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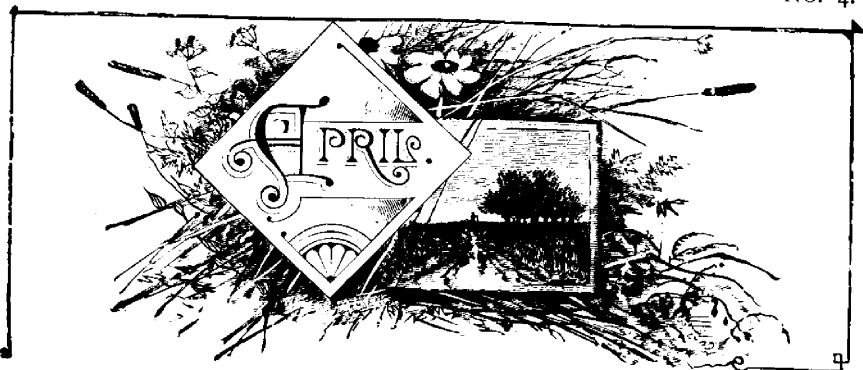
RESIDENCE OF MR. JOHN HAYDEN, COBOURG.

THE CANADIAN HORTICULTURIST.

Vol. XX.

1897.

No. 4.



HOME OF MR. JOHN HAYDEN, COBOURG.



AMONG the photographs which we have received in response to our request, is a fine view of an interesting house in Cobourg. It takes many years, and much taste, to make a beautiful picture with lawn and trees about a house, but this our friend Mr. John Hayden, has well succeeded in doing. What a grand lawn tree that old locust is after all, despite its rough bark and brittle limbs; it towers up to such a lofty height, its foliage is so graceful, and yet so open, only half hiding objects beyond. Then the drapery of the house, formed by festoons of climbing vines almost meeting the shrubs at the base of the veranda, is in good taste; for to hide the house foundations completely with shrubbery so that the house and the lawn seem in a manner to be a unit, is in accordance with the principles of landscape art.

Respecting his yard decorations, Mr. Hayden writes: The Meerscham vine on the gable was given me by the late Mr. Hume, father of John Hume, Esq., of Port Hope, some 25 years ago. It is

much admired; also the Virginia creeper on the corner. In shrubs we have honey suckles. The trees are locusts, chestnuts, elm, mountain ash, and spruce. As you only see part of the lawn in the photo, there are numerous beds of flowers, such as geraniums, fuchsias, marsh mallows, pansies, carnations, all in separate beds. There is also a long bed of choice roses, over 12 varieties, from Webster Bros., Hamilton. I have a grapery with five varieties of choice grapes, viz.: Black Hamburg, Muscat Hamburg, Bucklands Sweet, Sweet Water, Rose Chasselas, all of which have bore well for the last 20 years. I had the vines from Ellwanger & Barry, of Rochester; they yield very fine fruit, which has been distributed freely among sick people.

The small greenhouse shown is larger than it appears; there are some 200 pots of all kinds of house plants, palms, etc. It is a source of pleasure, especially in the winter. My experience is this; to be successful with flowers, you have to love them. My wife attends to the flowers; we are both amateurs.

Now, my vegetable garden is not

HOME OF MR. JOHN HAYDEN, COBOURG.

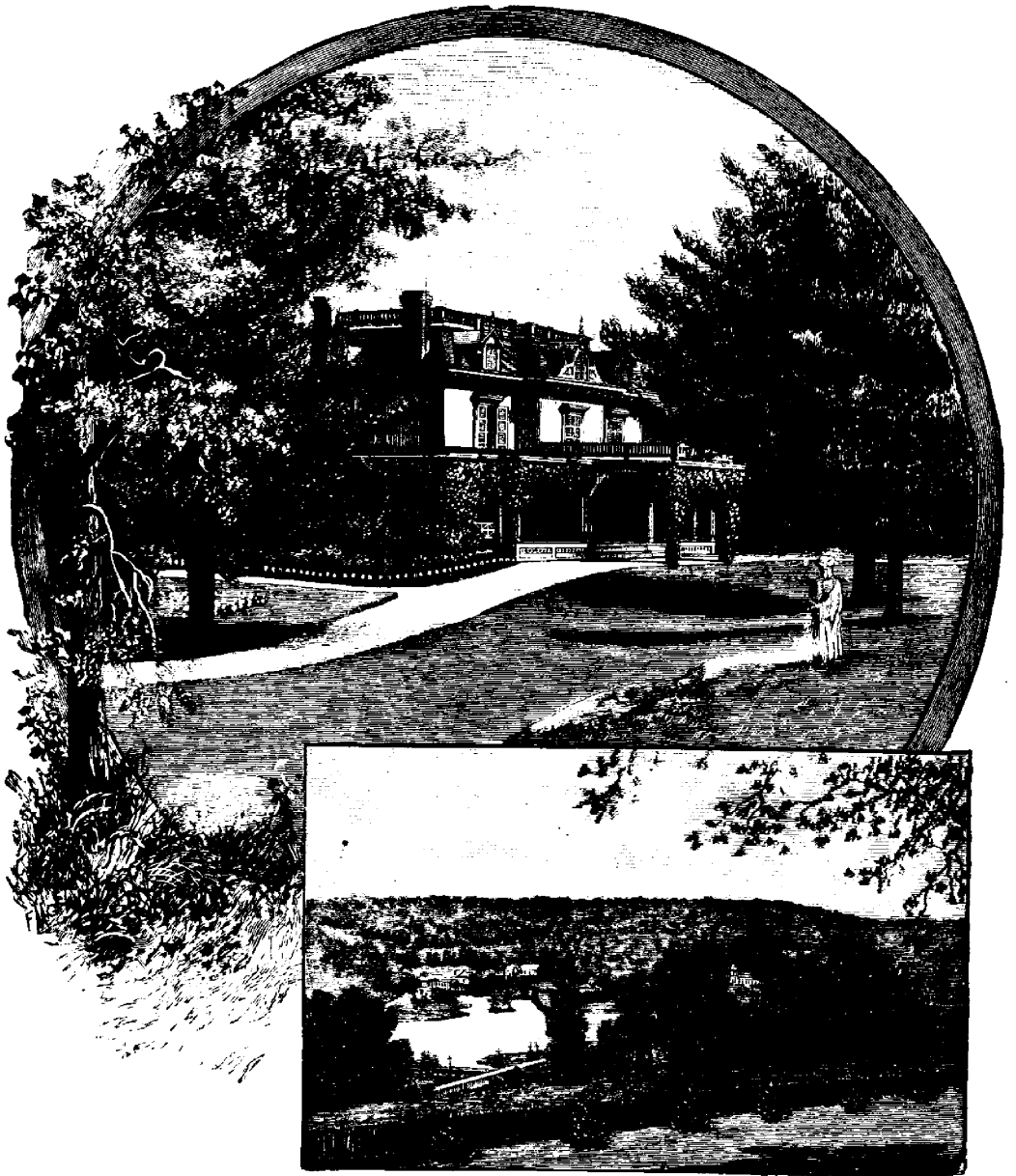


FIG. 1084.—A HOME ON THE HUDSON.

large, but the quantity of stuff I get from it is wonderful. In some parts I get three crops; have over 20 varieties of vegetables—some rare ones—the long rows are of sweet peas, over 14 choice varieties, which continue in bloom until frost comes.

I have plums, pears, apples and cherry trees; the latter delights the robin, they sit and watch them getting red, and then they go for them. I delight to work in the garden all the odd moments when away from business.

GARDEN WALKS.

IN continuation of the subject of "Yard Decoration," p. 51, we give a view of a home on the Hudson River, (Fig. 1084) which suggests one special feature of the art; we refer to that of so arranging the planting of trees and shrubs as not to obscure any interesting or beautiful views. In this instance the beautiful Hudson, with the distant hills form a picture that no one with half an eye for the beautiful would ever think of hiding, but how often this consideration is entirely forgotten, and spruces and other trees are planted just where they should not be, while some ugly barn or board fence remains in full view.

The graceful curves in the walks approaching the house in this illustration are also worthy of notice, and imitation.

The following excellent pointers under this head, are from Edward Kemp's work, "How to Lay Out a Garden":

Walks should be made to embrace particular views, and take a variety of levels, to be concealed from each other, and to have a definite object. All the more interesting aspects of the house, the garden, and the country, ought to be seen from them at particular and favorable points. These points should thus be situated where the ground is highest in a general way, that the view may be the more commanding.

Undulation in the surface of walks, where it can be suitably obtained, will be very effective in the production of variety. It must be very gentle and gradual, and like the curves of the ground line, the changes should pass softly and sweetly into each other.

If two walks be seen from each other,

which are taking parallel directions, one of them will appear to some extent needless, and in the same degree objectionable. Masses of shrubs, or banks of earth partially clothed with these, are the most natural and gentle divisions for placing between them. A walk that leads nowhere, or ends in nothing, gives an impression of an unfinished place, and is as unsatisfactory as all other abortions. If it be not possible to continue it beyond a certain point, and yet be of consequence that it proceed so far as that point, a summer-house or arbor or seat to obtain a good view will be a sufficient terminating object. Otherwise the walk can be carried round a small circular or other loop, filled with shrubs till it returns again to the same spot.

No walk must ever turn aside from its course except for some sufficient object. A great change of level, a tree, plant, or group of plants, and a variety of such things, will justify a curve in a walk; and when it is straight something must be distinctly placed to stop it, where it turns off in a lateral direction. It should appear as if it *could not* go any further in that direction. Repton suggests as an excellent rule, that where two walks branch off from one another at any point, they should take a decided outward turn (see Fig. 1085) so as not to seem as if they would unite again.

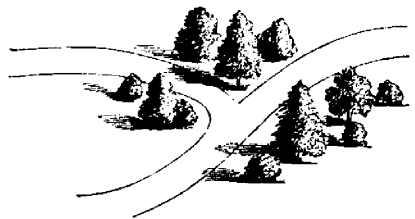


FIG. 1085. — PATH MAKING.

GRIMSBY AND WINONA FRUIT GROWERS—II.



FIG. 1086.—MR. C. P. CARPENTER.

LITTLE more need be added concerning these fruit centres, for we want to deal with many other parts of our beautiful Province. There are two Winona men, how-

ever, who have accomplished so much, toward the development of the fruit industry in Canada, that we must not pass them by. We refer to Mr. E. D. Smith, who is referred to in a succeeding article, and to Mr. T. H. P. Carpenter, whose beautiful house is shown in Fig. 1087.

At Winona station, these two gentlemen compete with each other in their purchases of fruit from growers, and in their circulars of prices current to buyers. Having telephone connection from the shipping sheds, with the leading growers, they can soon have at their command any quantity of fruit for the filling of orders. Mr. T. H. P. Carpenter and his father, C. P. Carpenter, formed a partnership in the fruit shipping in 1878, and the business of the firm in the fruit business averages between \$25,000 and \$35,000 per annum. In 1893 their shipments of choice dessert grapes amounted to about half a million pounds, since



FIG. 1087.—RESIDENCE OF T. H. P. CARPENTER, WINONA.

GRIMSBY AND WINONA FRUIT GROWERS—II.

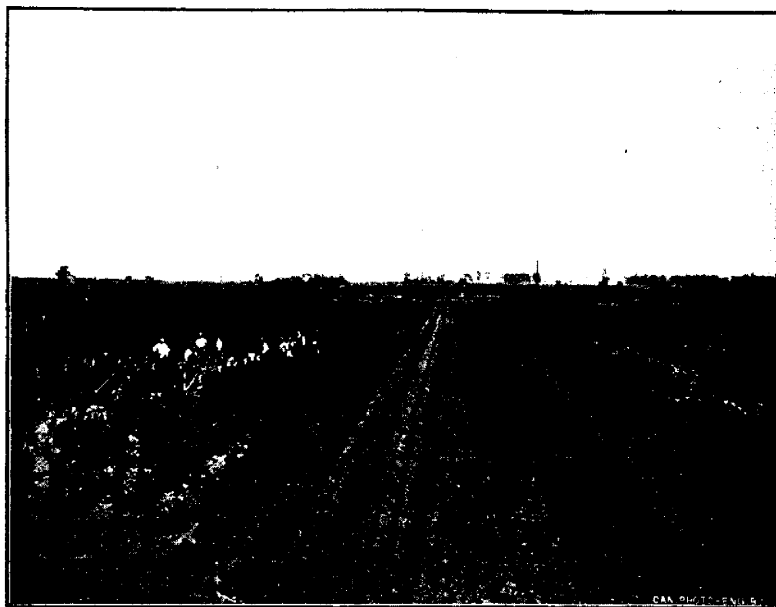


FIG. 1088.—MR. CARPENTER'S VINEYARD.

which date the amount shipped has increased year by year.

