

Pages Missing

Why? ————— Why?

The question is, Why should the farmers of Ontario send their boys and girls to the

Ontario Agricultural College?

and the answer is, Because the boys will receive a practical and helpful working knowledge of Scientific Agriculture, and because the girls will be given a first-class training in Household Science at the **MACDONALD INSTITUTE**.

Residence Accommodation is provided for both men and women.

Macdonald Hall, the girls' residence, is one of the best equipped buildings of its kind in Canada, and the boys' dormitories are comfortable and commodious.

COURSES

Courses for Boys, varying from two years to four years in length, commence on September 13th.

Courses for Girls, varying from three months to two years in length, commence on September 13th.

For full information regarding courses, terms, etc., write to **G. C. CREELMAN**, President Ontario Agricultural College, Guelph, Ont.

The Fonthill Nurseries & Canada's Greatest Nurseries Over 800 Acres in fruit and Ornamental Trees, Shrubs, Vines and Roses.



Send now for our catalogue of New Specialties, and 25c for our aluminum Pocket Microscope, just the thing to use in examining seeds, grasses, plants and trees. Submit your list of wants for spring planting. Liberal Inducements to Salesmen. Terms sent on application. See our reading notice page 163.

STONE & WELLINGTON, - - - - TORONTO

The Canadian Horticulturist

MAY, 1905

VOLUME XXVIII



NUMBER 5

NEW FORMS OF KEROSENE EMULSION

FRANK T. SHUTT AND W. T. MACOUN, C. E. F., OTTAWA.*

THE value of kerosene or coal oil for the destruction of scale insects as well as for all soft bodied and sucking forms has long been recognized. It cannot, however, be used without admixture or dilution, for its high price precludes its general application on dormant wood, and its injurious action on foliage forbids its employment during the summer season.

Kerosene will not mix with water, but special pumps have been devised for throwing an atomized spray of kerosene and water, provision being made for regulating the proportion of each constituent. These pumps, however, have not proved entirely satisfactory, the difficulty, apparently, being in obtaining a spray of uniform strength.

It is as an emulsion that kerosene has been found most valuable and most widely applicable. The satisfying agent almost universally used is a soap solution, though milk and certain other fluids with more or less viscosity have occasionally been employed. It may be held that whale oil soap and soft soap so used adds to the efficiency of the resulting emulsion as an insecticide, but it seems clear that for the most part the soap simply serves as the vehicle for distributing the kerosene (the real killing agent) in a very finely divided state.

This being the case, it seems desirable to learn if other emulsifying materials cannot

be used which would not only lessen the expense of the spray, but at the same time obviate the necessity of the application of heat, without which the various soap emulsions cannot be satisfactorily made. A notable advance in this direction was made last year by Professor Close, of the Delaware Experiment Station, who has published the results of certain experiments which show that lime has the power of holding kerosene in suspension and forming a perfect emulsion. Prepared according to directions, it makes a fairly stable mixture, homogeneous, *i. e.*, of uniform strength throughout, one easy to spray, and which does not clog the nozzle. Briefly described, Prof. Close's directions are as follows: mix into a "thin sloppy mass" one pound of "Limoid" (an American preparation sold for the purpose) or slaked lime with one quart of kerosene. For a 10 per cent. emulsion, two gallons (imperial measure) are added and the whole emulsified by churning for, say, five minutes, best effected by means of a pump and a Bordeaux nozzle. No free kerosene, he states, will appear for several weeks, and though there may be a separation on standing into limy layers these will readily, if stirred, again produce the emulsion without deterioration. This emulsion, known as K-L mixture, may be used with ordinary Bordeaux (K-L-B),

*I beg to state that while I was associated with Mr. Shutt in the experiments described, to him is due full credit for the discovery of the value of flour in making a kerosene emulsion.—W. T. MACOUN.

Bordeaux and Paris green (K-L-B-P) and resin soap.

During the past month a considerable amount of work on this and allied forms of emulsion has been done in the laboratories of the Experimental Farm, Ottawa, and though this research is not completed, it may be advisable, as we are now at the season when spraying must be more particularly attended to, to publish certain of the more important facts which the work has brought to light.

First: Freshly slaked lime makes a smoother emulsion and one that stays in suspension longer than one made with ordinary air-slaked lime; the latter, however, furnishes a satisfactory emulsion if it is not too much carbonated by long exposure to the air.

Second: By using lime slaked immediately before using, the quantity may be materially reduced. A perfect emulsion can be made by slaking half pound of good quicklime and emulsifying with one quart of kerosene and two gallons of water.

Third: By the use of freshly slaked lime less time is needed for the churning in order to bring the mass to a perfect emulsion. Much, of course, depends on the vigor used in this part of the preparation, but on small quantities two to three minutes of continuous pumping were found sufficient.

Fourth: It is not apparently a matter of much moment that the lime be dry and powdery when mixed with the kerosene. Excellent emulsions have been made both from air-slaked lime and freshly slaked lime when they have been quite moist or even made into a thick cream with water before adding the kerosene.

FLOUR EMULSION.

Fifth: Flour has been successfully substituted for lime. Beginning with the same weight as proposed by Prof. Close, viz., one pound to one quart of kerosene, which made a perfect emulsion, the amount of flour has

step by step been reduced until it was found that eight ounces were sufficient to hold in perfect suspension the quart of kerosene. The preparation with flour is most simple. The requisite amount of kerosene is placed in the vessel (pail or barrel)—which is preferably dry—and flour added in the proportion stated, viz., eight ounces to one quart, the whole thoroughly stirred and the water added, two gallons for every quart of kerosene. This is then vigorously churned as already described. The time necessary to churn will vary from two to four minutes, according to the quantity to be emulsified, and the emulsion is then ready for use.

When the emulsion is required for immediate use, the quantity of flour may be further reduced. It was found that as small a quantity as two ounces would emulsify one quart of kerosene, but that on standing a few hours a perceptible layer of kerosene had separated.

It has, further, been found that by scalding the flour before adding the kerosene a less weight is required. An excellent emulsion, which showed not the slightest separation of kerosene after one week, was prepared by scalding two ounces of flour, mixing the resulting paste with one quart of kerosene and emulsifying with two gallons of water.

The flour emulsion is smooth, readily and easily atomized, and does not clog the nozzle. Any separation into layers (no free kerosene will appear for several days, at least) may be readily overcome or remedied by simply stirring the mixture. It is equally effective, as might be expected, as an insecticide with the lime-formed emulsion, and amongst other advantages that may be claimed for it there is no perceptible whitening of the tree or foliage; and, further, in some places it may be found cheaper and easier to make than the lime emulsion. Its use is suggested as an alternative where good lime is unobtainable and also for mak-

ing the emulsion when intended for ornamental shrubs, etc., where the whitening of the foliage is objectionable. The flour emulsion can be added to Bordeaux mixture, Bordeaux and Paris green, if desired.

Experiments are in progress which indi-

cate that the proportion of kerosene (the most expensive constituent of the emulsion) may be materially reduced without affecting the insectidal value of the spray. Further particulars of these trials will be published in the June issue of *The Horticulturist*.

FRUIT GROWERS CONTINUE TO PROTEST

THE announcement in the April issue of *The Canadian Horticulturist* that the Hon. Sydney Fisher, Dominion Minister of Agriculture, had placed the chief of the fruit division under the chief of the dairy division was a great surprise to many fruit growers who had not heard of Mr. Fisher's announcement in the House of Commons. The result is that protests continue to reach *The Horticulturist* from fruit growers in all parts of Canada who are considering what steps they had best take to deal with the situation. That the present arrangements shall not continue any great length of time is the evident determination of the growers heard from.

The following are a few of many letters on this subject received by *The Horticulturist*:

Mr. Ralph S. Eaton, Kentville, N. S., president Nova Scotia Fruit Growers' Association: I hope the Minister of Agriculture will, in the near future, deem the fruit interests of Canada of sufficient importance to warrant the establishment of a fruit division occupying the same place in the department as other divisions which are responsible only to the minister.

Mr. S. C. Parker, secretary of the Nova Scotia Fruit Growers' Association: I feel strongly on this matter, and think united action should be taken by the various associations in Canada to bring pressure to bear on the honorable minister to place our chief in full standing in the department. I shall be glad to hear of any new development and any plan of action that may be devised.

Mr. J. C. Metcalfe, of Hammond, B. C.,

president of the British Columbia Fruit Growers' Association: The fruit industry of Canada is of sufficient importance to require the appointment of a fruit commissioner for that division, as in the other divisions and responsible only to the Minister of Agriculture, and further would add the necessity of the various fruit associations and fruit growers generally agitating and pressing upon the Dominion government the appointment of a commissioner for the fruit division.

Mr. Thomas G. Earl, Lytton, B. C.: It is degrading to the enormous fruit interests of this province, as well as to those of the whole of Canada, that the fruit commissioner should be placed under the control of the dairy or any other commissioner. I would think that the dairy commissioner would have his hands full in caring for his own department, and, besides, dairying and fruit growing are quite different. I would suppose the Dominion government, when taking into consideration the enormous and continued expansion of fruit growing, would see the necessity for placing the fruit interests in the hands of a competent commissioner expressly for that purpose.

NEW BRUNSWICK HAS ACTED.

Mr. W. D. Albright, secretary New Brunswick Fruit Growers' Association: At the fruit growers' convention in Fredericton a resolution was passed endorsing my action in protesting by telegram to Hon. Mr. Fisher against the subordination of the fruit to the dairy division. In conveying him the resolution I wrote a somewhat lengthy letter in reply to which I received some weeks

later a letter fully explaining all the minister's reasons for the proposed change. The reasons to me, however, seemed mere excuses, and I think the press should not desist in its protest.

