairy-like and

very appropriate title of the "Pink Mist Tree."

It is quite hardy in most localities in Southern Ontario; several fine specimens of it can be seen growing on lawns in and around Hamilton, one or two of which have flourished for nearly half a century, without

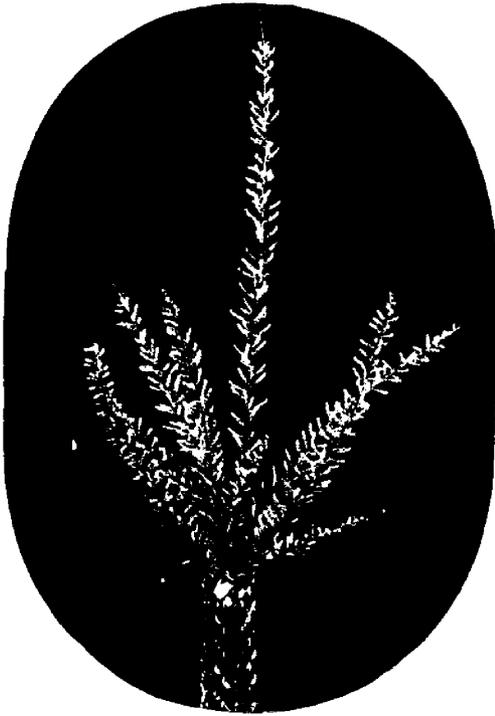


FIG. 1830.

SPRAYS OF AFRICAN TAMARIKS.

any protection whatever in winter. It requires to be pressed back rather severely at times, as its long, slender growth has a tendency to mount upwards, the plant often attaining a height of ten or twelve feet, if not checked in its towering career. But under any condition it is a very pretty shrub, and no collection of flowering shrubs should be without a specimen of the lovely "Pink Mist Tree."

The accompanying photo will give some idea of its heathery-like spikes of flowers and habit of growth; but no photograph could possibly do full justice to the beautiful effect that a large specimen of this plant has, when covered with its minute delicate pink flowers.

The *Tamarisk Chinensis*, that flowers in September, is also a very pretty shrub, with flowers of a deeper rose color than the African variety. Neither of these shrubs are as common on lawns as they deserve to be, as they grow and flourish in any fairly good soil, and require very little care and attention.

HORTUS.

HYBRID PERPETUAL ROSES.

OF the artistic merits of Roses of this strain, and their hardy excellent qualities, a true lover of the Rose never tires.

When the M. Victor Verdier came to us in 1863 it created a sensation, and it has stood the test of time nobly. Henry B. Ellwnger was famous for his select collections, and in his day prized the following as the most highly scented of the hybrids:

General Jacqueminot, Rev. J. B. Camm, Baron Prevost, Maurice Bernardin, and M. Victor Verdier. Perhaps "a flower by any other name would smell as sweet," but would it be as lovely?

But his list of the best dozen hardy sorts

we consider eminently superior, and every plot of ground should have just those varieties.

BEST DOZEN.

Anne de Diesbach, Alfred Colomb, Baroness Rothschild, Baron de Bonstetten, Fisher Holmes, Eugene Verdier, Marshall P. Wilder, John Hopper, Gen. Jacqueminot, Paul Neyron, Mad. Gabræl Luizet, Caroline de Sansel, Francis Michelin.

A good baker's dozen with proper protection; a foot of stable manure and a few boughs to hold the snow would be essential or prudent in states like Vermont and Canada. Although so many years have passed, these same

roses can not receive many additions. The French Rose, La France, of 1889, is one of the best now, and the crimson and yellow and white Ramblers—decided acquisitions in the list of climbers—doubtless will continue to increase in variety, and at length become fragrant. Clothilde Soupert is a glorious rose, and should be added to the above list, as also the Dinsmore. The Soupert now has two daughters—yellow and white. They are always in bloom, as is the Dinsmore, and are fine for out-door and in. Mabel Morrison is also a fine rose. If one can prolong the list add Maria Rhoda, crimson; Eugene Verdier, silver pink, Baron Prevost, rose; Louis Van Houtti, crimson-maroon; La France, rose and white; Many of these, the ever lamented James Vick, furnished me years ago, all proving true to his recommendation, and yet embalm his memory.

I love a rose for its fragrance, therefore the Polyantha roses have little charm for me. They stand the winters very well, and are a pretty house plant. Pearl d'Or and Cecilia Bruner, and Little Gem, are all I have been introduced to as yet. I say introduced, for when I see a lovely new rose for the first time, I am as delighted as if they were human.

The crossing of roses, and the grafting together of various sorts, make a new chapter in roses that has no end. Progression is now thoroughly stamped upon the florist,

and I am never surprised, but delighted, at their success. I look every year for new wonders, and always find something. Success to all in this heavenly enterprise, which no bad man ever follows as a trade, and which I hope to find glorified in the great hereafter.

The French Hybrid Remontan, or perpetual hybrid, will bear a second time if the flowers are cut off. The eyes next to the top will start and give a second flowering, making you rejoice as when a loved one is restored to health. A few tea roses lengthen the season if you have not the Soupert and Dinsmore. The two Perrles de Garden, Metior, Hybrid Tea, Mad. Lombard, Child's Jewel, the Rainbow and Maria Von Houtti and Sunset are desirable.

The Moss Roses are superbly lovely. The pure white Blanche Moreau, Henry Martin rose, and the new bright crimson scarlet Princess Adelaide, are well worth the dollar paid for them the first bearing season.

It seems one could go on and on about these entrancing flowers and never find a stopping-place.