Their farm consists of about 175 acres, well stocked with vineyards, or-

chards and nursery stock. A great variety of fruit¹ is grown, including peaches, pears, plums, grapes, quinces, apples, cherries, raspberries, blackber-



FIG. 1089.—BASKET FACTORY, GRIMSBY.

MANITOBA NOT AT THE NORTH POLE.

ries, gooseberries, currants, etc.; but the vineyards (Fig. 1088) have always received especial care, and yield wonderful results. Among about 60 varieties of grapes under cultivation for profit, he esteems most highly the following:—Agawm, Lindley, Salem, Wilder, Delaware, Niagara and Moore's Early.

The cut at the head of this article represents Mr. C. P. Carpenter, one of the oldest residents of the section, who was born in 1826; by his pluck and perseverance he has made a success in life and has won universal respect.

A view of the old Grimsby basket-factory is given (Fig. 1089), showing a load of peach baskets ready to be sent out for the use of some peach grower. The number of baskets required for fruit in this section is enormous, and increasing yearly.

To give an idea of the fruitfulness of some of the garden ground in this section, we are authorized to say that Mr. Hugh Anderson, of Grimsby, harvested in one year 1,600 baskets of peaches from 600 trees, only four years planted!

MANITOBA NOT AT THE NORTH POLE.

IT seems very difficult to dispel from the minds of many people even in Ontario, the impression that Manitoba is situated somewhere in the immediate vicinity of the North Pole—even those who should know better give expression to some very strong statements in this connection. One of the large seed firms in Toronto in their 1897 seed catalogue, in advertising the Siberian pea, refer to it as follows, "Caragana, the one hardy shrub for Manitoba and the North-West." This is set out in large bold type, and is perhaps the most striking thing on the page of the catalogue on which it appears. This catalogue is sent from the Atlantic to the Pacific, and is calculated to do injury, as the statement is altogether incorrect. No doubt the Siberian pea is well suited to this Province, for while this catalogue goes on to describe it as a "tall growing shrub say four or five feet," it grows on our soil to twelve and fifteen feet high. To illustrate how absurd is the idea that this is the one hardy shrub that grows here, I would point out that of the thirty-four varieties of "Hardy Shrubs

and Herbaceous Plants," advertised in this catalogue, I have the twelve following growing in my own garden, viz.:—coreopsis, berberry, caragana, lonicera gaillardia, hollyhock, hydrangea, philadelphus, snowball, spiræa, purple lilac and yucca. Many of the remaining kinds are grown here, but I refer simply to what I grow myself. I think at least 30 of the 34 kinds will grow in this climate, and of these some grow most luxuriantly, *e. g.*, caragana, coreopsis, hollyhock, lonicera (Tartarian honeysuckle) and philadelphus (mock orange). It is not climate or soil we lack to grow ornamental shrubs, but a leisure class who will do it for pleasure, or a sufficient population to furnish a field for the nurseryman in the Province. We can boast of as many ornamental shrubs as Ontario could when she was 25 years old, and though the larger fruits grow more readily there than here, on small fruits and shrubs we would ask for further time for testing before we admit that we cannot equal the eastern Province.

Morden, Man.

A. McLEOD.

EXTENSION OF FRUIT GROWING.—I.



FIG. 1090.—MR. E. D. SMITH, WINONA, ONT.

The following paper was given by Mr. E. D. Smith, at a large gathering of farmers, at Stoney Creek, last February. It is a strong, enthusiastic paper, and our readers may wish to know something of the writer. Mr. Smith is a Canadian, who had large early experience in farming, but in 1885 coming into possession of land 85 acres of the paternal estate, he turned his attention to growing fruit and fruit trees. A pushing energetic man, of unusual business ability, his undertakings have proved successful, and his name is well known throughout Ontario. Mr. Smith has now growing 125 acres of solid nursery stock, at Helderleigh (views of which are shown in Figs. 1091 and 1092) on land all thoroughly tile drained 30 feet apart, and he gives each crop about 30 tons of well rotted stable manure, or other composite manures.

As a fruit grower he is no less enterprising. He has now over one hundred acres in fruit, all thoroughly drained. Of this about fifty acres is in grapes, (a view of which is shown in Fig. 1093) and the rest in a great variety of other fruits.

Mr. Smith keeps several teams of horses, and grows all the hay and oats needed, upon his own farm. In addition to the manure from his own stables, he buys compost from Toronto, and supplements the whole with bone dust, and about 2000 bushels of ashes annually.

But it is a buyer and shipper of fruit at Winona station that Mr. Smith is most widely known. He has made his name and the name of Winona famous among fruit dealers far and wide through the enormous amount of fruit which he has distributed, and in this way he

has given enormous impetus to the planting of fruit and fruit trees about Winona.

In the following article, however, it is evident he speaks from the standpoint of a grower and seller of trees than that of a fruit grower, and while we credit him with perfect honesty in his statements, we know many fruit growers whose experience of the last few years has led to utter discouragement.

AFTER such a season of low prices as the one just passed, the subject of my paper becomes a pertinent question.

“Has the planting of fruit orchards, vineyards and berry fields for commercial purposes been overdone?” You will notice that I say “commercial purposes” because I judge there is no one so bold as to say that planting for home use by the householders of this broad, fertile Dominion has been over done, especially when we know the tremendous importance it is to the health and vigor of our people to have an abundance of ripe fruit, and at the same time know that thousands of homes all over the country still have little or none of their own to gather, and when such is the case seldom buy any.

Now it is no more fair to assume the year 1896 to be a guide as to prices than to take the year 1895. The high prices of the latter year were brought about by the crop being short in many sections, though extremely heavy in others; this will not likely occur more often than in the past, when it has averaged once in five years for the last twenty seasons.

The low prices of 1896 may never occur again, as they have never occurred in the past, although we have had, almost, if not quite, as heavy crops in proportion to the markets opened up and the facilities for handling the product. Had we had the crop of 1896 ten years ago we could not have given it away at a price to pay, and so should we have no larger

EXTENSION OF FRUIT GROWING.

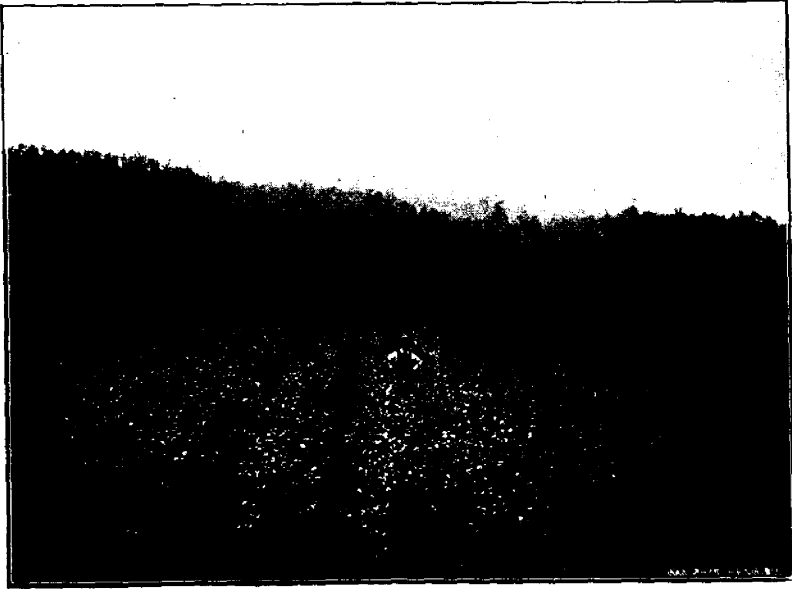


FIG. 1091.—A BLOCK OF PLUM TREES AT HELDERLEIGH.

a crop ten years hence, it would be accounted a famine year, and famine prices be obtained. I can well remember when a wagon load of grapes on Hamilton market was considered quite enough, and wise-acres shook their heads and declared that with the reckless planting of whole acres of vines the market would soon be overstocked, and you could not give them away, and yet since that time I have sold grapes at double the prices obtained then. The first load of grapes I ever sold was 320 lbs. on Hamilton market, away back in 1877, and I had the greatest difficulty in peddling them off at 3 cents for the most beautiful Delawares, and 2 cents for equally beautiful Concords. I obtained that price for Delawares last year with this its awful crop of all kinds of fruit, and repeatedly since then I have got double that price for both Concords and Delawares. We need hardly look for double these prices again; but I feel perfectly satisfied that we will, as in 1895 with its heavy crop

of grapes, fully as heavy here as the crop of 1896, realize a very large revenue indeed. We need hardly expect the large profits of such years as 1895 to be often repeated, indeed we may fairly look for very moderate prices at least four years out of five, but we must not forget that a cent and a half a pound pays us better now with ten, twenty or fifty acres in vineyard,—yes, even one cent per lb. pays us better than three cents fifteen years ago with one and two acre patches! The man who grows ten acres now can grow them nearly a cent a pound cheaper than he could then on one acre. Improved methods of culture, cheaper wire, cheaper trimming, no unnecessary waste by planting useless varieties, a better knowledge of soils and locations, better facilities for marketing, cheaper baskets, and last, but not least, the fact that a dollar will buy nearly twice as much of many things we require, all combined, enables us to market the product of ten acres with but little effort, while in those

EXTENSION OF FRUIT GROWING.

days we found difficulty in peddling out the product of one acre

The question next arises, can we still further expand our markets? they appeared full in every direction last year. I say we can. Last year I received a letter from a friend in Yarmouth, Nova Scotia, saying why do you not send grapes here? they are retailing at 18c. per pound. Now, I had offered grapes to all the best dealers in that town for several years at prices current. Last year about one and-a-half cents per pound here, equal to about 3c. there, and succeeded in getting no orders, the dealers, doubtless, getting them as cheap from Boston, from whence daily boats came, and that in spite of duty. The retail dealers, doubtless, put their heads together and decided that it would be more profitable to buy grapes at 3 cents and sell at 18 than to do double the business and sell at 10 cents, or four times the business at 7 or 8 cents. I

have seen this same thing in all our towns up north, such as Fergus, Mildmay, Walkerton and others, some years ago. But gradually some smart chap makes a break and sells lower, and discovers that where he formerly sold 10 pounds at 15 cents per pound, and wasted five pounds while waiting for monied people to come and buy at these high prices, he can now sell a hundred pounds, and do it so quick that he has very little waste, and, moreover, that he can buy cheaper when he sends to the place of production for 100 pounds than when he bought 10 pounds from a city dealer, and so the educating process goes on, and that is what we call opening up a market. The town that formerly used 100 pounds per week now uses 1,000 pounds, and yet there are hundreds of towns yet to know the blessings of cheap fruit; hundreds of towns yet where the greed of the retailer has yet to be foiled or where he has yet to learn the funda-

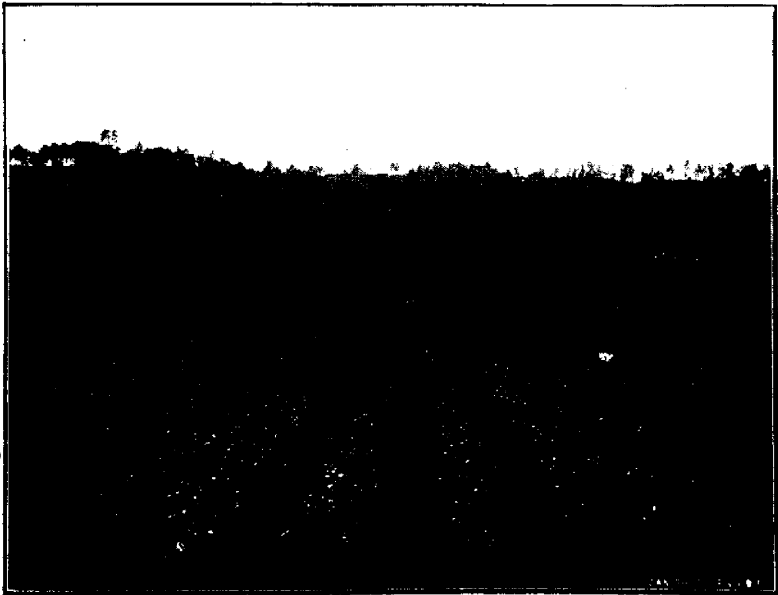


FIG. 1092.—A BLOCK OF 60,000 APPLE TREES AT HELDERLEIGH.