Mr. J. C. Gilman, Fredericton, N. B.: As a member of the New Brunswick Fruit Growers' Association I believe the fruit interests will not be served to the best advantage by being under the control of the dairy commissioner. Our fruit interests should have the best thought of some competent man instead of being served second handed.

Mr. George MacAlpine, Lower Gagetown, N. B.; In my opinion the fruit industry is only in the first stage of its growth, and its growing importance entitles it to as prominent a place as any other industry in the Dominion. I am in favor of having it stand on its own merits and not be subject to any other branch of agricultural work.

PRINCE EDWARD ISLAND.

Mr. P. N. Pate, O'Leary Station, P.E.I.:

I am very much in favor of the fruit commissioner being independent of other agricultural work. In our small province I notice much more interest is being taken in fruit raising and many more orchards are being planted yearly.

QUEBEC SPEAKS UP.

Mr. O. M. Derby, Clarenceville, Que.. In view of the fact that our fruit industry has attained such proportions, and seems

destined to become one of our most important departments of agriculture, I consider it advisable we should have a separate commissioner for that division.

W. D. A. Ross, Secretary Fruit Growers' Association, Chatham, Ont.: The fruit interests ought to be worthy of a division by themselves. If the same assistance is given to the fruit interests of the Dominion as has been extended to the dairy interests it may become just as important a division. It has been kept too much in the background. This matter should be pushed.

"Fruit Growers sidetracked," is the way in which Mr. W. C. Webster, of Stony Creek, Ont., speaks of the matter. He goes on to say: "We very much regret that the Department of Agriculture has seen fit to unite the fruit growing industry with the dairy department. This has come as a great surprise to the fruit growers of this province. They have been looking to the Minister of Agriculture to accede to the unanimous request of the associations throughout the Dominion to put the management of the fruit bureau on an independent footing. The industry is of sufficient importance to have as a head a man who has an intimate knowledge of all the details of fruit growing. It is just as important to have a head of this bureau as to have a minister of agriculture. We feel as fruit representatives that we have been treated very unfairly and unjustly."

More Fruit Might Be Grown.—Fruit growers in the Niagara district are beginning to realize that heavy, clay soil, when well drained, is the best for pears, plums and grapes. There are thousands of acres of this soil in the Niagara district well adapted for fruit growing, which are now only worth about \$25 per acre. Much of this land in a few years will almost certainly be under cultivation for fruit.—(W. H. Bunting, St. Catharines, Ont.)

The Best Export Pear in this district is the Duchess on dwarf stalks. I planted 1,030 last spring. The Duchess is a fall pear, and ranks ahead of the Anjou and Beurre Bosc. The Bartlett is the leading summer variety, and of winter varieties the Josephine de Malines and Easter Beurre. This latter will keep until April, and has a flavor similar to that of the Duchess, but is very coarse in texture.—(A. W. Peart, Burlington, Ont.)

HORTICULTURAL COLLEGE AND STATION WANTED

THE fruit growers of the Niagara district have petitioned the Ontario Department of Agriculture to establish a horticultural college and fruit experiment station for their benefit. One of the strongest deputations of fruit growers that has ever waited on the Department of Agriculture interviewed Hon. Nelson Monteith, Minister of Agriculture, April 19, and laid their claims before him. Hon. J. S. Hendrie assisted Mr. Monteith in meeting the deputation.

The fruit growers of the southern fruit belt of Ontario have long desired to have a fruit experiment station and horticultural college, and recently they decided to bring the matter to a head by having a deputation wait on the Department of Agriculture. The deputation, which was introduced by Dr. Jessop, M.L.A., of St. Catharines, contained many of the most prominent fruit growers of the Niagara district and included representatives of the Hamilton and St. Catharines city councils, and boards of trade, as well as representatives from the municipal councils in the counties interested.

"To show you how thoroughly unanimous is the desire of the residents of the Niagara district that a horticultural college and fruit experiment station should be established for their benefit," said Mr. E. D. Smith, ex-M. P., of Winona, to Hon. Mr. Monteith, "I might state that all the municipalities in the Niagara district have passed resolutions approving of the government establishing such a college and station. There are five experiment stations in the Dominion, but none in the Niagara district, which is the most important fruit section in Canada. At the stations already existing apples are almost the only variety of fruit that can be tested to general advantage. What we need in the Niagara district is a station which will conduct experiments in the production of the varieties of fruit we grow and

concerning which we are unable to obtain reliable information at the experiment stations which now exist. In the past our principal markets have been large cities not far distant from the Niagara district, to which we could ship our fruit without danger of its being damaged. The supply of fruit is increasing, which means that we must extend our markets.

"There has been a great growth in the trade with the Maritime Provinces, and the trade with the Northwest is rapidly developing. While we have been able to land our fruit on the local markets in good condition we find it is impossible to ship it to the distant markets although several varieties stand the shipment better than ours. California fruit growers are able to ship their fruit to all parts of the world and we should be able to do likewise. We need a fruit experiment station which will experiment in the production of varieties of fruit that will stand long shipment, so that we can be assisted in producing varieties that we can ship to distant markets. We have not one really good pear or grape. While some varieties are good shippers they each have some serious defects, such as poor taste, or susceptibility to disease. There are one or two good varieties of peaches and plums, but there is great room for improvement there also.

"If such an experiment station as we desire develops one good pear the revenue that will be derived from it by the fruit growers of the Niagara district would more than meet all the expense of the station. We do not want any 10 cent fruit experimental farm. I cannot too strongly impress upon you the enormous value to the fruit growers of finding varieties that will meet the requirements of the market. I believe the Dominion government should buy and equip the farm, but if it does not take the matter up there is a grand opportunity for the On-

tario government to do something that will be of great value to the fruit growers of the Niagara district."

"While we have many of our leading fruit growers here," said Mr. A. H. Pettit, of Grimsby, "I am safe in saying the whole population would have acted on the deputation had they been able. The experimental farms at Ottawa and Guelph are of great value to the fruit growers in the northern districts of Ontario, but not of nearly as much value to the districts where the tender fruits are raised. What we need is a horticultural college where our young men can receive instruction in the raising of fruit. Many residents of cities would send their sons to take a course in such a college. The best proof of this is the fact that many of them write to our growers asking if they will take their sons for a season that they may gain experience on their farms.

"When the farm at Guelph was started there was some complaint about the expense, but that time has passed, as the people recognize the great value of the college. This would be the case with the horticultural college we desire to have established. We do not want it to conflict with the college at Guelph, and I do not believe it would, as it will have a field all its own. It is our wish that it should be established in such a manner that it will be possible for students to graduate from the High schools, take a course in the college of horticulture and step out ready to take up practical work on the farm. Recently we had to send to Delaware for an expert to address a series of meetings in our district. The reason we had to send to that state was that they have such a college there and the gentleman who attended our meetings was of great value to our growers."

"There is no need," said Mr. W. H. Bunting, of St. Catharines, "to point out the value of the institutions we have, as that is recognized. It has been one of the greatest

regrets of my life that I was not able to take advantage of a course at a college like the college at Guelph, and I have been endeavoring to partly make up for this loss by securing this advantage for the benefit of my family. We have no fault to find with the capable officers at the Experimental Farm at Ottawa, or those at Guelph, all of whom are doing excellent work. Their field is large, however, and they are unable to give the required attention for the special needs of the Niagara district. This has made it necessary for us to apply for assistance again and again, to the colleges of the United States, and at times these requests on our part have placed us in a somewhat humiliating position.

"We desire to have an expert staff to carry on work that will be of great value to the Niagara district. We have heard a great deal of criticism regarding the packing of fruit. It is impossible to pack good fruit if the growers are not in a position to produce the best. We have, therefore, come to ask for assistance which will enable our growers to raise the standard of their products."

"The pests which destroy the fruit in the southern district of Ontario," said Mr. Hodgetts, of the St. Catharines Board of Trade, "are different from those in the northern sections and our fruit growers need assistance in learning how to control them. As the whole of Canada is affected by a shortage in the wheat crop of the west, so a shortage in the fruit crop in the Niagara district affects all branches of trade."

"Fruit production," said Mr. E. Morden, of Niagara Falls, "is increasing wonderfully. Twenty bushels are being grown to-day where one was raised 30 years ago. There is an immense market to the south of us, which is yet to be developed. Such a college as we desire will be of great value to the growers all along the northern shore of Lake Erie. The tendency of high schools

is to educate the young men away from the farms. A horticultural college would tend to keep our boys on the farm."

Mr. Honsberger, of Jordan, pointed out that hybridizing fruit is an operation which is receiving a great deal of attention and which has accomplished wonderful results. He was of the opinion that a horticultural college and a fruit experimental farm might, by following up this line of work, be able to produce such varieties as the fruit growers of the Niagara district need for shipment to distant markets.

It was pointed out by Mr. W. J. Drope, of Grimsby, that fruit growers through ignorance frequently plant varieties of fruit which afterwards prove very unprofitable. If they had a thoroughly equipped college and experiment station, which could give reliable information of this nature, loss of this kind could be avoided. Other speak-

ers included Mr. J. A. Keyes, of St. Catharines, and Mr. Nicholson, of Hamilton.

In replying to the deputation Hon. Mr. Monteith expressed the Premier's regrets that he was unable to be on hand to meet the deputation. The Minister of Agriculture stated that as yet the new government is only getting its feet in the stirrups and consequently it is not in a position to give an answer immediately to such an important request. The members of the deputation were assured that the department realizes the importance of the matter and that it will do all in its power to assist them.

Hon. J. S. Hendrie asked the deputation if the Dominion government had been approached. Mr. Honsberger stated in reply that the Department of Agriculture at Ottawa had been asked for assistance, but had stated that it could not take the matter up at present.