Give your children a birthday rose of some hybrid sort, and see that they are replaced if ought happens to them, it will give lasting pleasure and infuse the love of flowers.

M. AGATHA HOSKINS.

Newport, Vt.

CLOTHES MOTH.—Prof. L. O. Howard, the U. S. Government Entomologist, reports the use of bisulphide of carbon against clothes moths. The clothes are stored away in a wooden chest. In the cover of the chest is a large auger hole with a sponge

tied immediately below it. In midsummer a few drops of bisulphide of carbon are poured through the auger hole on the sponge, and the hole is then closed with a cork; the fumes being heavier than air, sink down into the chest and destroy every living thing.



FIG. 1831. QUEEN CACTUS, IN YARD OF PHILIP MORSE, SAN DIEGO, CALIFORNIA.
(Nearly 15 feet high and 12 feet broad. The largest cultivated specimen in the world.)

THE CACTUS FAMILY.

ONLY those who have engaged in the cultivation of Cacti understand the fascination these curious spring plants have for the collector. There are the same conditions which make the pleasure in gathering together large collections of rare coins, stamps, shells and curios of all kinds—namely, difficulty of procuring the best and rarest of the particular class you are in search of. The “Cacti Crank,” as he is called, has a large advantage over collectors of most of the classes mentioned, in that his plants are constantly changing, growing larger and more valuable; rewarding patience with their beautiful bloom, and constituting a continual source of pleasure in their care and their capabilities of creating wonderful combinations by grafting, etc.

A great many people discard the Cacti on account of their slow growth and their inability to get them to bloom readily, but if the growth of a cactus is not so fast as that of a geranium it is sure, and what it makes one year it keeps and adds to the next, while the fast-growing plants are thrown out every

year and new ones purchased. The few plants of Cacti which are kept year after year thrive on their neglectful treatment and soon become an ornament, even when not in bloom. Everyone acknowledges that the flowers of the Cacti are among the finest in nature, and they richly reward the fortunate possessor of the plant, even if one has to wait an entire year for it.

But it is not the grand flowers they produce that is the incentive to the collector, but the multitudinous variety of forms and spines that are contained in the various headings under the name of Cacti. It could not be the bloom that creates the desire in a beginner's mind for more of the odd plants, because few of them have seen the lovely flowers, and the few small plants first obtained have not yet reached that period, but the fact remains that the “cactus fever” is contracted by making a small beginning, and then only the possession of more new varieties will satisfy the craving.

As each addition is made to the collection, it is carefully potted and watched till growth



FIG. 1832. CACTI.

appears, when it is usually safely established, and very likely some new oddity of spine on the new plant is so very different from anything yet obtained, that the desire for new ones is greater than ever, if it were only to

see what new variance is possible. The number of Cacti lovers is growing very fast, and there is quite a demand for new varieties. In some places where there are a number of fanciers, they run around from one house to the other, where there is always something new to show, either new arrivals or some rare specimen that is just in bloom. In Woodstock there are a dozen or more who have quite extensive collections, and they are a source of mutual pleasure which often brings their owners together.

To tell of the numerous families of Cacti would take too much space for one letter, but I will later on, if allowed space, try and give a short general description of some of them, in the hope of awakening a still greater interest in the strange genus. I would like to have the names of all the cactus collectors in Canada, for mutual benefit. In Woodstock the collectors have had a number of classes made for their plants, and added to the list of the Agricultural Society's fall show. They also have a large space at the annual exhibition of the Horticultural Society.

J. H. CALLANDAR.

Woodstock, Ont.

SWEET PEAS.

To grow Sweet Peas successfully the following rules should be observed :

Sweet peas should not be planted on the same ground after culinary peas.

Excessive manuring with stable manure in the row immediately before sowing the seed is not desirable. Ground intended for sweet peas if not left in good condition after taking the last crop will be better for manuring the previous fall rather than at the spring seeding.

The use of artificial fertilizers, the so-called "phosphates," bone meal, nitrate of soda,

etc., can be made in spring at the time of planting or soon after.

Thin sowing, by which is meant planting the seeds from four to six inches apart, is conducive to vigor and strength of the plants which come later into bloom, but continue much longer than plants from thick seeding.

Frequent stirring of the soil with hoe or cultivator in dry weather, thus producing a dust mulch, is preferable to artificial watering, unless irrigating facilities afford opportunities for a regular and abundant supply of water.—*Vick's Magazine*.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE UNITED STATES will make a fine apple exhibit at Paris. About 2500 barrels of apples have been sent forward, all the samples double wrapped, first with parchment butter paper, then with regular fruit wrappers, made of Manilla tissue.

PEACHES IN GEORGIA.—The Hale peach orchard in Georgia has about 300,000 trees; one block of 60,000 Elbertas is the heaviest loaded of all. Mr. Hale estimates that 8000 car loads of peaches will be shipped out of Georgia this year.

GRAPES.—The Dominion Government will not undertake the export of Canadian grapes, but the Hon. John Dryden has given us some assurance that he will forward several car loads during the season purely for experiment.

MR. WALTER STARK, English manager of the Imperial Produce Co., at Liverpool, who

made a success of the export of our dairy products, called on the 12th ult. He showed us a new patent glass jar for our cherries, peaches and plums, which he thought would be the right thing to use in packing for the English market. The processing would be exceedingly simple, and the goods properly put up and labelled would take the precedence of tin packages at once.