EXTENSION OF FRUIT GROWING.

mental principle of business, that cheapness increases consumption, and enables him to make larger profits by handling larger quantities with despatch.

Then we must not lose sight of a probable market in England for our grapes. I make no doubt whatever, but that with proper cold storage we can lay our grapes down in Britain in perfect condition, and further; if the market there is fully tested we shall be able to cultivate a taste between the middle and working classes of Britain for our grapes, on account of their cheapness and good quality. Malaga and Black Hamburg, and other fancy grapes usually offered for sale, are too dear for these people to use freely. If we can once get these classes to like our grapes we have a market for all we can grow in Ontario. I have thus far spoken chiefly of grapes, mainly because we here grow them largely, and seem to have the soil and climate suitable to their growth in the greatest perfection, and because many are in doubt as to the future. Before I finish speaking of grapes, however, I want to say, that even this year with all its enormous crops of all kinds of fruit, grapes paid a profit of at least \$30 per acre net, over all expenses. Where is the farm crop that did it?

Taking up other fruits in their order, no one could complain of the price of strawberries during the past season, and yet this is a fruit more easily overplanted than any other, for the simple reason, that they can be grown over the whole country with success. Strawberries have been overdone, but now there are not enough planted. Raspberries have never yet, on good soil, failed to return a handsome profit; they paid less in 1893 than last season. It has always been a mystery to me why raspberry growing is not overdone. This fruit is more easily and cheaply grown than almost any other,

and succeeds over a wider range of territory, and yet it has not yet ceased to be an extremely profitable crop. Doubtless the imposition of a duty by the U. S. government will strike a blow at the trade, though it seems to me I have heard somebody say that the consumer always pays the duty, when goods come into Canada, and if this be so maybe the consumer of our raspberries in the United States will somehow help us out.

The currant is a fruit more likely overplanted for market than any other, in my opinion, as it is not a fruit so universally used as other fruits, and, moreover, it is so cheaply and easily grown. Another year or two is required to speak with certainty about this fruit. I am inclined to the belief that the great scarcity of money had more to do with the low prices of currants last year than anything else; the crop the year previous was nearly or quite as heavy, but owing to money being more plentiful and other fruits dearer in price, currants paid splendidly. Even last year my Fays turned me \$200 from two acres, clear over all expenses of picking and baskets, though like the rest, I suffered with the hitherto most profitable Raby Castle and got no profit out of them.

Blackberries will always be a profitable crop on land best adapted to them, in my opinion, as they come at a season when fruit is usually scarce, there being only early peaches to compete with them, and, moreover, there is not a very wide range of land suitable to this fruit, ripening as it does three years out of four during a prolonged drought.

As for peaches, I well remember the season of 1880, when Crawfords sold for 25 cents per basket and less, and everybody prophesied the absolute ruin of those who had been foolish enough to invest large sums in peach plantations, and yet, after 16 years of steady planting,

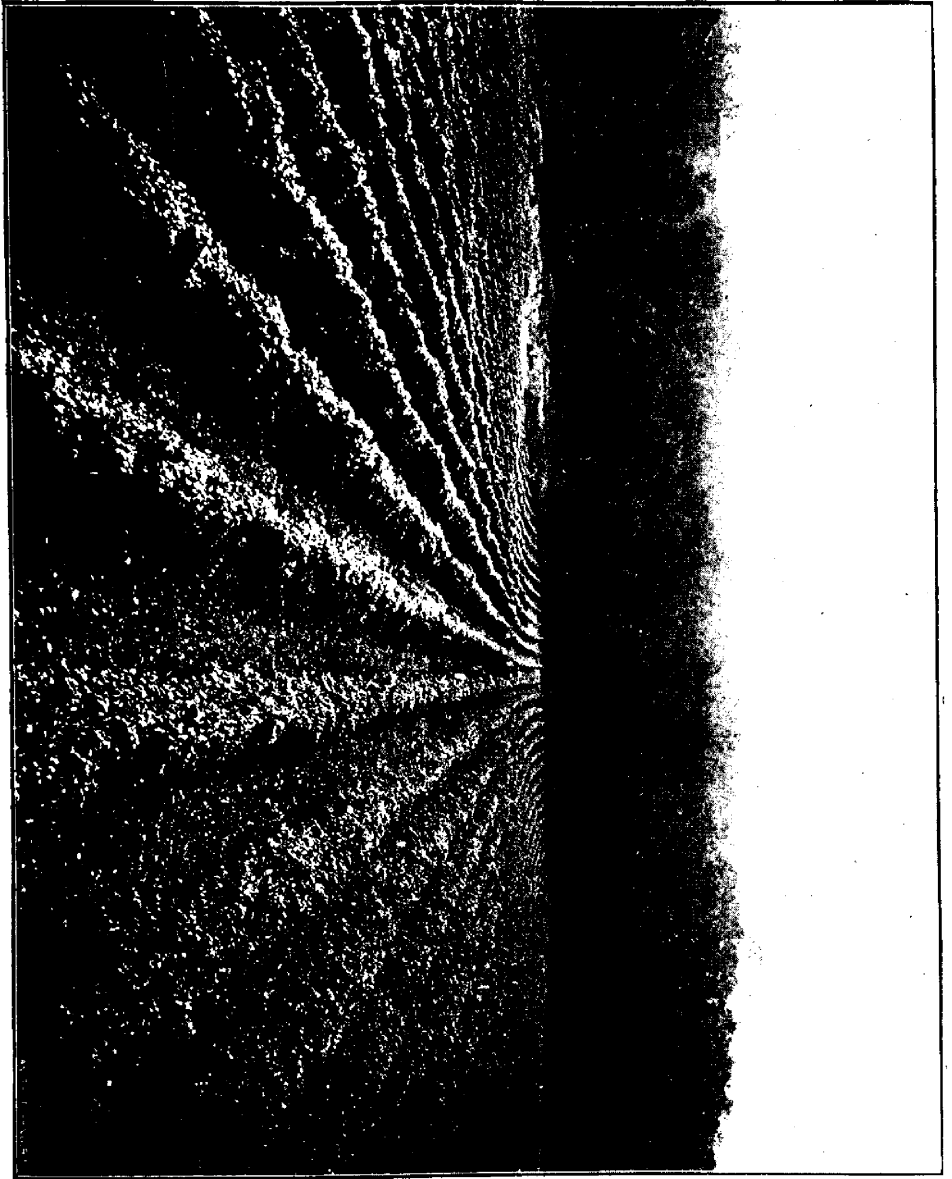


FIG. 1093.—VINEYARD AT HELDERBERG.

HARDY CLIMBING ROSES FOR CANADA.

not less than 150,000 peach trees annually, or an aggregate of about 2,400,000 trees, we have Crawfords selling in the self-same market at 80 cents per basket in the year of extreme plenty of all kinds of fruit, with a most prodigious crop of peaches, in the famous peach country of Essex. It looks very much as though had every peach tree in Canada been loaded as Essex was, and in spite of everything imaginable working against good prices, still we would have realized much better prices than 16 years ago. True, the area of profitable peach growing, owing to the introduction of hardy varieties, has greatly widened since 1880, but for all that it must not be forgotten that peaches as well as grapes can only be grown in a limited section of the whole Dominion and the consuming population is the population that is increasing. The peach growers of Michigan got prices last year about like ours

in 1880, and yet they are not discouraged, they say it pays infinitely better to grow peaches, when they succeed well, at 10 cents per basket, than grain at present prices.

As for plums which have here especially come to be a most prominent fruit crop, there is this to be said, the crop of 1896 was as heavy in all the western counties as it could possibly be; and from Stony Creek east to Niagara river, no more could stick on the trees, and yet they were all marketed at remunerative rates. I know of a crop of plums which must have brought \$500 per acre the past season, and any full-grown plum orchard at Winona must have returned the owner from \$200 to \$500 per acre net over baskets.

E. D. SMITH.

Winona, Ont.

HARDY CLIMBING ROSES FOR CANADA.

WHERE is the devotee of Flora who does not long for an arbor, porch or trellis, on their own grounds adorned the summer long with clusters of handsome roses? There seems to be a desire in the heart of every rose-grower for varieties of this description. Thousands of Canadians every year buy everblooming, climbing roses from southern florists; and thousands are yearly disappointed because they do not survive the chilly Canadian winters. The florists are generally much abused in consequence, but it should be remembered that each firm covers a wide range of territory with its catalogues, and it is more than likely that the varieties described in those catalogues as hardy, are quite so with a

vast majority of those who buy from them.

Hardy climbing roses of fine quality and color are certainly one of the additions to the "Queen of Flowers" which the future holds in store. It appears to be but the matter of a little time till such varieties shall be obtained, for never before have the efforts of professional hybridists, in this line, been so fruitful; and never has there been so many promising new varieties upon the market. Excepting some recent introductions of which we cannot yet speak with certainty, we think the following review includes all the best known hardy climbing varieties:—

Baltimore Belle, Prairie Queen and Gem of the Prairie head the list for hardiness. They are old it is true,



FIG. 1094.--MADAME DE WATTEVILLE.

HARDY CLIMBING ROSES FOR CANADA.

the first two varieties being raised at Baltimore in 1843; but they will undoubtedly endure more frost than any later introductions. Baltimore Belle bears pale blush flowers, often white. Prairie Queen, rosy red, sometimes marked with white. Gem of the Prairie, rosy red, the only one of the three that has a fragrance. Greville (or Seven Sisters), color blush, tinged and striped with various colors; the flowers are borne in clusters of seven or more. It is decidedly tender at Hamilton. Mary Washington, a variety of uncertain parentage. It is said to have been raised by George Washington, and to be still growing in his old garden at Mount Vernon. It is a rapid grower and a free and constant bloomer. Flowers pure white, globular in shape, and fragrant; would be of great value were it more hardy, but we have seen it, when unprotected, freeze more severely than some of the Tea roses. Those who give it sufficient protection are rewarded by great quantities of elegant flowers, that amply reward them for their trouble.

Caroline Goodrich, a well-formed flower, rivalling Gen. Jacqueminot in color; though it winters well sometimes, it lacks that degree of hardiness possessed by Prairie Queen and other prairie roses.

Crimson Rambler, the new climber from Japan. It grows well, winters well, and blooms grandly. The flowers are not large, but the huge clusters in which they appear, render this no defect; the color is rich glowing crimson. Promises to become a permanent favorite in this country.

Empress of China; this new variety has many good points to recommend it. The growth is wonderfully rapid, bears most freely and constantly, flow-

ers that resemble a Tea rose in shape; the color is light red or pink. Though we cannot yet speak of its hardiness from experience, there seems to be no cause for uncertainty about it. The introducers frankly state that it has stood sixteen below zero, without injury.

Climbing Captain Christy, Cl. Jules Margottin, Cl. Victor Verdier and other climbing forms of Hybrid Perpetual varieties are largely planted in Britain, but their tendency to winter-kill to within a short distance of the ground, and the fact that they flower but once in the season, render them unpopular here.