A GREAT INCREASE IN SPRAYING

"IT is astonishing how stirred up fruit growers are this year over spraying. Men are spraying who never sprayed before, while those who have sprayed in other years are spraying more thoroughly. They realize that if they are to successfully combat the grape and plum rot, apple scab and other troubles fruit growers are heir to, they have simply got to spray. For every power sprayer used in this vicinity last year there are three being operated this season."

These remarks were made to an editorial representative of *The Horticulturist* a few days ago by Mr. Murray Pettit, of Winona, who conducts the fruit experiment station at that point, and who is known as one of the most successful fruit growers in the Niagara district. The *Horticulturist's* representative, who visited the section to ascertain what the growers are doing this year in the line of spraying, was astonished at the evidence on every hand of the amount of that work that was being done. Orchard

after orchard was passed where the trees were almost perfectly white, they had been sprayed so thoroughly. The main topic being discussed by the fruit growers who were seen was spraying, and it included such subjects as the spraying experiments being conducted by Prof. Lochhead, of the Agricultural College at Guelph, the test that was recently made on the farm of Mr. E. D. Smith, of Winona, of different makes of spraying machinery, or some of the new spraying mixtures which are being introduced this year.

"In former years," continued Mr. Pettit, "I used a barrel Spramotor pump which had three nozzles. It was operated by hand, and by pushing the work I was able to apply eight barrels of mixture in a day. This year I decided to secure a larger outfit which I could use to advantage on my grapes. After looking over the various machines on the market I finally decided to secure a spraying outfit from the Spramotor Com-

pany, of London, Ont., which is fitted especially for spraying vineyards. At the spraying competition held in Mr. Smith's orchard this machine did excellent work and attracted a great deal of attention among the fruit growers. Two other well known makes of spraying machines were represented in this test, and I heard one leading

or six times, in which case it is probable I will use the ammoniacal solution. The experiments that have been conducted at the Ohio experiment station indicate that the first spraying operations in the vineyard before the buds start are not necessary. This is a matter, however, on which Prof. Lockhead is experimenting."



Loading Mr. Smith's Gasoline Spramotor

This illustration shows several of the barrels in which Mr. Smith loads his spraying material and his Spramotor being loaded. Mr. Smith is leaning against the wagon.

fruit grower was so pleased with the working of my machine, which I loaned Mr. Smith for the test, that he offered an agent of one of the other makes \$10 if he would release him from a contract to purchase one of his machines.

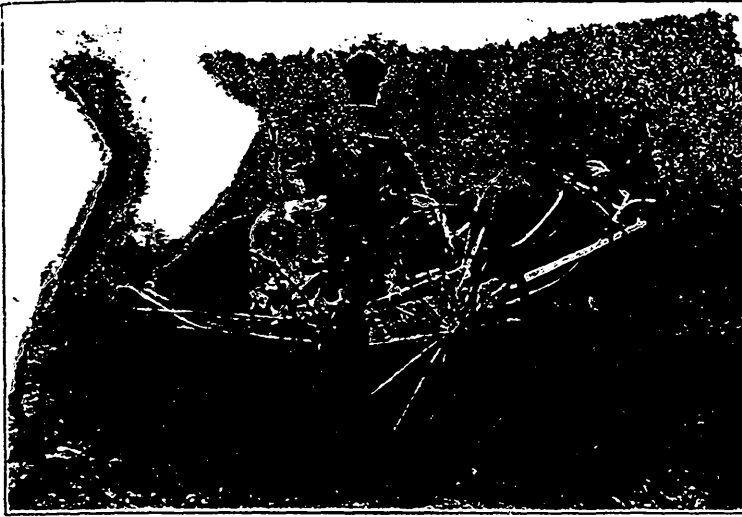
"My new machine can be operated by one man. It has eight nozzles, and I expect to be able to apply at least 16 barrels of mixture a day on grapes, and with about half the labor. It can also be used for spraying trees. If the horse is well trained one man is all that is required to operate it in the orchard, but otherwise two men may be necessary. One of the points I like best about this machine is that it is lighter than any other I have seen and generates the power from the axle with much less draft.

"This year I expect to spray three or four times with the Bordeaux mixture, but if the weather is very wet I may have to spray five

spraying mixture, not only for his own use but for the use of other fruit growers in the vicinity.

"This year is my first experience using a gasoline engine to furnish power for my spraying," said Mr. Smith. "I have used it freely, and find that it is very cheap to operate, as the gasoline only costs about 25 cents a day, during which time I am able to apply 800 to 1,000 gallons of mixture. Two men are all that are required to run the engine and do this spraying. When I used hand power I was only able to apply about one-third the quantity of material with the same number of men. It costs about eight to ten dollars for the gasoline for the season's work when 300 to 400 barrels of the mixture are used. Other years it has cost three times as much for the power. My outfit, including the tank, engine and pump, cost \$240. I am able to use the gasoline

An enthusiast in the matter of spraying was found on the next farm in the person of Mr. E. M. Smith, who this year has two hand pumps and one gasoline power outfit with a 120 gallon tank, all of the Spramotor Company's make, of London, Ont. At the time of the visit Mr. Smith had his power outfit at work in his plum orchard and was holding large quantities of



Mr. Pettit's Spramotor at Work in the Vineyard

With this outfit it is possible to thoroughly spray vines on both sides of the cart at the same time.

engine not only for spraying, but for cutting feed, sawing wood, and other work of that nature. It is a three horsepower machine. Before buying my spraying outfit I examined the others on the market and became convinced to my satisfaction that the Spramotor machine I purchased was the best as regards ease of operation, cost of power and durability. The chief feature in its favor, in my opinion, is the quickness with which the spray can be applied. When loaded with liquid it weighs about one ton. By deriving the power from the engine no hardship is entailed on the horses."

Adjoining the orchard there were nine barrels in which the lime and sulphur mixture was being boiled. The mixture was cooked by steam secured from the engine. The cooking operation lasted about one and a half to two hours. Eighteen pounds of sulphur were used to 36 pounds of lime. Mr. Smith explained that for the convenience of his neighbors he boiled this mixture and sold it to them for 90 cents a barrel on the place. "I boil about 300 barrels of lime

and sulphur," said Mr. Smith, "which is applied to the trees while the buds are dormant. I spray once with the lime and sulphur and three times with the Bordeaux mixture."

"How many acres have you in fruit?" was asked. "About 35," replied Mr. Smith, "including 1,500 or 1,600 peach trees, 2,500 plum and pear trees, and 12 acres of grapes. I spray everything. This year I started spraying about April 13, and expect to get through by May 1. As soon as the blossoms drop I start with the Bordeaux mixture on the plums, pears,

grapes and apples. Very few growers in this vicinity spray as thoroughly as I do, but I have found it has paid me to do it thoroughly. My plums last season netted me about \$2,500. They were a very clean crop, and I believe the large percentage of first-class fruit was due to the spraying. Most of my neighbors who did not spray had a very light crop. This year the majority of them are spraying. If I had used the Bordeaux mixture on my grapes last year I believe I would have saved the whole crop. As it was I only had about a third of a crop, owing to the rot which made its appearance for the first time in my vineyard. I sprayed one row with the Bordeaux mixture as a test, although when it was applied I did not expect to be troubled with the rot. Out of the 75 or 76 rows in the vineyard the one I sprayed was the only one that was good. This year I intend spraying every vine."

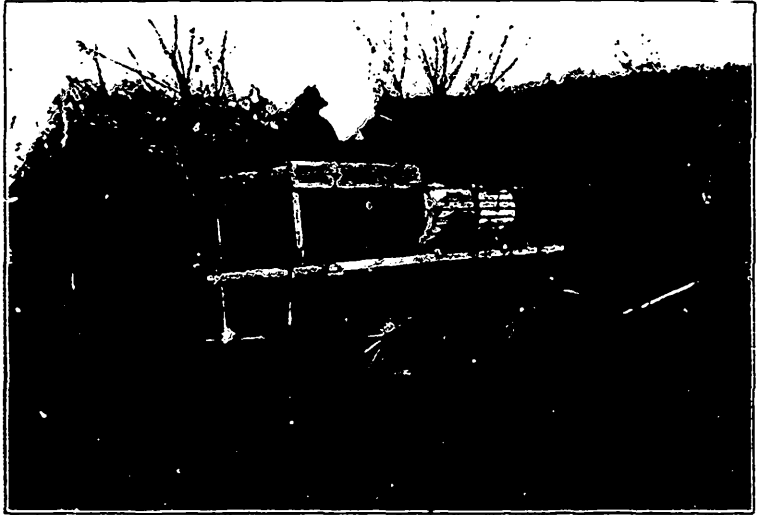
"What do you find your spraying costs?" was asked. "Last year," replied Mr. Smith, "it cost about \$250. This year the cost will be \$350 or \$400. While this may

seem heavy, I am satisfied the spraying increases the saleable portion of the crop 25 to 50 per cent., which means that the work is a splendid investment."

"Are there many growers using the Spramotor gasoline outfit?" was inquired. "There are three in this vicinity," said Mr. Smith, "including Mr. A. G. Geddes, Mr. A. Vance Cline, both of Winona, and myself."

Like Mr. Pettit, Mr. Smith was satisfied that when he purchased his machine he secured the best for his purpose that there is on the market. While visiting at Mr. Smith's place the representative of The Horticulturist had his attention drawn to a pail that was being used for screening the spraying mixture into the tanks. It was fitted with a tube in the bottom, out of which the mixture ran. In the inside of the pail there was a conical screen with the top of the cone pointing up. As a result of this conical shape, the screen, when the mixture was poured into the pail, did not become clogged as the rush of the water carried the sediment from the top of the cone down the screen to the sides of the pail and allowed the mixture to run through the top part of the screen. Mr. Smith was quite enthusiastic in regard to the pail. "It cost me," he said, "about \$1. and I save 50 cents worth of time and bad language every day through having it. Only three or four

are being used in the neighborhood. The pail is simply an ordinary galvanized iron pail. I bought a foot square of brass screen with a mesh of about 30 to the inch. The pail and the screen were taken to a tinsmith who put a three-inch tube into the bottom of the pail and fitted the screen inside. It is a great convenience for, as fruit growers



Mr. Smith's Gasoline Spramotor Outfit at Work

know, an ordinary flat screen soon becomes clogged."