THE YORK IMPERIAL apple, which has been so highly spoken of in some journals recently as a good export apple, is hardly criticised by Bell in R. N. Y. in the following terms:

York Imperial seems to be more sensitive to curculio and other insects causing deformities in the fruit, than any other apple we have. There were no perfect specimens among them, while the Springdale apples, not far from them, were nearly all smooth. York Imperial seems to have a very tender thin skin, very much subject to scald too. We do not care for it either as dessert or cooking apple, the flavor is not to our taste.

COLD STORAGE TEMPERATURES for keeping fruit have been carefully tested at Dartford, England, and a few interesting points determined. Strawberries, currants and cherries, were all put in three compartments, so as to test the effect of temperatures between 26° and 40°. The best results seemed to result from a temperature of about 30°, at which point even strawberries were kept in good condition for three weeks, and cherries for a month, after which they began to wrinkle. To protect the fruit from the drying currents of air a covering was necessary, and paper and wool were tried. It was found that the fruit packed in the latter material were fresher and clearer than in paper.

EXPORT OF TENDER FRUIT.—Our committee has interviewed the Hon. Sidney Fisher with considerable encouragement. Mr. D. J. McKinnon, the chairman, reports that they were most cordially received; that the minister was most anxious to meet our wishes, and would endeavor to arrange with the steamship companies to guarantee certain limits of temperature, say between 34° and 38°, and failing in this to be liable for the damage so caused; that the fruits would be most carefully inspected at Montreal, and that two men who were well posted in Canadian fruit would be sent over to look after our interests.

COMPETITION IN HIGH GRADE APPLES.—Mr. A. S. Baker, of London, England, gave an interesting address before the Eastern New York Fruit Growers on the apple business. He said that the English apple market was supplied by the United States, Canada and Tasmania, and since the latter came at a time when the market was practically free of apples Canada and the United States were the only competing shippers. These American apples were the finest in the world, but brought the poorest prices simply because of the slip shod methods of packing.

They were not graded or sized, packed in barrels, and often poor stock was faced with first class; when such could be sold, it was dumped, and the whole sold at the price of seconds. This, he said, accounted for the low prices our apples brought in the English markets. The Tasmanian apples are shipped nearly 14,000 miles, through the hot climate of the equatorial region, and reach London rather dried up. Their flavor is not as good as the American apples. Yet they sell for better prices in the London market than the American apples. The Tasmanian apples are not barreled, but put in boxes 22 inches long by 11½ inches wide, and 10¼ inches high, outside measurement. They are carefully inspected and labeled, and sell on the strength of the label in the London market without inspection. Englishmen have a great respect for associations, and the stamp of a society or company would be much more quickly recognized than that of an individual. If shipped in boxes he advised putting a sheet of paper between each layer of apples. As varieties for the London market he recommended Baldwin, Ben Davis, Newton Pippin, Northern Spy, Greening, Russet and Jonathan.

APPLE GRADING AND INSPECTION QUEBEC FRUIT GROWERS.—The report of Committee on Resolution of the Quebec Fruit Growers' Association, with reference to the grading and inspection of fruits, makes the following recommendations:

1. That three grades for quality are sufficient.
2. That grade should be marked plainly on outside of all packages for export.
3. Grade marks to be uniform throughout the Dominion, and such as can be easily understood—

XXX Highest quality.

XX Second “

X Third “

4. Fruit packed in standard cases, viz.,

half bushel or bushel cases, should have, in addition to the grade mark, the net weight or number of specimens of fruit contained in the packages.

5. Regular fruit shippers to be allowed to have a registered number or mark recorded at Ottawa, similar to the cheese factories.

6. Brand on outside of fruit package—

1 (c) Canada or Canadian.

2 (b) Variety of fruit.

3 (a) Grade of fruit.

4 (d) In boxes number of specimens or net weight.

5 Name or private mark of shipper.

7. Fruit inspectors to be appointed, who will have authority to open any package bearing a grade mark, and if the contents be not up to grade, the parties concerned to be prosecuted.

(Signed), J. M. FISH,
A. BRODIE,
R. W. SHEPHERD,

Committee.

Adopted at the annual meeting of the Pomological and Fruit Growing Society of the Province of Quebec, held on the 21st February, 1900.

W. W. DUNLOP,

Sec.-Treas.

OUR REPORT FOR 1899.—The following notice of our last report has just been given in the Mail Empire :

The Provincial Department of Agriculture has just issued the 31st annual report of the Fruit-Growers' Association of Ontario, for the year 1899, which will be found valuable by orchardists. It contains the proceedings of the annual meeting of the association, including many papers on a variety of horticultural topics, embodying the experience of some of the leading fruit-growers and practical scientists. Among those whose contributions appear are W. A. Whitney, E. C. Beman, A. H. Pettit, G. T. Powell, Dr. Harrison, Professor H. L. Hutt, Professor W. T. Macoun and Professor J. W. Robertson. The paper of the latter on "Commerce in Large Fruits" has a special interest in view of the attention now being directed to opening up a remunerative export trade in Canadian food products a subject of which the writer is specially qualified by his experience to treat. The principal difficulty in establishing this trade on a permanent and satisfactory basis has been the variable

and sometimes inferior quality and condition of the shipments owing to carelessness in packing and poor transportation. Professor Robertson reiterates the lesson that to hold the market and do a profitable trade it is absolutely necessary to have uniformly good fruit alike throughout the package, in sound condition, with good keeping qualities for the general consumer, and superior qualities for the class who are willing to pay extra for such. He gave an account of the results of trial shipments of pears, peaches and apples made by the Dominion Department of Agriculture, the experience gained affording many practical suggestions to fruit-growers and shippers. Mr. Pettit, in a paper on the same subject, urged the appointment of Government fruit inspectors to examine fruit destined for the British market, and the establishment of standards of excellence, in accordance with which the shipment should be classified as a guarantee of quality to the purchaser.