Climbing LaFrance and Cl. Meteor; these originated as "sports" from the dwarf Hybrid Tea varieties of the same names. There is no occasion to look further for finer, sweeter-scented climbing roses than these; but one must not expect the canes to live, where the wood of the dwarf varieties are injured, for they are identical with the parent variety in every way, except that the canes grow much longer. However, the quality of their flowers and constant blooming habit, entitle them to the most elaborate protection the gardeners' art has devised.

Marechal Neil, Gloire de Dijon, Cl. Malmaison, Cl. Perle des Jardines, Cl. Hermosa and other climbing Teas, stand the winter on the Pacific slope (B. C.) with little or no protection, and will winter outside here on the Niagara Peninsula, if well protected. When uninjured by the cold they make a glorious display all summer. Roses of this class should not be wrapped or covered too early; the first frost simply assists the ripening of the wood.

Hamilton.

WEBSTER BROS.

FRUIT GROWING IN BRITISH COLUMBIA.



FIG. 1095.—From a Photo of a Cherry Tree, seven years planted, on ground of M. J. HENRY, Vancouver, B. C.

FRUIT growing in British Columbia can be made very profitable if the settler has means enough to properly clear the land and live until he can get returns from his plantation of fruits, which means an expense of \$200 to \$400 per acre for clearing, and his living for two or three years until his fruits begin to bear.

Nearly every variety of plums and prune grow to perfection here, but there are only five or six varieties that I would plant for profit.

Cherries do equally as well, and bring good prices, especially the Gen. Wood, Yellow Spanish, May Duke, Royal Ann and Black Tartarian. Seven years ago, my friend, Daniel VanWyck, of Ridgeville, Ont., sent me some suckers of the common sour cherry, which have now grown into bearing trees,

and have proved to be one of our best preserving cherries, selling readily at 10c. per pound, growing larger fruit than they did in Pelham and perfectly free from black-knot or worms.

Very few apples grow to perfection in this lower part of British Columbia, near the salt water. I grow good Yellow Transparent, Maiden's Blush, Wealthy, Duchess of Oldenburg, Talman Sweet and King. Baldwin and Ben Davis yield and keep well, but do not color up nicely. The Dutch Mignonne and Little Romanite, I notice do well in neighbors' orchards. Around Lytton and Armstrong, in the upper country, they grow the finest apples I ever saw.

Nearly all the English gooseberries mildew badly with us, but the Downing and Oregon Champion are free from it so far and yield immense crops.

Vancouver, B.C. M. J. HENRY.

LECTURERS TO HORTICULTURAL SOCIETIES.



FIG. 1096. —MR. JOHN CRAIG.

A VERY interesting feature of the work of our Association is the sending out of lecturers on horticulture each year, to address the affiliated societies. This is a line of work hitherto largely neglected by horticultural societies, but among the most important of the objects for which they exist and receive government support. In taking up this work we are filling this want, and doing, in a small way, extensive work in horticulture such as is being carried on at great expense in other countries.

We have now twenty-eight Affiliated Societies, and for these we provided three lecturers. For the nine Societies east of Toronto, the Hon. S. Fisher, Minister of Agriculture, sent us Prof. Craig, horticulturist of the Central Experimental Farm, Ottawa, a sketch of whose life appeared in a previous number. His subjects for lectures were (1) "Decoration of Home Grounds" (illustrated); (2) "Window Plants and Perennials"; (3) "How Varieties Originate,

and How Individuals are Multiplied"; (4) "Fruit Growing Regions of Canada" (illustrated).

Mr. W. M. Robson, Pres. of the Society at Lindsay, sends us a glowing account for the hearty reception given Mr. Craig at that place, on Thursday evening, Feb. 25. The chair was occupied by the Mayor, and the hall was packed. The local paper gives two columns to a report of the address, and the answer to questions. Similar reports came from Smith's Falls, Napanee, and other places.

Mr. D. W. Beadle, a sketch of whose life has also appeared in this Journal, is a well-known pioneer Canadian horticulturist and first editor of this magazine, has made the following tour of lectures, viz., to the Affiliated Societies



FIG. 1097.—MR. D. W. BEADLE.
at Freeman, Grimsby, Niagara Falls South, Port Colborne, Hagersville, Port Dover, Simcoe, Thornbury and Meaford. He treated of such subjects as



FIG. 1098.—MR. ALEX. McNEILL.

“Injurious Insects and Fungi,” “Plant Food,” “Cross Breeding,” “Flower Garden and Hardy Perennials,” “Lawn and Front Yard,” “Neatly Kept Garden,” etc.

Mr. Alex. McNeill, one of our directors, is making the Western trip to the following list of Societies, viz., Chatham, Seaforth, Kincardine, Durham, Bramp-

on, Waterloo, Paris, Woodstock and Leamington. His subjects were (1) “Horticultural Possibilities of a Town Lot”; (2) “How to Grow and Care for House Plants,” and (3) “Insect Pests.” Mr. McNeill is coming rapidly to the front among our horticultural speakers. His early training was on his father’s farm in Middlesex, and there he acquired that perseverance in overcoming difficulties so essential to success. He afterward took a training for teaching, to which profession he devoted seventeen years, latterly a science master at Windsor High School. Tiring of the confinement of the school, Mr. McNeill, some years ago, turned his whole attention in fruit growing, making a specialty of the grape, and gradually turning his attention also to other fruits and to floriculture. Such a combination of school training and practical work develops the best elements for success, whether in one’s own business or in giving pointers to others; and therefore we value Mr. McNeill as well worthy of a place along with the other two above mentioned lecturers in horticulture.

A SHADY RUSTIC SEAT.

The illustration shows the foundation for a vine-covered rustic seat. In rustic work of any kind it is best to select fairly smooth pieces of wood, with not too much irregularity of branching. Smooth sticks, closely covered with bark, make much the more satisfactory work, providing plenty of the rustic look where more would look incongruous. The top of the seat shown could be arched, if such a style were preferred. Vines planted at the ends and in the rear will soon cover the whole and give a delightfully shady seat.

Roses of a tree growth, climbers or trailers could be utilized in any of these

structures, and if combined with clematis would give magnificent results.—
American Gardening.

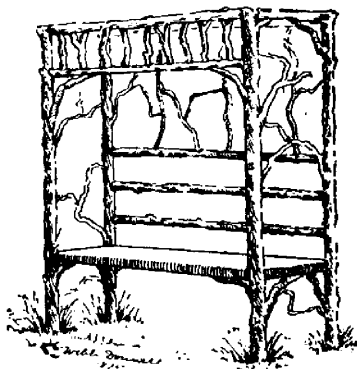
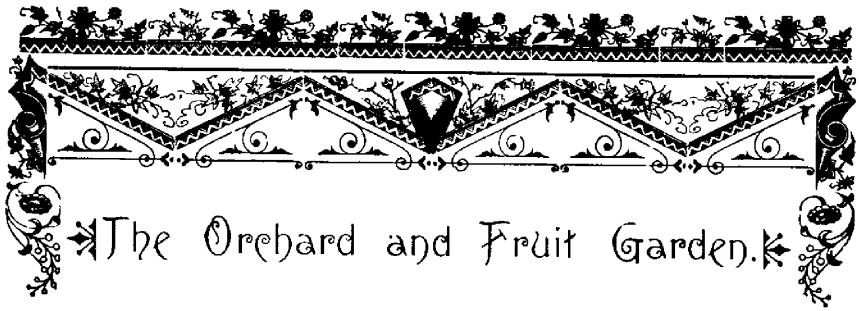


FIG. 1099 —SHADY RUSTIC SEAT.



The Orchard and Fruit Garden.

SMALL FRUIT CULTURE FOR MARKET.

(Continued from page 65.)

If the planting is not done until spring, most soils suitable for small fruits will be benefited by a deep fall plowing, followed by a shallower cross-plowing as early in spring as the land is workable, or by thorough and repeated working with one of the numerous forms of disk or spading harrows now in use.

This should be followed by a lighter pulverizer or smoothing harrow before the soil becomes lumpy. The roller or plank clod crusher can sometimes be used to advantage, but if the soil be taken at the proper stage of dryness the treatment noted above will rarely fail to accomplish the desired result. Too much attention can hardly be bestowed upon this matter of soil preparation, yet it is often slighted by small-fruit planters. Errors in fertilizing, cultivating, or pruning can sometimes be corrected by subsequent good treatment, but deficient preparation cannot be overcome during the existence of the crop.

MANURING.

Unless the soil is very rich from previous fertilizing, the crop will be largely increased by the application of well-rotted stable manure, say 20 tons to the acre, applied before the final plowing or thoroughly worked into the soil with a spading harrow. If stable manure is not obtainable, finely ground

bone and muriate of potash can be profitably used on many soils. Nitrate of soda can sometimes be applied in moderation with profit. If the soil is of a sandy nature and known to be deficient in nitrogen, a preparatory crop of crimson clover will doubtless be advantageous in climates where this plant succeeds, or other leguminous crops may be grown and plowed in. Hardwood ashes are excellent on most soils and, in general, commercial fertilizers rich in phosphoric acid and potash may be profitably used. The selection of the fertilizer that can be most profitably used on any particular soil must be determined by local experiment, however, and upon the very field in question, unless tests have been made on similar soils in the immediate neighborhood.

It should be said that among growers who ship their fruit long distances, there is an increasing tendency to favor commercial fertilizers rather than stable manure, on the ground that the fruit thus grown is firmer and of better carrying quality. This applies particularly to fruit grown in the humid climate of the South Atlantic and Gulf States, where most fruit plants incline to make a rank growth, which produces watery fruit, and where rains during the ripening season are frequent. A considerable gain results also from the absence of weed seeds from prepared fertilizers,

SMALL-FRUIT CULTURE FOR MARKET.

these often proving very troublesome in fields enriched with stable manure.

PLANTING AND CULTIVATION.

The best time for planting small fruits is yet a disputed question, except in the North, where fall-set plants of most species are subject to winter-killing. There are few localities where spring planting is not the safer method, though often the soil can be more thoroughly prepared and the planting be more cheaply done in autumn than in spring. If done in autumn, in regions where the ground freezes to any considerable depth during winter, the newly-set plants should be well mulched to prevent winter injury.

All planting should be in straight rows of equal distance apart. In the case of the bush fruits it is often advantageous to have the rows laid off both ways, so that the cultivator can be run in both directions, at least during the first season. If the land is hilly and inclined to wash, the rows should be laid around the hills, conforming to their curves, but on land reasonably level the rows should, if possible, run north and south and should be as long in that direction as the shape of the field will permit. Overcrowding of plants should be avoided, as fruit of large size is rarely produced by plants having insufficient food, air, and sunshine. If more than one variety of any fruit be planted, or if plants of the same variety be obtained from different sources, each lot should be separately planted and labeled. Failure to do this often leads to expensive uncertainty in later years when plants are desired for new fields or for sale. Many a careless or dishonest plant grower or dealer has escaped responsibility for misnamed or damaged stock through the inability of the planter to positively

trace the plants to his establishment.

Plants should be promptly examined upon receipt, and should be at once heeled in if planting cannot be done immediately. In no case should they be permitted to dry out or be left with roots exposed to the sun or to drying winds. If dry when received, they can often be freshened by placing the roots in water for a few hours. If the weather is dry at planting time, the "puddling" of the roots by dipping in a thin mud of clay and water to which fresh cow manure has been added will often go far toward insuring their growth.

Before setting out, each plant should be carefully examined, and all broken or decayed roots, leaves, or branches should be removed. Plants found diseased or infested with injurious insects should be promptly destroyed, unless the affected portions can be readily cut off and burned. The roots should always be placed in contact with fresh, moist soil, whether the planting be done with the hand or with dibble, spade, or other implement.