While The Horticulturist's representative did not have the time to visit other fruit growers in the vicinity, he learned that among others who were using the Spramotor power outfits, which seemed to be very popular, are Messrs. F. M. Carpenter, C. J. Carpenter & Son, J. S. Cockburn, J. J. Foran and John A. Foran, all of Winona; W. M. Orr, of Fruitland; G. L. Book, of Grimsby, and Robert Thompson, of St. Catharines.

Spraying will save the apple crop when nothing else will. It must, however, be done thoroughly or it might as well not be done at all.—(Adolphus Pettit, Grimsby.

I do not know of any way in which farmers with orchards can make a better percentage upon the outlay of effort and money than by spraying their trees.

The Gravenstein Apple in Ontario

LINUS WOOLVERTON, GRIMSBY, ONT.

THIS famous German apple is a universal favorite. The excellence of its flesh, its beautiful and attractive exterior, its abundant productiveness, and its large size all combine to make it the very best apple of its season. It is not a very old apple. The first description of it was written about 100 years ago by a German pomologist, and about 1850 it is said the original tree was still standing in the garden of the Duke of Augustenberg, at the castle of Grafenstein, in Schleswig-Holstein, Germany.



Gravenstein Trees in Bloom.

The apple is widely grown in western Europe as an early fall market apple, and it is this apple that has made the Annapolis Valley, in Nova Scotia, famous: so much so, that many people suppose there is no place equal to it for apple culture. As a matter of fact this apple can be produced

in Ontario quite as perfect, and possibly larger in size than in the Annapolis Valley, and it is a mystery why our apple growers have not planted them. Very seldom do we find an orchard of the Gravenstein in Ontario, and indeed rarely do we find even single trees of this excellent apple.

The illustration shows a row of trees of this variety, now about 50 years of age, growing on the experimental grounds of the writer. No trees on the place are as beautiful in blooming season as these; the great, pure white blossoms throw all other varieties into the shade, and attract the ladies in search of floral decorations. The fruit makes the most delicious sauce, and the very best of apple pies: while for a commercial variety it is unexcelled. The fruit is clean and uniform in size, and it commands the highest price in the British markets.

Pears in an Apple Orchard

D. JAMES, LANGSTAFF, ONT.

I HAVE only about 20 or 22 pear trees planted in and about my apple orchard. They were planted for home use and not to make money, but having more than required I always sell the surplus.

The Flemish Beauty has been the most profitable. The Improved Kieffer is good for canning and will keep well for shipment to the northwest. The Bartlett is not a healthy tree, but of course the fruit is luscious. The Ritson, Buerre Clairgeau and Buerre d'Anjou are grown, besides some with whose names I am not acquainted. A late fall or winter pear is the most profitable, as the grower is not forced to market them as soon as gathered. The Winter Nellis is highly spoken of by others.

There is no place in Ontario where co-operation in the spraying and marketing of fruit is more neglected and more needed than in the Georgian Bay district.—(Wm. Patello, Creemore, Ont.)

SPRAYING WITH THE NEW K. L. MIXTURES *

THE San Jose scale made its appearance on chestnuts and various shrubs in the United States as well as on fruit trees, said Mr. A. N. Brown, of Wyoming, Delaware, in his talks before the Niagara Peninsula Fruit Growers' Association, last month, but it has been fought successfully and it is the duty of fruit growers to fight it persistently and to gain control. The black rot is another prevalent disease, but it has been successfully combatted. In the state of Delaware spraying has been attended by the most satisfactory results. The trees have been made almost immune from attack. A healthy tree will resist attack. Trees can be made healthy by spraying, which will kill other pests as well as the scale. An addition to the wash will kill fungi.

He would advise against the use of caustic soda, but the lime, sulphur and salt wash is good. Oil—crude or refined petroleum—will kill scale. There is a soluble oil in use—19 gallons of water to one of oil is the proportion. The new K. L. mixtures which are being experimented with, and which promise to be most effective, were described by Mr. Brown. K. L. is made from kerosene and limoid, the latter a high grade magnesian lime, with 40 per cent. magnesia. The proportion for the mixture is one quart of oil to one pound of limoid. Crude oil will not do. It is a question whether K. L. can be used in Canada on account of the expense of refined oil. In the United States they can buy it for seven and a half cents per wine gallon by the barrel, and at that rate they can use it.

A test was made at two or three of Mr. Brown's demonstrations to see if ordinary Canadian lime can be used instead of limoid, and though only partially successful

it appeared as if it might. Bordeaux mixture can be used instead of water, and the wash K. L. B. then becomes a fungicide. By adding a poison, such as Paris green, London purple, or preferably arsenide of soda, it becomes also an insecticide, K. L. B. P., and will kill chewing insects, such as codlin moth, etc. The lime is simply a conveyor to carry the oil evenly to all parts of the tree so as not to burn any part, which oil is liable to do.

The advantage of K. L. is that it is easily made and will do for a summer wash and has greater covering capacity than other washes. When dry slaked or air slaked lime is used the mixture must be agitated violently for five minutes to emulsify it; when limoid is used the agitation need only continue three minutes. When thoroughly emulsified the kerosene is not likely to separate from any of these forms of lime.

It is important that the materials used should be pure. Every part of the tree should be thoroughly sprayed, otherwise the scale will not be killed and will soon spread. The wash should be in the form of a spray, not a sprinkle. Large orchardists should use power machines.

If the Bordeaux mixture is properly mixed, said Mr. Brown, one application is enough. The bluestone may be seen all season on his trees from one application. He used arsenide of soda because it is soluble in water, other poisons are not, but it is a rank poison and has to be used very carefully. It is better than Paris green and only costs half as much.

The K. L. B. P. mixture, Mr. Brown claimed, is a panacea for all the pests of the orchard—sucking insects, biting insects and fungous diseases.

I believe in thorough cultivation of the peach orchard and heavy pruning.—(Adolphus Pettit, Grimsby, Ont.)

If left to itself the San Jose scale will destroy an orchard in two to four years. Spraying is the only remedy.

* This article, owing to crumh of matter, was crowded out of the April issue.

NOVA SCOTIA AS AN APPLE GROWING PROVINCE*

RALPH S. EATON, KENTVILLE, N. S.

ON account of the general large crop throughout all apple growing countries and especially in England, the prices for fruit shipped before December 1, 1904, were very low, the lowest since 1896. Many fruit men would have been better off had they left their Gravensteins on the trees. Blenheims were particularly clean and their seemingly spot proof skin advanced them many points in their position among the most desirable varieties. The King, too, though always popular, strengthened its place on the markets last year.

Comparisons between Nova Scotia fruit growers and others are usually interesting. Knowing that the great bulk of our apples are grown in a little valley between Windsor and Annapolis it is natural that we should be curious to see how our output compares with the big province of Ontario and some apple states of the Republic. Our fruit business occupies a conspicuous place and may be regarded with pride. The value of its exports exceeds the value of the combined export of all our other farm products.

From carefully prepared statistics of the International Apple Shippers' Association the following estimate is made of the crop for 1903, a year of good average crops for Ontario and the States mentioned:

	Barrels
Nova Scotia.....	525,000
Ontario.....	547,000
Maine.....	500,000
Massachusetts.....	132,000
Pennsylvania.....	173,000
New York.....	3,184,000
Ohio.....	240,000

Fruit growing has increased the value of farms in fruit districts from two to five times the value of farms of equal area in other parts of Nova Scotia. It has changed many acres of our country from a value of \$20 or \$30 to the selling value of \$1,000. It has changed hundreds of farms from a

value of \$1,000 or \$2,000 to \$10,000. It has changed dozens of farms from a value of \$2,000 or \$3,000 to \$15,000 and \$20,000 and a number to \$25,000 and \$30,000. It has advertised the province more than any one of its products. In visiting, a few years ago, a number of horticultural societies and fruit men of the United States, I was met almost invariably with the question, "Are you from the great fruit district of Nova Scotia?" It is probable that more people in the world know of Nova Scotia from its fruit than from any other source.

The average yield of apples in Nova Scotia for the last 10 years has been about 300,000 barrels. The bearing orchards 25 years of age and upwards well cared for have been producing during this time about 100 barrels per acre. All orchards are not well cared for and perhaps 50 barrels per acre would be a fairer average estimate. This would show the crops to have come practically from 7,000 acres or 11 square miles, or a square of about three and a quarter miles. Does this not seem almost incredible? Yet this small square properly cared for will produce 700,000 barrels annually.

The area of Nova Scotia is 21,731 square miles, about 2,000 times the area producing our apples. Only a very limited proportion of this area is not suited for this fruit. This has been proved in many ways. The county exhibits at the Provincial Fair substantiate this. Hants and Pictou are magnificent counties for fruit and each could be growing as well as not, without the slightest interference with the other crops, a million barrels of apples annually. Beautiful apples have been grown in the most northerly points of Cape Breton and southerly parts of Shelburne, Lunenburg, Yarmouth, Digby, Halifax, Antigonish and Victoria. Many growers in these districts consider

* An address delivered at the last annual convention of the Nova Scotia Fruit Growers' Association, of which Mr. Eaton is president.

their apples excel the "Valley" in quality. It has been largely accidental that King's and Annapolis counties have been growing the great bulk of the fruit.