The subject of spraying was also fully considered, W. M. Orr, President of the Association, furnishing the details of extensive spraying experiments made under the direction of the Ontario Department of Agriculture at various points in the Province, and Professor Macoun presented the results of similar operations at the Ottawa Central farm. Experiments are now in progress at the farm to determine if possible the best time to whitewash the trees, so as to secure the best results. It is proposed to test this application as a remedy for the San Jose scale.

Dr. William Saunders' address on the market afforded by Manitoba and the North-West for Ontario fruit products, indicates the probability of building up an extensive trade in that quarter. Last season over 200 carloads of grapes were successfully shipped to the North-West, and a larger quantity could have been disposed of. Advice was given to fruit-growers to endeavor to secure this market. The report ought to be studied by all interested in the production or shipment of fruit, as it will be seen from the above partial summary of its contents that it comprises much practical information.

THE NOXIOUS INSECTS ACT.—In response to the request of our Association, through its Committee on the Codling Moth, the Ontario Legislature has recently passed the following Act :

1. This Act shall be known as *The Noxious Insect Act*.

2. The following provisions of this Act shall come into force and take effect as to every municipality the council of which shall by by-law declare this Act to be in force therein. The council may at any time repeal such by law, and thereafter this Act and any regulations made thereunder shall cease to apply or be in force as to such municipality.

3. Upon the recommendation of the Minister of Agriculture the Lieutenant-Governor in Council may make such regulations for the prevention and destruction of insects injurious to trees,

shrubs and other plants as may be deemed advisable. Such regulations shall come into effect and have the force of law after publication in two successive issues of *The Ontario Gazette*.

4. Every municipal council adopting this Act shall in and by the by-law adopting the same appoint one or more inspectors whose duties it shall be to inspect all orchards and to enforce the provisions of this Act and the regulations made thereunder, and to report upon the same to the council.

5. In case the occupant or the owner of any lot neglects or refuses to comply with this Act or with any regulations made thereunder, the Inspector may cause the necessary work to be done, and shall within ten days make a report in writing to the Council stating the amount of the cost thereof, and the Council may thereupon direct that this amount or such part thereof as may appear to them equitable, shall be entered upon the collector's roll against such owner and shall be collected in the same manner as other taxes.

6. Immediately upon the passing of a by-law by any municipal council for bringing this Act into force, the said council shall cause to be delivered to the occupant or owner of every lot affected, a printed copy of this Act and of the regulations made thereunder, together with a copy of the by-law and the name and address of the Inspector appointed to enforce the Act.

7. Any person interfering with the Inspector, or attempting to hinder or prevent him in the enforcing of this Act, shall, upon conviction thereof, before any of Her Majesty's Justices of the Peace, be subject to a fine of not less than one dollar nor more than twenty dollars, and in default of payment of the same to be imprisoned in the common jail for the period of not less than ten days, nor more than twenty days.

ERRATA.—On page 213, Fig. 1820, shows Night Blooming Cereus, by mistake, credited to R. Jennings, should read "grown by W. C. Young," who also photographed the picture.

BLACK KNOT OF THE PLUM and rotting of the fruit have been found to be amenable to regular and thorough spraying in the orchards of the Hatch Experimental Station, Mass., with the result that most of the fruit has been saved, and the black knots few. Our native plum trees are reported

curculio proof, many of the varieties immensely productive; the fruit buds never winter killed; fruit not injured by brown rot; though inferior to the best European and Japanese, some varieties are of good quality and especially valuable for cooking; the trees not subject to black knot, but they are sometimes attacked by leaf-curl and the plum-pocket fungus.

D. W. BEADLE.

307 Given's St., Toronto.

THE SAN JOSE SCALE ACT has been amended by the Ontario Legislature so as to permit of the treatment of the infested trees under regulations made by Order-in-Council. This is also in compliance with the recommendations of our committee, in view of the excellent results obtained by the use of whale oil soap for the destruction of the Scale. The following is a copy of an Order-in-Council approved by His Honor the Lieutenant Governor, the 25th day of April, A. D., 1900:

Upon the recommendation of the Honorable the Minister of Agriculture, the Committee of Council advise that for the purpose of preventing the further spread of the San Jose Scale, the Department of Agriculture be authorized under the San Jose Act, 1900, to furnish owners of Scale infested orchards that are adjacent to such infestation, with whale oil soap suitable for spraying in barrel lots, at one half its cost, including freight, (being one and three-fourths cents per pound) on the following conditions, namely, that applicants agree:

1. To properly prune and prepare their trees for treatment.
2. To apply the soap under instructions to be given by the inspector in charge.
3. To make application to the Chief Inspector or such other person as may be named by the Department, stating the number and kind of trees to be treated.
4. To prepay the cost of the soap as per terms above stated.



QUESTION DRAWER.

Wheat in the Orchard.

1153. SIR.—A neighbor of mine who set out some apple trees three or four years ago, sowed wheat in the same field last year and now three-fourths of his trees are dead.

He attributes the loss of his trees to the wheat being around them. He also tells me that his brother-in-law sowed wheat in his orchard and some of his trees also died, and his neighbors told him that he would lose all his trees if he continued the practice.

Now is it known that wheat takes such an effect upon fruit trees, or has there been any such case brought before the notice of the Fruit Growers' Association before? Kindly reply through Canadian Horticulturist and oblige.—Yours respectfully,

Cobourg.