Cultivation should immediately follow planting, and should be repeated at frequent intervals during the spring and summer. The appearance of weeds should not be waited for, as the cultivation is for the crop rather than for the destruction of weeds. In general it should be shallow rather than deep, though when the soil becomes hardened by the impact of heavy rainfall or the tramping of berry pickers, the grower should not hesitate to break it up by running a sharp cultivator, or even a light one-horse plow, to the depth of 3 or 4 inches between the rows. If the soil is properly prepared and the cultivation regularly kept up, this tearing up will rarely be necessary except after the harvesting of a crop of fruit. Provided the soil is in condition to work, once a

SMALL-FRUIT CULTURE FOR MARKET.

week is not too frequent for the shallow cultivation of the small fruits during the growing season, and during the July and August drought that frequently prevails the surface soil should rarely remain unstirred longer than four or five days. Toward the end of summer, particularly on rich and moist soils, cultivation of the bush fruits should be less frequent, and it should entirely cease before the first frosts occur. The use of the hoe in small-fruit plantations should be avoided as far as possible, but when needed hoeing should be promptly done. With land in good tilth and clean at the start, with fertilizers free from grass and weed seeds, the necessity for the expensive and laborious use of the hoe as formerly practised is greatly reduced. But in order to accomplish this the land must be free from clods, sticks, and stones, the cultivator teeth sharp, the horse steady and true, and the man active and careful.

PRUNING AND WINTER TREATMENT.

Where winters are severe enough once in four years to seriously injure unprotected bush fruits, mulching or laying down will often pay well. Much depends upon the character and cost of the material used, and its durability. Straw, unless clean threshed and free from grass seeds, is a most productive source of future trouble to the grower. Forest leaves can be secured in sufficient quantity in some localities to be available for use among the bush fruits. Where obtainable, pine needles also form an admirable mulch, and with a little care in removing can be used two or three times. Broken cornstalks that have been well tramped over in the barnyard are useful, and sorghum bagasse is utilized in some sections. In colder and drier climates the only sure

protection for blackberries and raspberries is the laying down and covering of the canes. This is accomplished by digging away from one side of the plant, toppling it over with a fork, and wholly or partially covering the canes with earth from between the rows. This method involves staking or trellising the bushes when they are raised again in spring, but it is found profitable because of the insurance against crop failure which it affords. On most heavy soils water furrows should be run between the rows with a light one horse or shovel plow late in fall, in order that surface water may be promptly removed during the winter months.

With the strawberry the only pruning needed will be the removal of superfluous runners. The raspberry and the blackberry, bearing their fruit almost exclusively on branches from canes of the previous year, are benefited by systematic pruning, while the currant and the gooseberry need it as urgently as do the tree fruits or the grape, if large fruit is the object sought.

Though sometimes subject to serious damage by insects and fungous diseases, the small fruits, as a class, are less injured by them than the tree fruits. Most of the serious troubles may be avoided by choosing vigorous and resistant varieties or by spraying with well-known insecticides and fungicides.

VARIETIES FOR MARKET.

In the selection of varieties for planting, the best guide will always be local experience. If the grower aims to supply a home demand, he may often find it profitable to grow varieties which, because of lack of firmness, would be valueless for shipment. The published bulletins of the experiment stations afford much light on the subject by indicating in a general way what the beha.

GROWING AND MARKETING OF TOMATOES.

viour of varieties is in each section. These should be consulted, and also the reports of the State horticultural societies, many of which contain catalogues of the varieties known to succeed within their several districts. But most valuable of all will be found the experience of growers in the immediate vicinity. Their conclusions, though not always correct, are safest for the beginner, and he should only plant largely those varieties which they have found successful. The main planting should rarely consist of more

than two varieties of each fruit, except in the case of the strawberry, where four or five sorts ripening in succession may often be profitably grown. New and untried sorts, though highly commended elsewhere, should be planted in an experimental way only, for but a small percentage of the varieties introduced prove equal in value to the standard market sorts at the time of their introduction.

WM. A. TAYLOR, in Year Book,
U. S. Dep't of Agriculture for 1895.

GROWING AND MARKETING OF TOMATOES.

BY MR. JOHN CRAIG, OTTAWA.

THE possibility of marketing Canadian Tomatoes profitably in England has aroused a spirit of inquiry among market gardeners and fruit growers, relative to the best methods of growing the plants, packing the fruit, and the best varieties to cultivate for this special purpose. The following notes are prepared with a view of briefly answering these questions.

RAISING PLANTS.

The summer season of Ontario and Quebec is not long enough to admit of the profitable cultivation of tomatoes without the aid of a greenhouse, hot-bed, or window box in starting the plants in spring.

Soil for Seed Boxes.—The soil should not be too rich. A mellow loam of good quality, with sand added to the extent of one-fifth of the whole, will produce stronger and healthier plants than will the leaf mould one frequently meets with in the soil of window boxes. If a greenhouse is available the seed may be sown about the middle of March, or a month earlier if the plants are intended

to serve the demands of the home market. A high temperature, 95 degrees to 70 degrees at night and 80 degrees to 85 degrees in the day time, will produce large, succulent, but tender plants. A too low temperature will produce stunted weaklings. Neither class is desirable. It is better, however, to have the temperature slightly too warm, than too cold, in consideration of the nature of the plant. Sow the seed thinly, in rows six inches apart, pressing the soil firmly over the rows. An ounce contains 8,000 to 10,000 seeds. The seedlings should be transplanted at least twice before setting them in the open field. This treatment gives strong, stocky plants. If grown *in the greenhouse* the seedlings should be "pricked" into "flats" (shallow boxes) soon after the true leaves appear, setting them two to three inches apart each way. From these "flats" the plants are removed when they begin to crowd each other, to the cold frame or hot bed, setting them six to eight inches apart each way, or further if the plants are large. By the middle—or in a backward season—the last week of May (in this section)

GROWING AND MARKETING OF TOMATOES.

they will have made large, stocky plants and are ready to plant in the field. The sashes or other covers used to protect the frames should be kept off the frames to harden them, for some time previous to setting the plants out.

When the seed is sown directly *in the hot bed*, this should be done early in April. A strong, even heat is desirable, such as may be secured from a two-foot bed of horse manure. Sow the seed in four or five inches of soil, after the heat of the bed has subsided to 75 degrees. Additional cold frames should be provided for the reception of the plants when they are removed from the seed rows. Transplant twice, if possible, before setting in the field.

In Window Boxes.—Fairly good plants may be grown in boxes of soil, or in flower-pots placed in well-lighted rooms; but owing to the fluctuations of the temperature of the dwelling-house and the lack of light, the plants are often "drawn," stunted or otherwise injured. When any considerable number of plants is required a hot-bed should be employed. The remarks made above on transplanting from the seed rows, apply with equal force whether plants are grown in the greenhouse, in the hot-bed, or in the dwelling-house.

FIELD CULTURE.

Soil.—It is a mistake to plant tomatoes in poor soil. It is true that a warm and somewhat light soil will produce better plants and earlier fruit than a heavy clay, but a large crop of smooth, well-grown tomatoes need not be expected unless the soil is fairly well enriched. Poor soils produce early, but small, and often badly shaped and much wrinkled tomatoes. Sandy or light clay loams, well drained, and well manured, give the best results.

Preparing the Ground.—Plough deep-

ly in the fall. In the spring apply 20 tons to 30 tons of barn-yard manure to the acre, plough again and harrow smooth two or three weeks before planting time. Harrow again just before marking out the rows, to destroy the first crop of weeds.

Setting the Plants.—It is better to set the plants in rows 5 x 3 feet apart than 4 x 4 feet apart each way, as the wider space facilitates the work of cultivating the plants and of picking the fruit. Planting will be expedited if a light furrow is opened in the line of each row.

Planting.—Before lifting the plants out of the boxes or frames, the soil in which they are growing should be thoroughly watered, so that it will be saturated to the depth of the lower extremities of the roots of the plants. A few hours after this is done the plants may be taken up with a ball of earth about the roots of each by using a sharp trowel, or a spade, if they are far enough apart to allow of the use of the latter implement. The plants should then be placed in carrying boxes, transported to the field in a cart or wheelbarrow and set in the freshly opened furrows. When planted, the ball of earth should be about an inch below the surface, and the soil firmly pressed about the lower roots. About three thousand plants are required to set each acre, when planted 5 x 3 feet apart. If badly grown and the plants are tall and spindling, they should be set in a slanting position with a view of covering the procumbent stem with soil so that it may strike root.

Cultivation—Shallow and level cultivation should be given for a month after setting out. It is then advisable to attach the moulding wings to the cultivator and with these turn a slight furrow to the plants. The operation of hilling is finished by making with a hoe, about each plant, a broad sloping mound

GROWING AND MARKETING OF TOMATOES.

two or three inches in height. This will tend to distribute the fruit and vines and by shedding rain will, to some extent, lessen the tendency to rot. After hilling, the level surface should be cultivated as long as it is possible to do so without injury to the plants. If growth is unsatisfactory it may be stimulated, by a light application to each plant of a mixture of muriate of potash or wood ashes and of nitrate of soda. Muriate of potash, 100 pounds, or wood ashes, 1,000 pounds, and nitrate of soda, 200 pounds per acre may generally be used with advantage. This mixture may best be applied by scattering it around each plant before hilling.

Training.—In field culture, it does not pay to train tomato plants to stakes or trellises. This system belongs to the garden of the amateur and may there be practised with economy as to space and satisfaction as to general results. In the field, some attention should be given towards securing a proper disposition of the naturally sprawling branches, to prevent too much interlacing and to secure their proper distribution.

PICKING AND PACKING.

Packing for the Home Market.—Pick the fruit when fully colored, being careful to avoid bruising it. Discard all ill-shapen or blemished specimens. The fruit should be carried in baskets to the sorting shed and then carefully packed in the shipping baskets or packages. Place the fruit in the basket with the stem end downwards, wiping such specimens as are soiled, finishing the package with a "smooth face." Strong baskets—veneer is better than the splint—should be used, and these covered with a stout frame like cover made of the veneer trimming material, but centered with leno, so that the fruit may be readily inspected.

Packing for Foreign Market.—If the fruit is intended for the European market, it should be picked when fully grown and just beginning to change color,—if it is to be forwarded in *thoroughly refrigerated compartments*. Partly colored specimens forwarded last year to Liverpool, with imperfect ice refrigeration, arrived in an over-ripe and unsatisfactory condition. If shipped by ordinary freight, which may be successfully done *with moderately cool compartments and good ventilation*, the fruit should be packed when fully developed, but when yet green in color and well "glazed." All fruit should be carefully graded as to size and with due regard to its characteristic color when mature. Scarlet and purplish red varieties should not be packed together in the same case.

PACKAGES.

Light, strong wooden ventilated cases are recommended. A case of the dimensions given below will hold about 20 lbs. of medium sized tomatoes in two rows — or layers — about four dozen tomatoes deep. The layers should be separated by a sheet of stiff cardboard, —unless each specimen is wrapped in tissue or light printers' paper,—even with this precaution the cardboard division will be found useful. To prevent the fruit from shaking, place a layer of clean "excelsior" over the fruit before nailing down the cover.

The words "Canadian Tomatoes" should be branded upon the ends of each case. The name and the address of the grower should appear printed on a sheet within.

Dimensions of Case Outside.—Length 22 inches; width 10 inches; depth 5½ inches. It should be provided with a partition placed crosswise in the middle. The boxes should be made of planed lumber, bass-wood preferable, with bored

PEACHES FOR THE ENGLISH MARKET.

holes in the ends, or slits along the corners to give ventilation. Boards of the following thicknesses may be used in the construction of this box. Ends and partition $\frac{5}{8}$ inch; sides, top and bottom $\frac{3}{8}$ inch. Ventilation may be provided for, by using slightly narrower side pieces than called for by the depth of the box—say $4\frac{3}{4}$ inches. The top and bottom pieces should come flush to the corners. This would leave a narrow ventilating slit at each corner without weakening the case to any extent.

VARIETIES.

If it is intended to ship the fruit to distant points, medium sized, smooth, solid varieties should be grown. Most of the extra early kinds are inclined to be rough or wrinkled. Among those that seem best suited for export purposes, as tested here, are:—Longkeeper (Thorburn), Stone (Livingston), Favourite (Livingston), Liberty Bell and Cook's Favourite. Dwarf Champion is a smooth desirable sort, but not very productive.