During the next 10 years King's county, Nova Scotia, will be rather conspicuous for its output. Though from one standpoint the plantings of recent years have been few, yet in the aggregate they have been sufficient to put the crop at 500,000 barrels in the near future. The setting of 1,000 to 2,000 trees by an orchardist of late has scarcely caused a passing comment. Fifteen years ago 1,000 barrels was the highest mark for a single farm. Eight years ago 2,000 barrels was the largest figure. Two years ago 3,300 barrels were harvested from one property. Within five years 4,000 barrels, within 10 years 5,000 to 7,000 barrels will be shipped by a single grower.

After evolving a scheme for encouraging

the more rapid development of fruit culture in the other counties I presented it to the government of the province. It included the planting of one to three model and experimental orchards in the most desirable localities in each county and the securing of five to ten farmers in each locality to duplicate in area and in care the pattern set by the government.

The government has adopted the scheme in part, having established one or two orchards of two acres in each county. The success of the scheme submitted should aid largely in stimulating the planting in large areas around each nucleus and quite rapidly cover the bare fields with trees supplying a variety and quantity of fruits which will make each county produce, it is hoped, in the not far distant future, as much as either King's or Annapolis counties are growing to-day.

CANADIAN APPLES IN ENGLAND

T. H. RACE, OTTAWA, ONT.

WHAT becomes of all our good Canadian apples is a question that I have been asking myself during the past two months without a satisfactory answer. I do not find them on the tables of our ocean steamers, nor on the hotel tables in England, nor on the large market stands, nor in the shop windows. On the Cunard and Anchor line steamers, both British lines, nothing but a third class Baldwin can be found upon the tables. In fact throughout England it was Baldwins of a low grade that I found offered everywhere. Having been in England for the past two months in charge of the Canadian exhibit at the Colonial Products Exhibition, Liverpool, I made it my business to see and learn all I could of Canadian fruit there. For our exhibit we had 55 boxes of well selected apples, Ben Davis, Spitzenburgs, and Blue Pearmain from British Columbia; Peerless, McIntosh Red from the St. Lawrence valley; Spys,

Baldwins, Stark, Ribston Pippins, Greenings, Kings, Golden and Roxbury Russets and Cranberry Pippins from Ontario, Quebec and Nova Scotia. In all the boxes each apple was wrapped in a separate piece of paper. "I here was never before such an attractive display of apples seen in Liverpool. "Why cannot we get our apples done up in that shape here in the market?" was the question that everybody asked. We wholesaled our stock to one of the most enterprising dealers in Liverpool at six shillings a box, and he disposed of them at a large profit, as he said himself, "like wild fire."

I do not know that this price, six shillings, would pay the packer, but we could have got two shillings more just as easily, only we wanted to give the dealer a chance to boom them, which he did.

One morning I visited St. John's market, the largest in the city, and I saw there any

amount of United States apples, all low grade, selling at four pence and five pence per pound. No one seemed to be offering a fine quality got up in an attractive shape with the placard, "grown in Canada," as we recommended to the dealer who got our stock. Another morning I visited the great wholesale mart and saw lot after lot of United States Baldwins knocked down at 10 to 14 shillings per barrel. After these had been disposed of a few lots of No. 1 Newtown Pippins were offered and were snapped up at 20 shillings per half barrel. This convinced me that there is as much in a name and a condition as in quality. Establish a name for our No. 1 Spys, offer them in an attractive condition, and there should be as much money in them as there is in the American Newtown Pippin. Another thing that attracted special attention

in our exhibit was the nicely packed boxes of evaporated apples. We distributed a few samples of these among the better middle class and in every case the recipient came back and pronounced them delicious. We disposed of our stock of these also to the dealer already referred to—Thos. Dowd, of Moorefield Place, Liverpool—who is going to introduce them to the Liverpool trade. I see no reason why a very large trade should not be secured in England for this Canadian article. So far as Liverpool is concerned I believe the matter is in good hands, and if Mr. Dowd does as well for Canada as has been done for the island of Jamaica in handling her fruits and finding consumption for them, it will be well for the Canadian growers, packers and producers to get into business relations with him.

NOTES ON SPRAYING

PROF. W. LOCHHEAD, O. A. C., GUELPH.

FRUIT growers and gardeners should give considerable thought at this time of the year to the selection and purchase of spraying materials. They must take for granted that injurious insects and fungous diseases will attack their crops this coming season and should be prepared to meet their attacks successfully.

The secret of successful spraying lies in a thorough knowledge of the habits of the injurious insects and fungi, and in the intelligent application of the chemicals which have been found most effective as insecticides and fungicides. Some sucking insects, like the San Jose scale and the pear psylla, can be best treated in the spring before the buds open, with the lime-sulphur solution. The preparation of this solution is well known. Where the orchard is large it is advisable to boil the lime and sulphur for one and a half or two hours, according to the formula in use for the last two years.

The lime-sulphur solution applied to peach trees will prevent leaf-curl to a large

extent. It is also, therefore, a valuable fungicide. As soon, however, as the buds open other solutions must be used. The standard fungicide is Bordeaux mixture. The 4-4-40 formula is generally employed in Ontario, *i. e.*, four pounds copper sulphate, four pounds quick lime, 40 gallons of water. Stock solutions of known strength of the copper sulphate and lime are prepared and kept in separate barrels. Two precautions must be taken in making the spraying solutions: (1) The stock solutions should be poured separately into the barrel, which should be nearly half full of water. (2) The ferrocyanide test should always be made to determine if enough lime has been added.

TO KILL BITING INSECTS.

Some arsenic compound should always be mixed with the Bordeaux to poison the biting insects and caterpillars. Paris green is the one most commonly used, and at the rate of six to eight ounces to the barrel of Bordeaux. White arsenic, being cheaper

and more constant in strength, is being used quite extensively by many growers in the following forms:

1. Arsenite of soda, made by boiling four pounds of sal soda crystals in one gallon water with one pound of white arsenic. A pint of this solution is added to the barrel of Bordeaux.

2. Arsenite of lime, made by boiling one pound of white arsenic in two gallons of water for half an hour, then adding two

pounds of good quick lime. A quart of this solution is used with a barrel of Bordeaux.

One application, at least, should be made before the blossoms open, to prevent scab on apple and pear, brown rot on plum, and the ravages of the bud moth and the case bearers. Another application should be made after blossoming to prevent scab, brown rot, and the codling moth. Two more applications are necessary through the season if fruit free from scab is desired.

ONTARIO AND NOVA SCOTIA METHODS COMPARED

G. FRED. MARSH, CLARKSBURG, ONT.

AN interesting article by Mr. A. McNeill, Chief of the Fruit Division, appeared in *The Horticulturist*, in which he says: "The extent to which commercial fertilizers are used in Nova Scotia would seem most extravagant to an Ontario farmer." Mr. McNeill also says, "the Ontario grower might well envy the vigor of the Nova Scotian trees," and this vigor he ascribes chiefly to the better care and attention which the trees receive. These will all play their part, but no doubt a considerable part of it is due to the feed.

A farmer cannot expect a horse to do good work or a cow give a plentiful supply of milk unless they have the proper food; neither can a tree bring forth fruit year after year unless it is properly fed. In Nova Scotia a common application to a bearing orchard is 300 pounds of bone meal and 200 pounds of muriate of potash per acre, and when a tree carries a heavy load a further application of nitrate of soda is made in order that the growth of the tree may not be checked and the next year's yield thereby lessened. The effect of this fertilization is seen not only in the yield and quality of fruit but also by the fact that the off year, as it is called, is almost entirely done away with, and the Nova Scotia farmer can count on a crop each year.

In comparison with this picture the average Ontario orchard grows a number of

crops of grain and is then seeded down, and is usually suffered to go on producing hay indefinitely. It will be fortunate indeed if it gets an application of farmyard manure once in six or seven years, while the ashes which should be used to balance up the farmyard manure are shipped out of the country to help the United States farmer grow fruit. Surely the Nova Scotian apple grower would call this "extravagant practices."

At any station in Ontario can be seen the dealers screening and grading their ashes ready for shipment. The Ontario fruit grower must be very blind to his own interests when he allows as much as a million bushels of ashes to be exported annually from his farms.

A recent call on one of our fruit growers brought this very prominently before me. This gentleman had drawn out the trimmings and limbs from the spring pruning and piled them in a loose windrow, afterwards burning them and putting the field in corn. On the spot where the ashes had been plowed in the corn yielded at least twice as much as the rest of the field. When I asked what he would put in the orchard to take the place of the plant food which had been taken from the trees to make corn he was much surprised and did not seem to realize that an apple orchard required to be fed just the same as a corn field.

A Codling Moth Parasite

W. LOCHHEAD, O. A. C., GUELPH.

I HAVE received the following letter from Mr. Ehrhorn, Deputy Commissioner of Horticulture, California, regarding the parasite of the codling moth which he has introduced into California. The codling moth is not nearly so destructive in Europe as in America, and it is generally suspected that a certain parasite keeps the moth in subjection.

Horticulturists are greatly interested in the codling moth, which involves millions of dollars losses annually. For many years entomologists and others have been searching for valuable parasites which, if propagated in sufficient numbers, would keep it in check.

Mr. Ehrhorn's letter is as follows: "We have a parasite of the codling moth, and some have been liberated in various sections of California and we are breeding them at our office. I am unable to give much information with regard to the parasite, as the time has been too short to make any extensive observations, but this very insect keeps the codling moth in check in Europe, and we are in hopes that it will do the same for us in California. Time only will determine whether or not the parasite will do the work."

Trees Which Failed to Grow

W. T. MACOUN, HORTICULTURIST, C. E. F.,
OTTAWA.

I set out a few apple trees last spring. Some of them did not make any growth, yet they are as green as can be right to the top. I also planted an Austrian pine. It does not look very well, although it is green. Do you think they will grow?—(Chas. Derdaile, Walkerville, Ont.)