J. J. GORMLY.

The growing of wheat, oats or barley in an orchard is condemned by the best orchardists, because such grain robs the soil of phosphoric acid to an alarming extent, and because of the mechanical action of such crops in robbing the soil of its moisture. The weakened growth resulting seems to leave the trees most susceptible to the borer, and other evils, so that indirectly wheat growing may have caused the death of the trees referred to.

Treatment of Amaryllis.

1154. SIR.—Would you please give in the Horticulturist instructions for treatment of a white Amaryllis. I planted one last September and it has not made root yet. The leaves shot out, then died away. The bulb is large, hard and dry.

A SEAFORTH SUBSCRIBER.

The bulb referred to has probably been watered all the winter, when it should have been resting, or possibly the soil may have become sour for want of proper drainage. I would advise that the bulb be shaken clean from the soil it is in, and all decayed roots removed. Repot the bulb into a mixture of equal parts of enriched loam and sharp, clean sand; pot into a comparatively small pot, a six-inch pot is large enough for a good sized bulb; use fully an inch of

broken pot at the bottom for drainage. The top of the bulb should be just above the surface of the soil when repotted. A handful of sand placed around the base of the bulb will help it to start root action. Water well once, and plunge the pot in coal ashes out of doors until fall, it will require very little water during summer, and still less in winter. For further treatment of Amaryllis see May number of Horticulturist for 1899.

Hamilton.

W. HUNT.

Dwarf Trees.

1155. SIR.—Can I make dwarf apples by getting one-year-old trees and training them to branch out near the ground?

Newburgh.

J. GAUDIER.

This would not be a proper method of making dwarf apple trees; for, as ordinarily grafted, the growth is too vigorous to be kept back by pruning. Dwarf apples are made by using a dwarf or slow-growing variety of apple, such as the Paradise or Doucin as stock, and in consequence the growth is checked and the tree bears earlier. For the commercial orchard, however, this is not advised in the case of the apple.

Planting Fruit Trees.

1156. SIR.—I intend to plant two or three hundred trees next year. Would it be best to buy in the fall and bury in the ground until spring. Would you recommend one, two or three-year-old trees?

Newburgh.

J. GAUDIER.

It only gives increased labor to buy trees in the fall and bury them until spring, and it is best to buy just when the trees are needed for planting, allowing them to remain out of the ground as little time as possible.

Apple, pear and plum trees are usually planted at three years of age from the graft, while the cherry is better planted at two years from the bud.

The Plum Scale.

1157. SIR,—I enclose you two small pieces of an apple tree from Mr. G. L. Hubbs, Picton, P. O., with scale, or insect, on the bark. A red insect seems to come from the scale, and when the scale is removed it leaves a white spot on the bark. Will you kindly give me any information you can about it?

Picton.

WALTER T. ROSS.

We have frequently had samples of this scale sent into this office, and it is quite common, both in this province and in New York state. It is so large as to be easily fought, either by scraping off and burning, or by spraying with whale oil soap. The following is from our volume for September, 1894, with the accompanying illustration :

This illustration is from a photograph of an infested branch of the Bradshaw plum. On the twig at the left are seen scars showing where some of the scales have been removed. The actual length and width of a full-grown scale is indicated by the cross lines in the illustration. The dimensions are usually about five millimeters by four—that is to say, about seven thirty-seconds by five thirty-seconds of an inch.

At the present writing, June 20th, the scales are filled with a whiteish powder, which, examined with a lens, proves to be composed of eggs. The young lice, which are produced from the eggs in the spring, had already issued from the old scales this season about May 10th, when my attention was first called to the insect. The branches were then covered with a sticky substance like honey-dew, evidently secreted by the young insects. On leaving the old scale they crawl over the branches till, finding a convenient location, they attach themselves to the bark. They seem to prefer a location

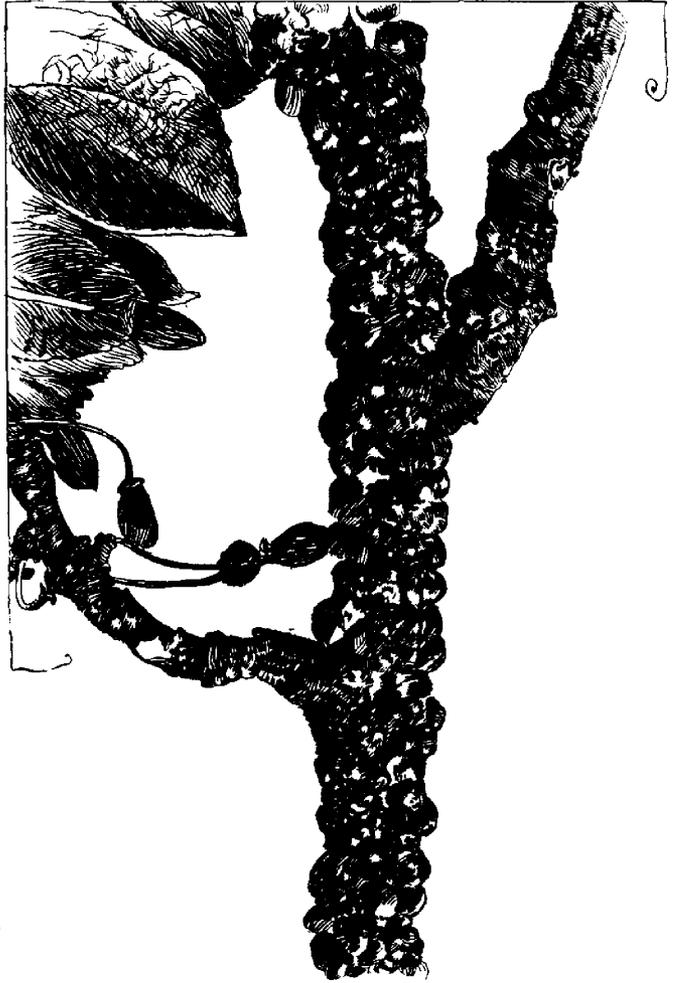


FIG. 1833.—BRANCH OF PLUM INFESTED WITH SCALE, *LECANIUM CERASIFEX*.

on the under side of the limbs. At first they whitish, or nearly transparent, but gradually assume the dark reddish brown color of the mature insect.