Bulletin Central Exper'l Farm.

PEACHES FOR THE ENGLISH MARKET,

Editor Canadian HORTICULTURIST.

DEAR SIR,—Our fruit-growing friends in other parts of the Empire are vigorously pushing their way into the English market. A recent number of the Gardener's Chronicle states that arrangements have been completed for the transportation of the Tasmanian apple crop. There will be nine cargoes in all, containing about 100,000 cases. A still more important point, as far as this district is concerned, is the fact, that a consignment of peaches has been received from the Cape, 400 boxes in all. The Chronicle adds: 'These were

fine in quality if not always large in size. Prices range from 6 to 10 shillings per box of 20. The lower price was for a consignment, part of which had got slightly bruised. The retail prices were from 9d. to 1s. each."

We must remember, of course, that this fruit arrived in mid-winter, and the English people are prepared to pay big prices for things out of season. At the same time this is an encouraging object lesson for Canadian peach growers.

M. BURRELL.

St. Catharines, March 13, 1897.

ONIONS.

The keeping powers of onions raised by the aid of concentrated fertilizers, are not injured. For nine years in succession, on the same bed, I used Freeman's potato manure and bonedust in equal quantities at the rate of 1,000 lbs. to the acre; applying it broadcast on the land just before sowing, and working it in about three inches deep, by the use of

a hand cultivator. A slight coating of rotted manure was dug in every fall. This also I know, when my friends would be complaining about the maggots eating up half their onions mine would be free from them. I have had both the yellow and white Southport Onions keep in perfect condition till the middle of June, particularly the white variety.

South London.

C. J. F.



✧ Flower Garden and Lawn. ✧

HARDY PERENNIALS.—III.

(Continued from page 108.)

During the last few years there has been a great increase in the number of yellow perennial composites offered for sale, most of them wild flowers from Western America. While some of them are too coarse in habit to be desirable additions to the garden border, many of them are most effective and showy, and valuable as a source of cut flowers. Among them are several rudbeckias, of which *R. Newmanni* is the best; several heleniums, including *H. Autumneli*, our common wild species, many sunflowers besides the one already noted. The following have proved most satisfactory with me.

Gaillardia Aristata—Blanket flower.—The original wild form from the Western Prairies, though a handsome flower of 2 to 3 inches diameter, has been immensely improved in size and color by cultivation, and is now one of our showest and most beautiful border plants. Some of the new varieties are 5 inches and over across, a few are all yellow, but most of them have the outer end of the rays yellow and the rest red, ranging from scarlet to the deepest marron. The best known form is *G. Aristata grandiflora*, the one generally

grown and the only one offered in Canadian plant catalogues. Some United States dealers offer 7 or 8 sorts, but though an American flower, it is in Great Britain that its beauty is best appreciated. Messrs. Connell & Sons', Kent, catalogue, no less than 34 distinct named varieties, among which *J. Kelway*, *Vivian Grey*, *Lorenzo* and *Wm. Kelway* are most highly recommended. The named sorts are propagated by division of the roots, but a fine collection may be grown at small expense from the best seed, be careful and get seed of the perennial sorts, generally sold in mixture under the name of *Gaillardia hybride maxima* or *G. hybrida grandiflora*, some seedsmen list seed of the annual kinds as *G. grandiflora*.

Seed sown in May makes fine plants for transplanting the following spring. Plant out in clumps, it does not grow robust enough to make a good show in single plants. The flowers are on long naked stalk, and last a long time on the plant and after cutting. In continuous bloom last summer from June 21 to Oct. 11. Thrives best in a dry, sandy soil and sunny location.



FIG. 1100.—COREOPSIS LANCEOLATA.

Heliopsis Pitcheriana—Introduced by Pitcher and Manda, three years ago, is evidently the same as *H. Scabra* of the botanies, a wild flower on the Western Prairies, is claimed by the introducers to be perfectly hardy, and to be much superior to *Coreopsis lanceolata* as a source of cut-flowers. The flowers are about the same shape and size, a little darker in color, and not so long stalked. The habit of the plant is much more robust, growing 2 to 3 feet high and as much across, leaves dark green, rather rough, somewhat heart-shaped, on long petioles; the flowers from the axils of the upper leaves are produced quite freely the whole summer. Last season plants from seed sown early in May, bloomed continuously from August 21 to October 10. Though the flower closely resembles *Coreopsis lanceolata*, the plant is so different in appearance that it is well worthy a place in the border.

Coreopsis lanceolata. — The best known of the clear yellow composites and probably the best of them all for cut flower purposes. The flowers are produced in such great profusion that they can be cut freely without robbing the plant. Though strictly a perennial, it blooms freely the first year, if seed is sown early in the spring. Last season I had abundance of flowers from August to Oct. 4, from spring sown seed. Though claimed to be quite hardy, I have had some difficulty in bringing them through the winter safely. Such a dense mass of leaves grow at the base of the stems, that they are apt to rot if not covered very lightly. The flowers are from 2 to 3 inches across, of a beautiful bright yellow on naked stalks about 4 in. long.

Anthemis tinctoria — Yellow chamomile.—Is a native of England that is slowly finding its way into American plant catalogues, and being recognized as a very desirable border perennial. It is perfectly hardy and easily grown from seed. The flowers are bright yellow, about 2 inches across; in season from July to fall. The leaves are very finely divided—quite fern-like in appearance—light green above and downy beneath, forming a close mat about 8 inches high, from which the flower-stalks rise to a height of 18 or 20 inches. Though the whole plant is quite soft and delicate looking, it has most unusual powers of resisting frost. The past season it was the last perennial of my collection to succumb to the cold.

Plants from spring sown seed were in bloom from August till near the middle of November.

LILIUM SPECIOSUM.

THIS section of the lily family is often listed as *L. Lancifolium*. There are all of twenty sorts in commerce in America at present. They are favorably known throughout the north as high-class and very hardy lilies. The flowers of some surpass the *Auratums* in rich colorings, and rival them in fragrance, all flourish and increase where the beautiful but capricious *Auratums* would fail.

The *speciosums* are natives of Japan, their time of blooming is from July to October, the flowers are drooping, the petals in all the varieties recurve so as to nearly touch the flower stem, showing off their rare color and shadings to perfection. The usual method of propagation is by division, one bulb planted in rich soil will have made quite a clump at the end of three growing seasons. When transplanted they should be given well enriched, deeply dug soil, the small bulbs and offsets had better be planted separately. It is rarely advisable to replant lilies of any kind oftener than once in three years.

Many recommend shade or partial shade to have these plants in their greatest beauty. The only advantage of shade seems to be the moisture that is nearly always present where there is shade. Varieties of *Speciosum* will do quite as well when fully exposed to the sun, if care is taken that the ground does not want for moisture.

Where the winters are severe the bulbs should always be planted in soil that is well drained and comparatively

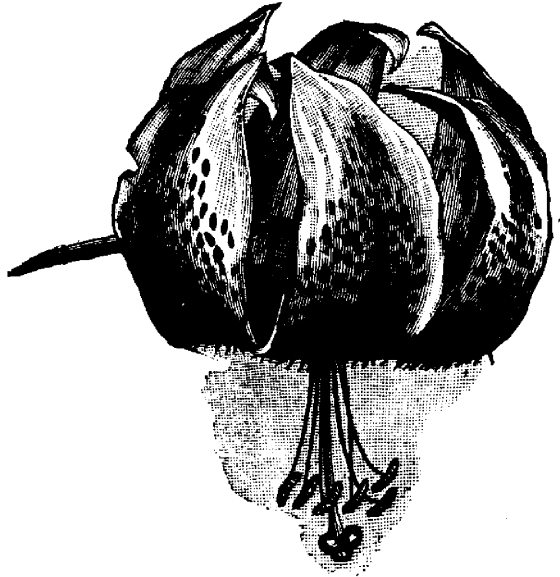


FIG. 1101.—SPECIOSUM ROSEUM.

dry during their dormant season. Where the extreme cold renders protection absolutely necessary, forest leaves, held in place by a rough frame of boards, evergreen boughs, strawy manure, or anything, may be used that will prevent the ground about the bulbs from freezing and thawing.

Speciosum Roseum is certainly the most popular of all, the color is deep rose, distinctly spotted carmine, towards the centre of the flower the color shades to a frosty glistening white. The variety *Rubrum* is often catalogued, we have never found sufficient difference in the flowers to think of growing them separately.

Album is a white variety of chaste and pure color.

Monstrosum Album has flattened flower stems, which carry from thirty to fifty flowers. Its floriferousness under good culture is wonderful.

Melpomene and *Opal* are varieties of recent introduction that deserve special

MANURE FOR FLOWER BEDS.

mention. The former has thick waxy petals, a characteristic of all the Speciosums, the color is glistening white, spotted and clouded with rosy scarlet, each petal is bordered with the same color. Opal is still more grandly colored, the petals appear as if covered with hoar

frost, delicately suffused and heavily spotted with crimson, and tipped with white. These two are still held at an almost prohibitive figure.

WEBSTER BROS.

Hamilton, Ont.

MANURE FOR FLOWER BEDS.

FRESH compost can only be used with benefit as a mulch in late autumn to prevent the heaving of newly set plants. If compost is to be applied to bulbs or the roots of perennials, it should be at least a year old, and thoroughly rotted. A cow and a flower bed travel well together, provided they are kept in separate compartments. The barn yard muck where cows are kept is an excellent plant food; in our estimation it is the best, and whenever we can obtain plenty of it we wish for no other. That part of the enclosure which is free from coarse straw and stable litter, in which the animals thoroughly pulverize their droppings with their feet and incorporate them with the soil underneath contains the correct thing. Scrape this into heaps with hoe or rake, take it to your flower beds and spread it over them in the fall, be liberal with it, don't be afraid, and you will marvel the following summer at the wonders of floral creation. The effect is astonishing. You need no longer lament that your flowers are not as fine as grandmother's were a half century ago. Your plants will receive new life, and their vigorous growth will defy the ravages of the insect world. It will make them more floriferous, and

the brilliancy of the colors will surprise you.

The leachings of manure water that accumulate in a depression of the barn yard are a treasure, and should be utilized. Carry them to your rose and hydrangea beds after a heavy rain, apply the liquid with a sprinkling can with the rose removed; there let the solution percolate through the soil down to the thread-like, fibrous roots, where nature's alchemist will assimilate them, and mark the result.

If all the barn yard leachings that are now running to waste throughout the country could be utilized in this way, two roses would bloom instead of one, our hydrangeas would have heads twice as large, and other plants would be equally floriferous. Barn yard leachings can be applied with equal benefit to all perennial plants and small fruits. Celery fairly revels in it, and we are safe in saying that a corn stalk would produce twice as much corn.

If we persist in setting out flowering plants and watch them slowly starving to death without making even the feeblest effort to succor them, we will never be successful floriculturists.—Rept. Pa. Hort. Soc., '95.

EVERY GARDEN SHOULD HAVE ROSES.



I HAVE often asked the question "Why have, you no roses?" "Oh, my soil is far too light and all rose growers, when writing, say the soil must be a strong clay loam." True, roses do best in such soil if well drained. A few years ago some friends from London happened to call on me at Delaware one fine morning when I had about seventy rose bushes in full bloom, the first word spoken was, "We did not know it was possible to grow such roses on soil so sandy and poor as we know yours was; how do you manage to get such roses?" By applying every fall a good coating of cow manure leaving it on the surface till the spring, then dig it in with a fork, and before raking the ground apply bone-dust till the ground is fairly white all around the bushes, prune the bushes as soon as the buds begin to open, by doing this every year I find my bushes growing stronger and giving me plenty of fine roses, but no one can have good roses without manure, and a rigid system of

pruning; also care must be taken to allow no insect pests to get the upper hand, for if the foliage is destroyed the whole plant receives a very severe shock. A few words about small roses or "bantlings," as your friend Mr. O. G. Johnstone calls them, he also states "One honest two-year old pot-grown rose is worth fifty of the baby roses sent out by mail." He must not forget roses are like men, in that both must be babies at the starting point. Now, I know that many persons, when reading a catalogue they see a lovely picture of roses, and they see two year old plants quoted at \$4.50 per dozen, "Oh, I would like a dozen, but I cannot afford it," and so on year after year, and no roses.