If the apple trees and pine trees were still alive in the autumn of 1904 it is quite likely that they will live. It very frequently happens that when trees are received in poor condition, or if the soil is not properly prepared, or the trees not planted carefully, that they will make little or no growth dur-

ing the first season. If the winter is very severe it is quite possible that the trees may die, as trees that are not in a thrifty condition suffer, but the chances are that they will live.

What Varieties Would Be Best?

PROF. H. L. HUTT, O. A. C., GUELPH, ONT.

What varieties of fruit are best suited for Simcoe county? Will chestnuts and filberts grow here?—(W. A. Platt, Phelpsston.)

You have in your immediate neighborhood at Craighurst one of our Ontario Fruit Experimenters, Mr. G. C. Caston, who could give you more reliable information on the subjects mentioned than any one else I know of in that part of the country. The varieties of apples he has found most profitable are: Duchess, Alexander, Blenheim, Ontario, Spy, and Guano. The Duchess is, on the whole, one of his most profitable varieties, but it is a fall apple, and it would not be wise to plant largely of it unless you are sure of being able to handle the crop in the proper season for market. The Blenheim, Ontario and Spy succeed best when top worked on some hardy stock, such as Tallman Sweet.

Chestnuts and filberts would not be likely to succeed in your neighborhood. Chestnuts grow well naturally in the southern parts of Ontario, but I know of no place where they have been successfully grown in the northern parts of the province. Filberts are barely hardy enough for the southern sections, and it would be useless attempting to grow them in the northern portions of Ontario.

It would be better for Nova Scotia if there were not more than half a dozen varieties of apples in the whole province and certainly in a neighborhood it would not be wise to grow more than half a dozen. No farmer should have more than three varieties on his farm for export.—(A. McNeill, Ottawa, before Nova Scotia Fruit Growers' Association.)

PRUNING IN THE SPRING *

J. M'P. ROSS, TORONTO.

I DO not know any gardening operation that gives as much pleasure to the reflective mind as pruning. Every bud has an individuality of its own, as it contains the duplicate of the stem or branch it is on. No branch should be removed without a reason, and the trained horticulturist can see at a glance why such and such a limb should be cut back or thinned out. The pleasure comes in feeling that your work is done understandingly.

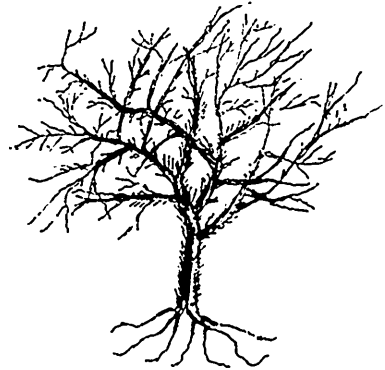
Pruning is identical with cultivating. As the gardener hoes out the weeds between the rows and thins the plants in the row for the purpose of giving sun and air to those that are left, knowing that when they are developed they will require all the space left, so the intelligent pruner thins out the branches on the shrub, vine or tree so as to allow the sun and air to benefit the fruit. By the removing of the surplus growth he sends the sap that would have otherwise gone to supply branch, leaf and fruit into the remaining branches, foliage and fruit, making sturdier branches, larger foliage and finer fruit.

It is a great pleasure to the pruner when he comes to a tree or bush that is full of wood, misshapen and neglected, to put it into proper shape, that is, to have the branches nearly balanced all round, to prune so as to leave the stems or branches all about the same dimensions; if the growth is too much to one side to shorten that well back, thus sending the sap to the weaker side.

We prune to produce form, to produce fruitfulness and to restrain fruitfulness. To produce fruitfulness summer pinching is practised. When a tree is growing luxuriantly and not fruiting the reason is that the roots are revelling in rich soil with abundant food and sending up sap so freely that it is simply making wood. To check this, when the young shoots are, say, six inches long, nip the end off with the fingers.

This checks the growth and induces the tree to form fruit buds which will fruit next year. Bending the branches down by tying on weights is another system. Any method will answer that retards the sap. Root-pruning is also effectual. This is done by digging a trench around the tree and cutting the leading roots with the spade, which is almost akin to transplanting. This generally results in throwing the tree into fruit bearing. Going over the tree when in full growth and pinching back the leading shoots two or three times is the most effectual.

Some seasons are so cold and wet when the trees are in bloom that the bees and in-



Gooseberry Untrimmed

sects cannot fly, and the blossoms are not fertilized, and sometimes late frosts are reasons for loss of fruit.

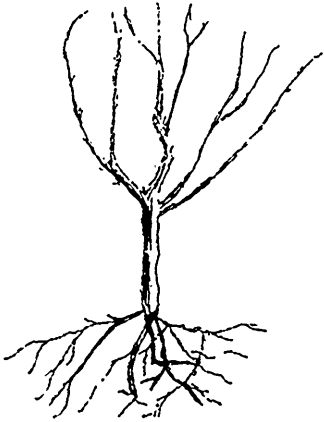
OVER PRODUCTION.

To restrain over production of fruit prune the limbs hard back. This removing of the wood leaves fewer buds on the tree, and when they grow having more sap to draw on they produce larger leaves to draw the sap, inducing a healthier, thriftier growth all round the tree, entirely renewing the wood. Old trees exhausted by bearing can thus be renewed into bountiful growth and a new lease of life of fruit bearing.

Very few flowering shrubs should be trimmed at this time of year, but should be

* A paper read at the April meeting of the Toronto Horticultural Society.

left till after flowering, as any cutting back now or thinning out means merely removing so many flowering branches. Above all things do not clip them into round heads, as it totally destroys the individual growth with its characteristic grace, leaving nothing but meaningless round form, abominable in its stiffness. The hydrangea is the only



Gooseberry Trimmed

shrub that should be well clipped back in spring before growth. All others should be pruned or thinned out after the flowering season is over.

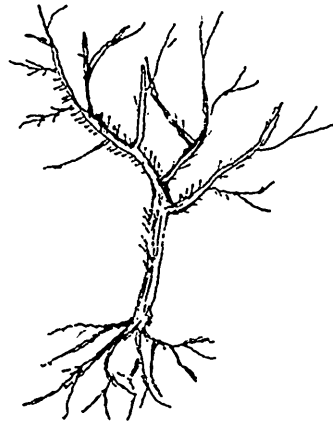
Raspberry canes cut back to within six inches of the ground will give a crop of fruit later in the season, after the other canes pruned back in the ordinary way have fruited and gone.

We all know how much finer the fruit is that is grown on young bushes or trees. It is generally larger and always perfect, with high color and shining skins as though polished. This is accounted for by free open exposure to sun and air, and this fact should point out strongly the benefit of pruning, which always should tend to keep the bush or tree open and well supplied with vigorous wood. The character and habit of growth of different varieties of fruit trees has also a bearing on the pruning necessary for each. The pruning required for Northern Spy should always be to widen the

branches and open the centre, as the tree has an upright tendency of growth similar to the lombardy poplar. As a contrast, in the case of the Rhode Island Greening, the object is to promote an upright tendency, as the habit of this variety is to spread out, and its branches after bearing soon touch the ground unless the pruner lifts them up.

The tendency of sap is always to the top bud, which if not cut back goes on indefinitely. The King of Tomkins is an example.

Pruning to produce an equal distribution of sap in all the branches consists in thinning out the branches so as to have the growth of the tree equally balanced all round. As the sap always ascends to the top of the tree, leaving the lower branches in a feeble condition, it is necessary to cut back the leading shoots so as to force the sap into the lower branches and thus keep up a uniform growth. Pruning the smaller branches on the strong part of the tree and leaving them on the weaker part restores



Rose Untrimmed

the balance, as by removing the branches you remove the foliage which attracts the sap, and leaving branches with their foliage on the weak part induces the sap to go there, thus increasing the strength of the tree in that part.

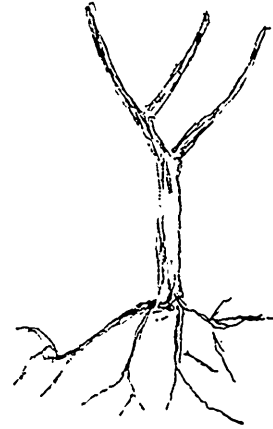
As gooseberries bear their fruit on the two-year-old wood it is necessary to always keep a few strong shoots growing to keep up the head and renew the bearing wood. These shoots are shortened back next year to produce lateral fruit-bearing branches. In short the bush should be trimmed to have say five leading branches placed at equal distance from each other, with the center open to avoid density and confusion.

Roses require hard cutting back, particularly hybrid perpetuals. Fully two-thirds of last season's growth of wood should be removed. This hard cutting back and thinning out weak growth induces such a vigorous growth and large sappy foliage that insects do not molest them, but leave them for weaker foliage. The blooms will also be larger and sweeter scented, both qualities greatly to be desired and produced by severe cutting back.

Persian Yellow and Austrian roses should only be pruned every second year, while the Crimson Rambler type of roses require no pruning beyond removal of weak or dead wood, or the removal of a branch growing where it is not desired.

Climbing roses of the Prairie type require sharply spurring back, and long leading branches should be cut back to firm wood

by thinning out into branches or canes of similar thickness. Disbudding roses, or rubbing off those buds not wanted prevents after confusion and economises sap. When cutting back the shoots cut close to an eye, leaving as far as possible full plump buds as



Rose Trimmed

more likely to produce flowers. Cut also those pointing outwards as more likely to give a handsome shape. Moss, Provence, Damask and Austrian roses should be cut back to within two or three eyes of the riper wood. Vigorous growing kinds do not require too close pruning, but weaker growing kinds should be severely cut back.

HOW TO PLANT STRAWBERRIES

J. O. DUKE, OLINDA, ONT.

IN planting large patches of strawberries I have had the best results by simply plowing a furrow across the field and setting the plants against the land side of the furrow, which is filled in at once on the return of the plow, marking out going one way across the field and filling in the furrow coming back. Six men can plant as fast as one man with a team can mark out and fill in, thus planting quite a large patch in a day.