Mr. L. O. Howard, the United States Entomologist, to whom specimens were submitted for identification, states that it is a somewhat rare species known as *Lecanium cerasifex*. He advocates spraying with dilute kerosene emulsion when the young insects first appear in the spring. The scales are soft and can easily be brushed or scraped from the larger branches.

Whale Oil Soap as a Fertilizer.

CENTRAL EXPERIMENTAL FARM,
OTTAWA, May 14, 1900.

1158. SIZ.—I have been asked to reply to the following question through the columns of the *Canadian Horticulturist*: "Can the whale oil soap used in spraying for San Jose scale benefit the tree in any other way than as an insecticide? Many orchardists state definitely that there is a marked effect upon the vigor of the tree, as shown by the color of the foliage and the improved appearance of the fruit, that can scarcely be attributed solely to the insecticidal properties of the soap."

Whale oil soap properly and honestly made will contain from 9 to 12 per cent. potash. This element, as is well known, is a valuable and important constituent of plant food, and especially so for fruit trees. It invigorates the vegetative growth and tends to the production of fruit with high flavor and good appearance.

It is not at all probable that there is any absorption of the potash from the soap spray through the bark or leaves, as some suppose; the potash, in common with other mineral foods, must be absorbed from the soil through the roots. If the potash in the soap is to act as a food to the tree it must follow the same course. It is not difficult to understand how this may readily take place, for sooner or later—probably within two or three weeks after spraying—the rains have washed off the soap and it has been received and absorbed by the soil in the immediate neighborhood of the roots. There it is gradually converted into compounds assimilable by plants.

We may now ask: Is there sufficient potash in the soap solution sprayed on the tree to make its value as a fertilizer worth considering? In making the solution for the San Jose scale, two pounds of soap are used per gallon, and probably two gallons will be required for a well grown, mature tree. Let us suppose there are 35 trees per acre. A simple calculation on the basis of 10 per cent. potash in the soap will show that the soil of each acre of orchard so sprayed receives 14 pounds of potash,

subsequently set free as plant food. This, though not a heavy application, would, in my opinion, be quite sufficient on many soils to produce a marked improvement. The usual dressing of the fertilizer, muriate of potash, is 100 lbs. per acre, equivalent to an application of 50 lbs. actual potash. Spraying with whale oil soap, therefore, it is seen, furnishes an amount of potash somewhat greater than one-fourth of that supplied when using the above named fertilizer in ordinary dressings.

FRANK T. SHUTT, C. E. F., Ottawa.

Violets Not Blooming.

1159. SIR.—Will you kindly tell me through your paper why a bed of "Maria Theresa" violets that I had planted last autumn in a cold frame have not flowered this spring? The plants are perfectly healthy, but no sign of bloom. Aspect southern, and well sheltered.

Toronto.

FLORENCE W. WADSWORTH.

The violets mentioned had not time, after being transplanted last autumn, to make and mature the growth necessary to produce flowers this spring. Allow them to grow on now undisturbed, as their healthy condition gives promise of a good supply of bloom next season. A south aspect is a very trying one for violets during July and August; partial shade, by placing over them some laths or slats of wood an inch or two apart, so as to break the direct rays of the sun and not exclude air and sunshine altogether, would be beneficial to them during the very hot weather. Give water liberally during summer. When necessary, violets should be transplanted as soon as the flowering season is over.

W. HUNT, Hamilton.

The Apple Box vs. the Apple Barrel.

SIR.—I enclose a cutting taken from the *Bridgetown Monitor* of the 18th inst., which may be of interest to you, and I should like to read your comments upon it in the next issue of *The Horticulturist*. The subject is a very important one, and if the facts are as stated by Mr. Baker, the sooner his suggestion is acted upon the better it will be for all concerned. The figures he quotes may be open to question, and I have seen it stated by dealers on the other side that for general use the barrel was the best package to use. What is your experience? Yours truly,

Annapolis, N. S.

E. D. ARNAUD.

Speaking upon American exports recently, at a meeting of the Eastern New York Horticultural Society, held in the city of New York, Mr. A. S. Baker, managing director of the International Cold Storage and Lightering Company, of Southampton, England made the following interesting references to this subject:

"You ask me what do I recommend. I say, abolish the barrel altogether. It will pay. Why? In the first place, you will save 20 per cent. of your freight rates. Now, you know on ships you do not pay for weight; you pay for measurement. The difference in stowing between a box containing one bushel of apples and a barrel is so great that you will save at the very least 20 per cent. cubic measurement, thus reducing your freight bills very considerably. There is another advantage about the box. The apples carry better; they get on to the market in better condition. They

"This same box that I describe, packed with such quality of apples as exist in this country, is uniformly worth on the London market fifteen shillings (\$3.75). Some of you will remember the returns, and say that you only get eleven shillings (2.75) for your barrels. Gentlemen, this is something for you to think over. Which do you want, eleven shillings for your clumsy barrel of apples, or fifteen shillings for your bushel box?"