During the last twenty-five years I have grown many roses, and as a rule always buy small plants. My plan is to buy say one dozen plants for which I pay \$1.00. I get them in May, and plant them in a bed in the kitchen garden where I know the ground is rich, about twenty-inches apart each way, keep the ground free from weeds and loose till November. As soon as you see any buds forming, take your knife and cut the branch off about three inches below the bud, by so doing you will find you have by November a fine lot of stocky bushes.

In the spring as soon as the ground is fit to work, dig your holes in your flower border and take up each bush with a shovel with as much earth as will remain on the roots, and see that the earth is made solid round the roots, then with a sharp knife cut back all growth to within six or eight inches, and if your soil is good, you may be sure of good roses. Last May I planted out four dozen Baby roses, and every one grew, and I feel confident that they will out grow

RAISING AND CULTIVATION OF ANNUAL FLOWERING PLANTS.

any pot grown plant because they will receive no check in moving. So friends with a little care and trouble for one summer you can have roses at a very

small outlay, only get your plants from some reliable florist and have them come by express.

C. J. F.

South London.

THE RAISING AND CULTIVATION OF ANNUAL FLOWERING PLANTS FOR THE GARDEN.

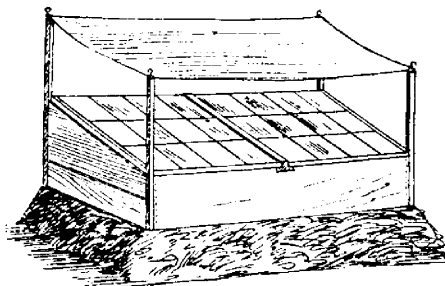


FIG. 1102.—HOT-BED FRAME.

THESE can be obtained at much less expense and with far less attention and trouble than plants which have to be kept over and propagated from cuttings; and for the amount of bloom, and the bright appearance they give during nearly the whole flower-producing season, they well deserve to have the care bestowed on them which they require to bring them to perfection. Every one with a garden of any pretension has a corner where some of these beautiful annuals could be accommodated, and where they would well repay any attention given to them. This short paper is intended for amateurs in the flower growing line, and I will give a few plain directions of how to make a hotbed for the tender annuals (with a list of those most suitable), the manner in which the seed should be sown and the attention required in the hotbed, the transplanting of such as require it in the hotbed, and their final transplanting to where they are to remain for the season, and flower. The

preparation of the soil for this as for any other crop is most important, and with good soil and good cultivation the results will be satisfactory. The hotbed may be of one or more sashes according to the number of plants required, and in any case the preparation of the material "hot stable manure" is the same. One chief mistake amongst amateur hotbed gardeners is in commencing too soon in the season. The earlier you start the more difficulties you have to contend with; and as the greater number have other vocations during the day to attend to, courting any more difficulties than can be avoided is not to be thought of. The material generally used for hotbed making is stable manure. It should be collected about two weeks before the time for building the hotbed, thrown into a heap and allowed to heat slightly before giving the whole a turn, that is, commence at one end or side and carefully mix all the material together by turning the whole pile over on to another part of the ground contiguous. In doing this, all the outside material should be placed in the centre of the pile, thereby making it as uniform as possible. About the beginning of April is quite soon enough to collect the material, and in about two weeks with frequent turnings will be in a good shape to build the bed. About two ordinary cart loads of the common stable manure usually obtainable will be sufficient for each sash of your bed. With proper

RAISING AND CULTIVATION OF ANNUAL FLOWERING PLANTS.

turnings this will be reduced to about one common cart load by the time it is required for the bed. It might be as well to mention here that in turning over the material it may be necessary to add water to make it heat properly. There should never be any dry patches (fire-fang) allowed in hotbed material, or in fact in any material required to be used as manure, it is useless afterwards.

The material to form the hotbed being now, say about the middle of April, in first-class condition, turn the whole over on to the place, making it one foot larger each way than the box to be placed on it, shaking and mixing the whole as it is put on. Make it firm with repeated taps with the back of the fork; when finished, the manure should be firm enough to carry a man without his foot sinking more than about three inches into it. This sort of a bed will not blaze up and burn everything that will be sown in it; then ultimately you might trace the cause of all the disappointments of your seedsman, who, honest man, does not know, and should not be blamed when perfectly innocent, for the disappointments sure to follow in trying to grow seeds in a place, nine times out of ten, constructed on improved principles to kill everything of vegetable nature. Very few seeds will stand more than 90°; and almost all annuals will succeed much better if never subjected to a higher bottom heat than 75°. The soil is another consideration of some importance; not that it requires to be extra good, but light and friable being more suitable. In fact, any good garden soil will answer very well with the addition of sand if of a

stiff nature to make it free and open. The quantity has more to do with success than quality, and in no case should less than four inches to six inches be used. The sorts of annuals requiring the greatest heat might be sown on the part where the four inches is used, and plants of a hardier nature, such as stocks, asters, etc., sown on the thicker part of the bed. Shading, airing, and watering being about all that is required after sowing until some of the small seedlings may require to have a first transplanting. Many plants are improved by this transplanting, giving them not only more root, but more head space. In fact, it is about impossible to produce good healthy plants of many of the different sorts of both flowers and vegetables without transplanting them. Shading the hotbed before the seedlings appear above the soil is good practice, inasmuch as plants do not require light to germinate, and it also has the further advantage of retaining the moisture, or at least not allowing the soil to become parched by the sun. Watering should be done only when necessary, and this done efficiently through a fine rosed watering pot, as many of the small seed or plants would be washed out if done too roughly. Ventilation is also one of the imperative attentions demanded to secure success in the hotbed. It is better to err on the safe side here; as to neglect giving air for a couple of hours on a sunny forenoon would most likely finish everything. The giving of air less or more, according to the state of the weather must by no means be neglected.

—Report Montreal Hort. Soc.



* Our Affiliated Societies. *

PARIS.—Mr. C. H. Roberts, the energetic Secretary of this Society, sends us a copy of his Annual Report. The finances are in a very encouraging condition, there being a balance in hand of \$100, and the portion of the grant coming to them amounting to \$140 per annum. The Society is distributing begonias, climbing roses, altheas, and raspberries. It also gave prizes to the scholars of the public school for the best essays on "Horticulture"; the essays were read, and the prize given in public. At the Agricultural Society Show prizes were given for the best design for a rural garden, and also for floral exhibits; the Horticultural Society also made an exhibit of named varieties of apples. At the Paris Cemetery the Society made a fine bed of foliage plants, which was much admired. Mr. Beadle's lecture was much appreciated.

NAPANEE HORTICULTURAL SOCIETY.

—Our spring distribution is as follows: Membership in Fruit Growers' Association (including CANADIAN HORTICULTURIST); subscription to Mayflower; sweet pea seed, 4 lbs.; aster seed, 1 oz.; hollyhock seed, 1 oz.; Poppy seed, 1 oz.; 65 brugmansia plants; 65 Cannas, very choice; 400 gladioli, also very choice.

J. E. HERRING, *Sec.-Treas.*

WOODSTOCK.—Renewed life and vigor was imparted to the Woodstock Horticultural Society at its regular monthly meeting recently. There was a good attendance, and the two hours spent in the discussion of fruit topics must have been of great value to those interested in horticulture.

Vice-President Pattullo presided in the absence of the president, D. W. Karn.

James S. Scarf, who was the Woodstock delegate to the Ontario Fruit Growers' Association convention at Kingston, gave an able and exhaustive report of the many things done, seen and heard at the Kingston gathering, and Frank Harris gave an interesting address on the culture of raspberries. Mr. Harris is an experienced grower, but as he stated in his address, he has never yet been able to raise raspberries at less than 5½c. per box.

At the next meeting it is likely that the Society will discuss some system of park ornamentation.

Messrs. Scarf, Snelgrove, T. H. Parker, Frank Harris, and the Secretary were appointed a committee to assist the Agricultural Society in the revision of the lists and the arranging of the horticultural exhibits.

Twenty-five dollars was devoted to the purchase of premiums consisting of flowers and seeds.

An effort will be made to increase the membership, a task which should be an easy one if all the meetings are made as interesting as the last.

R. B. THORNTON, *Sec.*

DESERONTO HORTICULTURAL SOCIETY.

—The first annual meeting of this society was held in the Town Hall, and was quite a success, all present seeming to take quite an interest in the subject of horticulture. The principal business of the meeting was the election of officers for the ensuing year. Mrs. E. Walter Rathbun was unanimously elected President; J. J. Keator,

OUR AFFILIATED SOCIETIES.

Vice-President ; Rev. J. H. H. Coleman, 2nd Vice-President. The Board of Directors was elected by ballot, and is as follows: Mrs. E. W. Rathbun, R. W. Lloyd, H. Townsend, C. Chamberlain, Mrs. W. S. McTavish, C. Bennett, W. G. Egar, E. J. Snarr, D. McClew. D. McClew was appointed Secretary-Treasurer and G. W. Wright and E. A. Rixon, auditors. From the interest manifested it is easy to predict a bright future for the society.

SMITH'S FALLS.—We had a very good meeting recently, and Prof. Craig spoke for two hours and held the attention of the audience the whole time. I think he was much pleased with the interest shown and seemed surprised that our society had so many members. We hope to have a few more yet before winter closes.

ROBT. GRAHAM, *Sec.*,
Smith's Falls.

LINDSAY.—We are much obliged to the Fruit Growers Association for sending us Prof. Craig, for he gave us so much valuable information on Flowers in the Home, and the planting of trees and shrubs on the lawn. He also gave us some fine stereopticon views. The instrument was handled by Mr. Stevens of the Collegiate Institute staff. There were about one hundred and fifty present. The President, Mr. W. M. Robson, was chairman.

F. FRAMPTON, *Sec.*

GRIMSBY.—On Tuesday evening, March 2nd, Dr. Beadle lectured before the Grimsby Horticultural Society in Society Hall. Mr. E. J. Palmer, the President, occupied the chair. The doctor spoke on "Herbaceous Perennials, and

among others mentioned the following as desirable for succession: Acute leaved Hepatica, Adonis Vernalis, Wood Anemone, (nemorosa) Aquilegia Canadensis, Astilbe, Japonica, St. Bruno's lily, Coreopsis lanceolata, Hybrid Pyrethrum, Anemone Japonica (red or white), Boltonea. He advised planting the Snowdrop bulb in September, and sweet peas also in the fall, in drills about five inches deep in the richest soil possible. Cover with about three inches of soil and then fill up in spring as they grow; Cupid sweet pea was white, a pretty dwarf, but the long stem varieties better for cutting.

TREES FOR THE LAWN.—To have the sward a brilliant green frequent rolling is necessary after the seed has been planted to compact the soil and secure and even growth. The speaker noticed that people generally tend to the artificial in planting their lawn; because there is a place for a flower bed or a clump of trees on one side that is no reason why another should be put on the other side with mathematical precision, Straight lines should be avoided—he liked to see borders assume a wavy outline, flowers massed for color effects, and trees and shrubs planted in little clumps. He advised his hearers to have nothing to do with the weeping willow—it might have a place in graveyards or along brooks, but the lawn is no place for it. Another tree that should be banished is the Manitoba Maple; it is decidedly a cheap tree and has nothing to recommend it but its rapid growth. Graceful elm and hardy maple saplings fresh from the bush should be planted, and we might add that the cutting of the top is not a wise act, as it spoils the symmetry of the tree and rot eventually sets in near the cut. The Lombardy poplars are sometimes planted with advantage, but are not

OUR AFFILIATED SOCIETIES.

graceful—a row of them look like exclamation points against the sky line.