The furrows should be about four feet

apart and most varieties may be planted three feet apart in the row, though some kinds, like Michael's Early, which produce many plants, can go four or five, while Burbach and Clyde, which are not heavy plant producers, should be planted 18 to 20 inches. Strawberries planted in this manner should be cultivated and well hoed within a week of planting, then cultivated often enough during the summer to keep them free from weeds and grass. Care should always be taken when cultivating to run the cultivator

the same way in the row, thus training the runners in one direction.

Blossoms and fruit should be clipped off as soon as they appear. Planting should be done about May 1, and not later than May 10 in southern Ontario. The rows should not be allowed to become more than

18 inches wide. It is a good plan to sow the patch to oats as soon as enough plants have formed. This prevents the formation of a lot of weak plants late in the fall, and also provides a nice mulch. If this is not done the patch should be well covered with clean straw early in the winter.

BEST VARIETIES OF FRUIT

“IN raspberries the Turner and Reliance,” said Mr. A. E. Sherrington, of the Huron fruit experiment station, to a representative of *The Canadian Horticulturist*, “have been found to be the two best early varieties in this vicinity, and the Cuthbert and Phoenix the two best medium and late varieties. In currants, of the reds, Fay’s Prolific, Pomona and Versailles have proved to be the best varieties, both in productiveness and quality. Among the blacks the Champion and Naples have been the most satisfactory in every respect, including growth of bush and fruit, as well as quality.

“Of white currants the White Grape is the best variety. The experiments with gooseberries have shown the Downing and Pearl, both of which are American varieties, to be the best and most profitable. The Red Jacket, also an American variety, is very promising but requires further testing.

“The three favorite strawberries are Michael’s Early, Sanders and Brandywine; the last two are the best for canning. The apples that have given the best results include the Spy, Ben Davis, Rhode Island Greening, Duchess, Baldwin and Golden Russett. Many other varieties have done well but have not proved as prolific commercially. Among the promising new

varieties are the Northwest Greening, a winter variety which has a healthy, vigorous tree, is an early bearer and produces much fruit of fair quality, and the Salome, a very desirable winter apple.”

IN THE BURLINGTON DISTRICT.

“Among the best varieties of red currants for the Burlington district,” said Mr. A. W. Peart, of the Burlington station, “are the Victoria, Wilder, Cherry and Fay’s Prolific, for early varieties, and North Star and Prince Albert for medium to late varieties. In black currants the most desirable commercial varieties are the Sanders, Naples and Collins’ Prolific, the latter being a late variety. In white currants the Grape is the largest and most productive, while the Imperial is superior in quality. The severe weather of a year ago had the effect of drawing the line between hardy and tender varieties of blackberries very closely. Those which passed through and cropped last fall out of a list of 22 varieties were the Agawam, Western Triumph, Snyder, Ancient Britain, Eldorado, Stone’s Hardy and Wachusetts. For a commercial plantation Mr. Peart considers the best paying varieties are the Agawam, Snyder, Kittatinny and Western Triumph.”

I have tested 15 varieties of blackberries and have narrowed them down to two, and these two fill the bill for this locality. They are the Eldorado and Agawam. They lose none of their bearing wood during cold

winter and give excellent crops, both in quality and quantity.—(G. C. Caston, Craighurst, Ont.

We couldn’t do without such a paper as *The Horticulturist*.—(C. W. Mitchell, Pt. Elgin, Ont.

The Strawberry Patch

MRS. JOHN GILFILLAN, KIRKTON, ONT.

ROWS of strawberry plants are usually placed about three and a half to four feet apart and the plants 15 to 24 inches apart in the rows, according to the thriftiness of the variety or varieties grown. The choice of varieties should only be made after actual test. Begin planting as early in the spring as possible, to get the benefit of early rains and thus give the plants a vigorous start.

Plants should always be well trimmed, all large or dead leaves removed, together with the tips of the roots, which will then branch out and take a firmer hold of the soil. Begin cultivation immediately after planting and continue throughout the season, thereby keeping weeds in check, conserving the moisture in the soil and confining the plants to their allotted space in the rows. Blossoms should be removed the first season, as well as any runners that may appear before the plants are in a sufficiently vigorous condition to support them.

Chrysanthemums in May

GEORGE HOLLIS, BRACONDALE, ONT.

MAY is a busy month for the chrysanthemum grower, especially for cut flowers. Cuttings of late varieties should be rooted ready to plant early in June. Keep the cutting bench rather wet and shade the plants from the sun. The air from the ventilators should be kept off them by hanging a curtain of cotton before the plants as, otherwise, the air will wilt them badly.

The early varieties such as the Bergsman and Monrovia should be planted this month. A good, stiff loam, which has been stacked for some time, is the best soil to use. Four wheelbarrows of this and one of well rotted manure (cow manure preferred), with some fine ground bone, say a four-inch pot full of the bone to each load, or two bushels of soil, makes an excellent mixture.

Clear the bench and give it a coat of new

lime. Put four to five inches of soil in the bench, the coarse in the bottom and the fine on top. Plant the early varieties about five inches apart in the row; if fine blossoms are wanted leave seven inches space. The late varieties need more room.

Pot the cuttings as soon as they are rooted. Do not leave them until they become hard and draw up thin, as if you do you cannot obtain high class flowers from such stock. See that the exhibition pot plants are kept near the glass and potted as needed, and grow the strongest shoots at the back. Syringe the plants with tobacco-water for the black fly, or fumigate them. A good start with chrysanthemums is a great advantage.

Planting Asters

FOR asters dig and rake fine about a square yard of rich soil in the open garden. If the soil is poor, dig in some well-rotted manure or cow manure. When the soil is fairly dry, make some shallow drills about half an inch in depth. The drills should be about eight inches apart. Sow the seed as soon as possible, thinly, about an inch apart in the drills. Rake the soil over lightly, sufficient to cover the seed. If the soil is dry, give it a light watering, using a fine sprinkling watering can.

When the plants are about two inches in height, transplant into rows about 15 inches apart. The plants should be about 10 inches apart in the rows. The soil should be prepared in the same way as for the seeds. The plants should be set in the soil a very little deeper than they were when growing in the seed bed.

One Layer of Manure to three or four of sod would be a better proportion for raising early vegetable plants than that given on page 146 of the April issue, as a compost less rich in fertilizing property produces a hardier and sturdier growth than when a very rich compost is used.—(Correction sent in by Mr. Hunt.)

Scarlet Salvia*

JESSIE EDMUNDS, BURLINGTON, ONT.

THIS is one of the best bedding plants we have where a great show of brilliant color is desired. Being a tall growing plant, it is very effective in groups for the lawn where prominent beds are desired. Its flowers are borne in spikes six inches long or over, and are the richest imaginable scarlet. So bright are they that they have a glow like that of fire when the sun shines on them, and so deep is their tone that they seem as if made of velvet.

A row of these plants make a magnificent background for a border along a fence or building on the sunny side. It is excellent for cutting. It is of the easiest possible culture. Either plant the seeds in the open border or under glass, to transplant when they are two inches high. Give them a rich mellow soil, keep the weeds down, and nothing more is required, unless the season should be dry, in which case it may be necessary to water daily.

If growing in the open, stake the branches as they are very brittle and easily broken by wind. If some of the shoots that spring freely from the roots are taken off and potted in September you will have a fine plant for winter blooming. The old plants will continue to bloom till frost nips them. The red spider is the one foe of the salvia, and if it makes its appearance the plant must be showered daily or it will be ruined.

Pruning Roses in other countries is generally done in the fall, but here it must be left until the spring, and I have found it most advantageous to leave it until the very end of April or the beginning of May, and the most to be done then is to remove all the dead wood, but some pruning may be necessary in the early part of July in cutting back to a few eyes some of the strong growing shoots, and thereby perpetuating the bloom.

—Robert Barclay, Winnipeg, Man.

Rose Culture

W. G. BLACK, OTTAWA.

IN selecting a place for a bed of roses the situation, as far as possible, should face the south and east. Roses require full exposure to rain and sunshine: they also require shelter from storms, north and west winds, and it is desirable to have a rose garden shaded from the fatigue of the afternoon sun. Beds should be so placed that each plant can be seen from the walk. This prevents beds being tramped on.

Taller growing varieties ought to be placed at the back and the smaller ones in front, but to accomplish this the young rosarian will have to make many changes after plants have grown. It is well to manure plants twice yearly, late in the fall and again after the first bloom of summer. Water should be freely given during the growing and blooming seasons. Let the manure in all cases be well rotted, and dug into the soil.

It will pay to give a little extra attention to newly planted roses. Care in childhood often determines the constitution of the man, so it is conducive to a healthy plant. To those who love flowers, there is an interest felt in the simplest operation of culture, for he who plants a tree adopts it as his own, and delights in administering to its wants.

Sweet Peas—An ounce of sweet pea seed will plant a row 10 feet long. Plant in trenches: cover at first with only an inch of soil, then as the plants grow, fill in one inch at a time. Put them in as early as possible. Water well each night, rich soil and blossoms picked daily is the whole secret. Sparrows are fond of peas when just peeping up. A shot gun is good for sparrows.—(N. S. Dunlop, Montreal, Que.)

If you cannot have suitable windows, have plants suitable for your windows.—(Mrs. W. J. McLenahan, Appleby, Ont.)

* Extract from address prepared for a Women's Institute Meeting

HOW TO MAKE CITY GROUNDS ATTRACTIVE*

MAYOR J. A. ELLIS, OTTAWA, ONT.

WHEN planning the improvement and beautifying of the grounds surrounding a city residence, the first thing to take into consideration is the natural surroundings. The object should always be to improve them where they can be worked into the general plan, and hide the disagreeable necessary features, such as sheds and fences, which are always to be found in conjunction with city residences.