In our opinion Mr. Baker's views on the great advantages of the apple box are to be taken with considerable allowance. The writer has now been using the bushel apple box for many years for exporting fancy apples to Great Britain, and expects to continue its use for special A No. 1 fruit. Our engraving

shows the box, one of them having cover removed to show the method of packing. Every sample is wrapped in thin manilla paper, assorted in to sizes by Wartman's grader, and each box contains apples of uniform diameter. Thus, 2½-inch apples will go four layers deep, four rows wide and eight apples long, to fill a bushel box of 128 apples.

Now this box is all right for such goods, especially for high-colored Spys, Kings, Cranberry Pippins, or any such fancy varieties; but it would be absurd to pack ordinary stock in these packages—such a course would injure the trade for fancy stock, increase the number of packages to handle, and lessen the net profits.

Many people ride hobbies, and ride them to death; and we are inclined to think Mr. Baker is a little inclined that way. For ourselves, at all events, after using boxes for ten years for export to England, Scotland and Australia, we intend continuing to use the barrel for ordinary stock.

To Kill Tree Roots.

1160. SIR.—What compound or solution of strong and simple nature should I use to permanently eradicate tree roots (Lindens and Maples)? My plants last year were a failure owing to these infested and annoying roots.

Windsor.

R. V. COVENTRY.

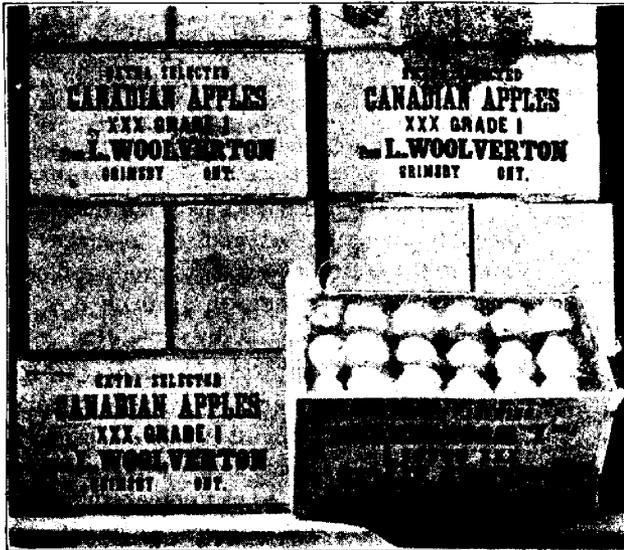


FIG. 1834. APPLE BOXES.

are altogether more salable. A box measuring 22 x 11½ to 10½ outside measurement will contain 50 lbs. of apples—or one bushel, English standard. The apples can be all wrapped in paper. There is no danger then of contamination from a bad one. There is another thing I will tell you. Apples, when stored away on board ship, contain a considerable amount of latent heat which manifests itself in the middle of a barrel, and, no matter how honestly you pack the barrel, the middle will never open as bright as the top or bottom, owing to this heating on the way. With a box this need never happen; when the box is properly made, it never does. Those who have to handle freight can handle a small box better, and with more care, than a barrel. The danger of bruising is reduced to a minimum, especially with the use of paper around each apple. You ask then, but will it pay us to go to this extra trouble? That is for yourself to decide.

If your correspondent refers to the superficial roots of living basswood and maple which often run to some considerable distance, and hence disturb other plants, I may say that I know nothing better than digging and cutting them out. There is nothing that will prevent the roots growing so long as the trees are alive. It is part of the nature of the root to send its branches wherever they can find nourishing matter—food and water.

If the roots are already dead, then again uprooting is the best remedy. Some advocate the use of coal oil or sulphuric acid. These are undoubtedly potent, but the spade and axe remedy is the simplest.

O. A. C., Guelph. W. LOCHHEAD.

Rocky Mountain Cherry.

1161. SIR,—Can you explain why I never get fruit from my Rocky Mountain cherry tree?

Anagance, N. B. C. STOCKTON.

In answer to S. Stockton, Anagance, N. B., I would suggest as the probable cause of the flowers of his Rocky Mountain cherry not setting fruit, that the flowers are not perfect. If he procured some scions from a Rocky Mountain cherry known to be self fertile and grafted them on his trees, he might be able to get some fruit.

C. E. F., Ottawa. W. T. MACOUN.

Exhausted Calcium Carbide as a Fertilizer.

1162. SIR,—Kindly give in your next Horticulturist some information as to the application and value as a fertilizer of exhausted calcium carbide as taken from the generator of an acetylene gas machine?

Hagersville. S. W. HOWARD.

The waste product from the acetylene gas machine is practically slaked lime. If the carbide has been manufactured from lime free from metallic sulphides, as iron pyrites, the by-product from the machine may be applied directly to the land. As, however, it is apt to contain sulphur compounds (which are injurious to vegetation), it is well to expose it in small heaps on the field for a

few weeks before mixing it with the soil. This exposure corrects and renders harmless the sulphur compounds.

There are very few soils that are not benefited by an occasional application of lime, say 20 to 40 bushels per acre every fourth or fifth year. For those that are peaty, sour or naturally deficient in lime, this waste product should especially prove a valuable amendment.

FRANK T. SHUTT,
Ottawa. Chemist Dom. Exp. Farms.

A Disease of Wax Plants.