The cut-leaf birch is a better tree—it is not long-lived, and is past its meridian at 30 years—but is handsome and a fast grower. The Sweedler's maple is a magnificent foliage tree, bearing rich blood-red leaves, and grows to a fair size.—JOHN CRAIG, before Port Hope Society.

FERTILIZERS FOR HOUSE PLANTS.—

The judicious use of fertilizers should be referred to. He had told them that plants needed additional food when about to flower. He might say that certain fertilizers sold for the purpose were not immediately available for the supply of plant food ; growers should remember

that fact. One of the most valuable fertilizers is nitrate of soda, or guano, found in Chili, used in the proportion of one ounce to three gallons of water ; it should be used freely twice a week. Bone meal is also good, but must be well soaked first and used in the proportion of a teaspoonful to a gallon of water. When plants fail to thrive under good conditions take them out of the pots and look at the soil—often the earth worm is the cause of the trouble. To keep them out take a lump of lime about the size of a tea cup, slacken in five gallons of water, and use freely at times. The latter remedy is also excellent for lawns that are troubled with worms. — MR. CRAIG, before Lindsay Horticultural Society.

DAHLIAS.

If large tubers, divide, leaving one or two eyes. Plant in boxes last week in March, in not very rich earth. Water well and keep warm until started, then give plenty of fresh air, but not too much heat, or plants will become rank instead of strong and sturdy. Aim rather at producing strong roots. After danger of frost is over dig a hole, at least 18 inches deep, mix in old, well-rotted, cow manure. Half is not too much. Put a little earth in centre, set plant in it lightly and carefully, cover sprouts and all to a depth of 5 inches. Put in a stake at once, in case of frost, so that the exact place may be known to cover. They will require no watering until above ground, but afterwards must be given at least a full pail of water each evening during the summer, watering leaves and all ; soap suds are good, mulch during very warm weather. Dahlias must have very rich earth and plenty of water to bring them to perfection. They like

the early morning sun, but not during the heat of the day. Stake well and tie with wide cotton strings. In autumn cut off stalks within one foot of ground, then dig round root, lift carefully without breaking, and raise them whole, leave for a short time to dry, then place them whole in a box in the cellar and keep dry until following spring.

T. A. W.

Napanee.

CANNAS.—Unless very old roots do not divide, plant in boxes about 1st of April. 1st of June plant out of doors in very rich soil. They do best in a sunny place, but should not be exposed to strong winds. Before the stalks are badly frozen in October cut within 4 inches of the ground and store in the clumps in boxes of sand in a rather warm place, not below 40 degrees. Water slightly at intervals during winter. They can be grown as pot plant also.

T. A. W.

Napanee.



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.

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✦ Notes and Comments. ✦

THE ORILLIA PACKET of March 6th chronicles the death of Mr. John Cuppage, for many years a faithful agent of this Society at Orillia. He was the son of a Major-General in the East India army, and has three brothers Lieutenant-Colonels. Mr. Cuppage was a well-read man, public spirited to a high degree, and highly esteemed by those who knew him.

THE SAN JOSE SCALE has appeared in Michigan. Professor Barrows has found it on the borders of Allegan and Ottawa counties, infesting pear, plum, cherry, peach and apple trees. It was brought there some years ago, a six pear tree from New Jersey.

PROPER CARRIAGE OF APPLES ON SHIPBOARD.—At a meeting of fruit-growers at Grimsby, the following resolution was unanimously carried:—

Resolved, That this meeting of farmers and fruit-growers is firmly convinced that some action should be taken to secure safe transportation of our apples to European markets, for we believe that had such been assured us in the past the crop of 1896 might have been

marketed there at such prices as would have nearly doubled the net proceeds.

We believe that there is no reason for our apples shipped in sound condition, to be landed in England in bad order, if steamship companies would make a very little effort to provide ventilation in the ship hold, where the apples are carried. All that is required is simply to maintain them during the entire voyage, in a temperature as cool as the ocean air in October and November.

DR. WM. SAUNDERS, of Ottawa, has just returned from Boston, where he delivered a lecture before the Massachusetts Horticultural Society on the 13th of March. His subject was, "Horticulture in Canada," and it was illustrated with stereopticon illustrations. An interesting summary of the lecture appeared in the Boston Evening Transcript.

THE HORTICULTURAL SOCIETIES visited by Mr. John Craig in his recent lecture tour under the auspices of our Association, speak in the highest terms of the excellence of his addresses.

Question Drawer.

Fruit Samples.

926. SIR,—At the request of W. Fisher, Orillia, I send you a sample of a seedling desert apple, grown by him, and would be obliged for your opinion.

G. H. HALL, *Orillia.*

The apple is rather pretty in appearance. Medium in size, conical, of excellent flavor, and probably would be a first-class winter dessert apple for the north.

Shortening-in Pear Growth.

927. SIR,—Is it advisable to cut back or shorten-in about one-half or two-thirds of last year's growth of young bearing pear trees in the spring, in order to prevent their growing too tall?

R. BURNS, *Parkhill, Ont.*

Yes, prune your trees while growing into the shape you want to have them, when they reach maturity.

Ashes for Pear Trees.

928. SIR,—What quantity per tree of unleached wood ashes would you advise me to apply to pear trees, ten or fifteen years old?

G. H. NIXON, *Hyde Park.*

Twenty-five or thirty pounds per tree, should afford sufficient potash for full-grown pear trees. Of course they should have nitrogen and available phosphoric acid in some form, also.

Ashes and Manure.

929. SIR,—Should I apply ashes and manure at the same time?

G. H. N.

There is no objection to this; the evil consists in leaving them mixed together in the same pile.

The Madison Plum.

930. Would you recommend the Madi-

son plum for the County of Middlesex?

G. H. N.

Will someone give his experience?

Nitrate of Soda.

931. SIR,—Will you kindly inform me the best market to buy nitrate of soda in, and also other fertilizers? and you will oblige

J. H. WIGLE, *Leamington, Ont.*

Japan Lilac.

932. SIR,—Is this perfectly hardy, and is it sometimes grown in the hothouse?

MRS. RAWSON, *Burlington.*

*Reply by Prof. H. L. Hutt, O.A.C.,
Guelph.*

I cannot speak from my own experience, as to the hardiness of this variety, as it is not in our collection; but I see that Prof. Saunders in his report for 1893, speaks of it being hardy at Ottawa, so I would suppose there would be no difficulty in growing it at Burlington.

I have not heard of its being grown in the hothouse in this country, although I do not doubt it might be. In England and France the lilac is extensively forced during the winter in houses where the light is excluded. The flowers are thus blanched pure white, and are in great demand for making bouquets, etc. The disadvantage of this method is the impossibility of having foliage to accompany the flowers. Leaves from other plants grown in the light have to be substituted.

The Onion Maggot.

933. SIR,—What is the best insecticide for the onion maggot?

R. BURNS, *Parkhill.*

We cannot answer our correspondent better than by quoting from the Hatch

QUESTION DRAWER.

Experiment Station Bulletin, concerning the habits of this insect, and the best methods of destroying it.

Its life history is briefly as follows :—
The eggs (Fig. 1103, *a* natural size and



FIG. 1103.—*a*, eggs of onion maggot, natural size ; *b*, eggs enlarged ; *c*, larva of natural size ; *d*, larva enlarged ; *e*, puparium of natural size ; *f*, puparium enlarged

b enlarged) which are laid on the leaves near the ground, are white, smooth, somewhat oval in outline and about one twenty-fifth of an inch long. Usually not more than half a dozen are laid on a single plant, and they hatch in about a week from the time they are laid. The young larva, as soon as hatched, burrows downward within the sheath, leaving a streak of a pale green color to indicate its path, and making its way

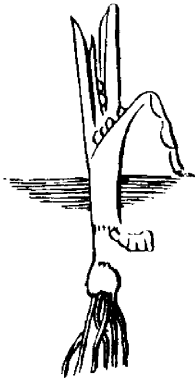


FIG. 1104. — Showing the eggs and the larva at work on the onion plant.

into the root (Fig. 1104) devours all except the outer skin. When the bulb of the plant has begun to form, several of the larvæ may be found feeding in company in it, and after it has been consumed they desert it for another, and still others in succession. The larvæ reach full growth in about two weeks, when they appear as shown in Fig. 1103, *c*, natural size, *d*, enlarged. The smaller end, which is the head, is armed with a pair of black, hook-like jaws. The opposite end is cut off ob-

liquely, and there is a pair of small, brown tubercles near the middle, and eight tooth-like projections around the edge.

The larva usually leaves the onion and transforms to pupæ in the ground outside. The puparium is shown of the natural size at *e* and enlarged at *f*. It does not differ very much in form from the larva, but the skin has hardened and changed to a chestnut brown color, within which the true pupa is contained. They remain in the pupa state about two weeks in the summer, when the perfect flies (Fig. 1105) emerge ; after pairing, the female deposits her eggs for another generation. The winter is passed in the pupa state, and the flies emerge in the early part of June, or about the time the young onions are sufficiently grown to furnish food for the young maggots.

The following preventives and remedies have been suggested :—

Instead of sowing onion seed in rows, where the young seedlings grow in contact, or nearly so, giving every facility for passing from one to another, they should be grown in hills, so that the larvæ cannot make their way from one hill to the other.

Scattering dry unleached wood ashes over the beds as soon as the plants are up, while they are yet wet with dew, and continuing this as often as once a week through the month of June, is said to prevent the deposit of eggs on the plants.

Planting the onions in a new place as remote as possible from where they were grown the previous year, has been found useful, as the flies are not supposed to migrate very far.

Pulverized gas-lime scattered along between the rows has been found useful in keeping the flies away.

QUESTION DRAWER.

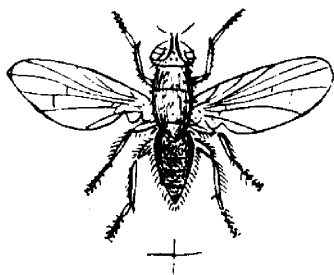


FIG. 1105.—THE PERFECT INSECT OR FLY.

Watering with the liquid from pigpens, collected in a tank provided for the purpose, was found by Miss Ormerod to be a better preventive than the gas-lime. It is recommended to run a roller over the ground a few times after the seed has been sown, thus compacting the soil so that the maggots cannot make their way through it from one plant to another.

Water raised nearly to the boiling point and poured along the rows from a tea-kettle or other convenient vessel, has proved destructive to the maggots, without injury to the plants. The water should be applied so as to go directly to the bulbs and not to the leaves.

Most excellent results have been obtained in England by growing onions in trenches, and as the bulbs grew, the earth was worked down upon them so as to keep them buried throughout the season. The onion bulbs should be covered with earth up to the neck, or even higher, so that the fly cannot get at them to lay her eggs.

When the onions have been attacked, and show it by wilting and changing color, they should either be taken up with a trowel and burned, or else a little dilute carbolic acid or kerosene oil should be dropped on the infested

plants, to run down around them and destroy the maggots in the root and in the soil around them.

Smilax.

934. SIR,—In your next issue of your valuable Journal will you kindly inform me how to cultivate Smilax. Does it require very rich soil? I have raised several plants from seed, but after reaching about a foot or more in height, the foliage and stems begin to get brown and they die down. I water moderately, as most other plants.

R. H. LIGHT, *Kingston.*

Reply by John Craig, Central Experimental Farm.

Smilax is probably one of the most useful of all plants grown for foliage by the florist. It requires a full year to obtain a crop. The ordinary method of procedure is to sow the seed in January or February. When the seedlings have grown to a height of a few inches, they are set in 3-inch pots and grown in this way for some months. In August or September the plants are set in benches, 6 to 8 inches apart. The Smilax should be ready for cutting in the month of January following. If it is cut down at this time, a second crop will be ready in March or April. The best soil for growing Smilax is one light, but rich in character. It is important that the plant should be syringed frequently with water (daily), and after being set in the bench, frequent applications of manure water are necessary. Growers should remember that the foliage is unusually sensitive, and tobacco smoke, such as is used to keep down green fly, proves very injurious to Smilax. It is better, therefore, to use the tobacco in the liquid form.