SIR,—I send you herewith two leaves taken from a Hoya Carnosa. The plant is very large, covering a frame about 4 ft. x 8 ft., and was, until very lately, quite healthy looking. I would like to know if it is possible to do anything to stop this apparent blight or whatever it is. Have you ever seen leaves of the Hoya affected in the same way? Can you tell me what it is? I thought when I first saw the spots that it had been some drops of water on the leaves and scalded with the sun, but I do not think this is the cause. I send two leaves, on the large one you can see the blight in the first stages, and on the smaller one the affected parts have lost all substance. The plant is standing in a square bay window with an east and south exposure. As I feel anxious about the plant I would like to hear from you at your earliest convenience.

H. B. SPROAT, Woodstock.

The disease affecting the wax-plant (*Hoya carnososa*) leaves is not a common one. It is due to the presence of a fungus called *Alternaria*, a genus allied to *Cercospora* and *Macrosporium*, which affect the tomato and other plants. The mycelium of this fungus lives in the soft cells of the leaves, and spreads with great rapidity. At first the spots are but slightly affected, and resemble the results of sun-scald on drops of water sprinkled on a leaf, but later the area of diseased part widens, and the tissues begin to rot. The margin of the area is very distinct. Cultures of the fungus were made in the laboratory here, and a fine crop of mycelium and upright stalks, bearing conidia, was obtained. Fig. 1835 shows very clearly the form of the threads and the conidia. The latter are flask-shaped, and frequently united

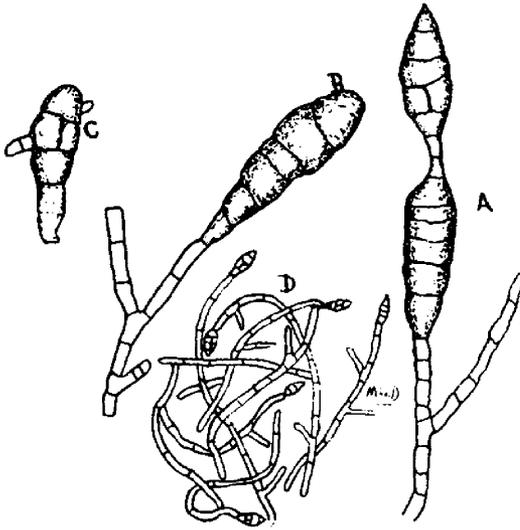


FIG. 1835. FUNGUS AFFECTING HOYA LEAVES.

Alternaria Sp. on leaves of Hoya.
 A B C, magnified $\times 450$ (camera lucida).
 A and B, showing shape of gonidia.
 C, a germinating gonidium.
 D, goniophores—from a pure culture in gelatine.

in chains, as shown at A, and connected by narrow necks. Each conidium is divided by partitions into several cells, and the threads of the mycelium are velvety. The full life-history of this fungus, however, is not well known.

Remedy.—All diseased leaves should be collected and burned, so as to prevent the further spread of the disease. Spraying with a weak solution of Bordeaux Mixture will act as a preventive of further spread.

W. LOCHHEAD.

Biolog. Dept., Ont. Ag. Coll.,

April 11th, 1900.

Open Letters.

Improved Cuban Queen Watermelon.

SIR,—The old Cuban Queen Watermelon has long been recognized as the leading shipping and commercial melon of the country. We have a sport of this melon that far supercedes the old Cuban Queen. The new melon is the admiration and wonder of all who see it, as it is a third larger than the old variety, and for sweetness and delicious flavor it stands unrivalled. In fact melon growers of varied experience pronounce it the greatest watermelon ever grown. Single vines perfect six to eight melons, averaging in weight from 75 to 120 lbs. The seeds of this melon are brown; the flesh the most vivid crimson red, melting and sugary. The vines are rampant, vigorous growers, and very healthy. This is the melon for the millions, as it succeeds on all soils.

We have tried all melons as fast as they originated, and were disseminated. But none equals this new melon.

S. L. WATKINS.

Lotus, Cal., March 21, 1900.

Benson's Hybrid Muskmelon.

SIR,—An entirely distinct and new hybrid melon, claimed to be a cross between a Pomegranate melon and Netted Gem. This rare melon combines the fragrance and beauty of the Pomegranate, and has the size and quality of the Netted Gem. This melon is enormously prolific, good specimens weighing three and four pounds. It is somewhat oblong in shape and very solid. In color it is a rich orange, striped and mottled with

gold. The great value of this melon lies in its preserving qualities, not being excelled by any known melon. The flesh is snow white, quite solid and most deliciously flavored, being quite spicy and aromatic. The preserves made from this source are excellent and quite easily made. For crystalizing, it is one of the finest fruits known. The garden lemon and vegetable peach cannot be compared with it, as it far excels them in all respects.

Lotus, Cal.

S. L. WATKINS.

The Largest Apple in the World.

SIR,—My attention has been drawn to an article in your paper (February number), that a Gloria Mundi apple, exhibited at the Indiana State Fair, and which weighed 23½ ounces, was claimed to be the largest apple in the world, but which I can prove was not.

In the fall of 1899, I bought from Mr. W. G. Watson, of Dixie, among other apples, about ten or twelve bushels of Kentish Fillbaskets, and with a representative of the largest wholesale grocery in Canada, we weighed several of the apples. One, the largest, weighed 25½ ounces, and several weighed over 20 ounces. In fact the whole lot averaged the largest apples I have ever seen. I might also add that my customers unanimously declared them to be excellent cooking apples, and I had numerous enquiries for them long after I had sold out. Yours truly,

Toronto.

E. LUTTRELL.

P. S.—We neglected to measure the circumference.