I am strongly opposed to that kind of landscape gardening which consists in planting a number of trees, shrubs and flowers at random, or dotted all over the grounds, without any regard to what the general view

of which we say these are lovely or beautiful, but what is lovely or beautiful with one set of surroundings may be quite otherwise in different surroundings. It is difficult, therefore, to lay down a hard and fast rule for all cases, as each place will require somewhat different treatment from any other.

The first thing we must consider are the natural defects, such as sheds and fences, which we wish to hide. These should be hidden by trees, shrubs or climbers. Next, we must consider our natural advantages, such as the boulevard and any trees or shrubs there may happen to be about the place. Having got the frame of our picture,

we must decide upon how we will lay out the picture itself.

I am decidedly in favor of always having a foreground of lawn. The boulevard can often make part of this lawn and it is desirable in many cases to carry it along the sides of the house. At the back of the lot trees or tall growing shrubs should be planted, and if there is a fence climbers might be grown against it.



The Home of Mr. Jas. Thorne, Ottawa, Ont.

will be when they have grown up. The object should be to make as perfect a picture as possible, one in which the different trees, shrubs, flowers and the grass will form a part, but which when completed and placed in the proper positions will make a harmonious whole. A sure guide is one's own eye. Often we come across grounds

We have now got our background, the front of our picture, and the sheds and fences taken care of. What remains to be done is to fill in between these to the best advantage to complete the picture. The tallest shrubs should always be planted at the back, and everything gradually graded from the back and sides to the front. Every-

Extract from an address delivered before the Ottawa Horticultural Society.

thing should be so arranged that none of our trees, shrubs or flowers will be hidden but yet so they will blend together. The disagreeable surroundings must be hidden. We want a complete picture which will give several different and pleasing views from different standpoints.

I am a strong believer in the massing of shrubs and flowers with open spaces from the front. Many a garden is spoiled by dotting them here, there and everywhere, so that wherever the eye rests there is nothing but a conglomerating of plants and flowers.

LEAVE PLENTY OF SPACE.

One great mistake often made is to have the trees in front of the house and grounds too close together. The reason is simple. When the young trees were first planted they were planted thickly in order to get shade right away. After a few years they grow up, and in many cases it would be far better were some of them cut out. From 20 to 25 feet is little enough for a well grown maple, for example, and it is wonderful how vastly improved most trees are when given plenty of room. When the trees in front are too close together the grass on the lawn does not get sufficient light and air, nor do shrubs and flowers which may be near them. Leave sufficient space between the trees that one may see between them the beauties of the grounds. The best trees for street planting in Ottawa are the sugar maple and elm. The soft maple and the red maple are almost as good.

There are very few good climbing vines which are perfectly satisfactory in Ottawa. The climate in winter is too severe for most of those which do very well a little farther south. For instance in Toronto Boston Ivy does excellently, but in Ottawa it very frequently kills down to the ground in winter. This is a great drawback because after killing in this way it takes the best part of the summer to attain its former growth and vigor.

The common Virginia Creeper is an excellent vine in many respects, but it too has one drawback, and that is its liability to the thrip or green fly, which often nearly destroys the leaves in August or September, and makes it have a very ragged appearance, just when it should be at its best. Probably the best climber for Ottawa is a species of Virginia Creeper which is native to Ontario and is to be found growing wild around Ottawa. This has all the good qualities of the ordinary Virginia Creeper, clings much closer to brick, wood or stone, needs no training or fastening up, and above all is very little subject to thrip. It is being disseminated by the experimental farm.

Other good climbers are Dutchman's Pipe, Clematis Jackmanii, and Honey-suckles. Several varieties of roses can also be used as climbers, particularly the Crimson Rambler. Climbers can be used to grow against and hide fences and sheds, they can be trained up verandas and porches and against the sides of the house itself.

(To be concluded in June issue.)

SWEET PEAS IN THE GARDEN

R. B. WHYTE, OTTAWA.

SOW sweet peas as soon as they are received and where they will get plenty of sun and air. Do not plant where they will be shaded by trees. They do not bear many flowers if in a shady place. If you can, make your rows run north and south.

If you have good garden soil no special

preparation is necessary. Spread about two inches of rotten stable manure over the surface, if you can get it; dig it in deep; it should be covered six inches deep so that none of it can touch the seed. Stretch a string the length of your row so as to make it straight, then with a hoe make a trench

beside the string about four inches deep, drop the peas, one at a time, about two inches deep.

When they are in, draw back into the trench enough earth to cover the seeds two inches. With your foot press lightly along the row so as to bring the earth into close contact with the seed. If the soil is very heavy or clayey that is deep enough to cover the seed; but if light and sandy, when the plants are about four inches high, draw in over the roots another inch of soil, and if

very sandy fill up the trench to the top.

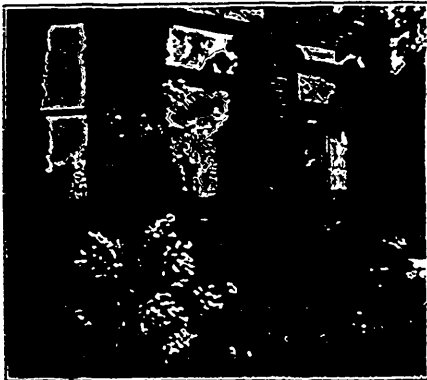
If your soil is very poor and sandy it will pay to take a little more trouble in preparing it. Dig a trench a foot deep and the same width. In the bottom put four or five inches of manure, cover the manure with three inches of the top soil, tramp firmly so that the seed bed will not be too porous. After tramping down, spread an inch or two of loose soil on which to plant your seed. Sow the seed, as directed above, filling in the trench as the plants grow, until full.

THE BACK YARD BEAUTIFUL

J. M. HULL, HAMILTON, ONT.

MY garden is 25 feet by 60 feet and was very hard clay. To improve it the first consideration was to have a good lawn, which should be in the center, and graded with a slope so as to carry surplus water away.

Having accomplished this the next step was to beautify the boundaries, such as fences, walls and outbuildings. I dug borders three or four feet wide along the fence and enriched it with good soil to a depth of 18 or 20 inches. Where space is limited no trees or shrubs should be planted on the lawn. All planting should be done in the border.



Front of Mr. Hull's House

In my garden are grape vines, Virginia creeper and honeysuckle, clematis and

rambler roses, which are perennial, and improve each year. I have annual vines, such as morning glory, scarlet bean, madeira vine



A Clump of Iris in Mr. Hull's Garden

and nasturtium, which grow quickly and soon cover a fence.

Next to the vines I place tall plants, such as hollyhocks, sunflower, native asters, plox, valerina, achillea and golden glow. The last named is a grand plant to hide a fence. It multiplies rapidly and is very hardy. In front of these iris, coreopsis, marigolds, snapdragon and zinnia are planted.

The border or edge has white candytuft. The garden is planted mostly with hardy plants, which are more satisfactory than annuals, and improve each year.

The banking of the foliage against the foundation, as shown in the illustration of the front of house, forms a connecting link between house and ground and gives the appearance as if the house grew there. The vines used are Boston ivy and pink rambler, which shows in bloom. It is not quite as grand as the crimson rambler, but is very pretty when in full bloom. The shrub in bloom is dentzia, Pride of Rochester, a double white and very beautiful. The other shrub is spiraea Van Houttei, one of the best shrubs, and grand when in bloom. The under planting is filled in with hardy ferns and pansy, which grow very well, as they are planted on the north side of the house.

The clump of iris is the florentina, a very sweet scented white, tinged with pale blue and yellow. The dark flower is a rich purple self-color. They make a lovely combi-

nation, as they bloom at the same time. I consider these two the best of German iris. Every garden should have at least a variety



A View in Mr. Hull's Garden

of these flowers, as they are very hardy and beautiful.

THE SPRING CARE OF ROSES *

W. G. BLACK, OTTAWA, ONT.

SPRING is the proper season to prune roses, though with some plants I cut back after the first bloom in July to obtain a crop of bloom in September. In speaking on this subject, the first question is, why is pruning necessary? Why should not our rose trees grow as fine and large as they will?

The answer is to be found in the manner of the natural growth of the rose. By watching an unpruned rose tree it will be found that first strong shoots flower well the following season, but next year another strong shoot starts considerably lower down, and this soon absorbs the majority of the sap, and eventually starves the original shoot, and is itself starved in succession by another. A rose in the natural state has this happen every year, and this is one of the first reasons why pruning is necessary.

The objects of pruning are to maintain the life and strength of the plants, and to

give more vigor, color and substance to the flowers, because there must be a considerable amount of strength and sap reserved for each bloom or some rose will not fully show the true colors. Each rose, in itself, must be a study for the pruner's art.

METHOD OF PRUNING.

The first care should be to cut out dead wood, and wood, no matter how thick or old, which is becoming weakly, in comparison with other stronger shoots. We should always cut back to the bud that looks outwards, and take care to see that the centre of the bush will not be too crowded, so that it can have air. Misplaced shoots, in the middle of the plant, should be cut off at the bottom. It may also break your heart to cut away some handsome branches, but it has to be done.

THE GUIDING RULE.

The answer to the question, how many buds are to be kept on each shoot, is to be

* Extract from an address delivered before the Ottawa Horticultural Society.

found in the golden rule of pruning, that more buds are to be left on the strong shoots, and less, in proportion, on the weak ones. Like Darwin's law of the survival of the fittest, you leave the strong plant long and cut away nearly all the weaker ones. The strong grower is capable of supplying several buds on each shoot with a sufficiency of sap for good blooms, and if a due number be not allowed the shoots will either not flower or will produce coarse and

ill shaped blooms. In proportion as a plant is weakly in growth, fewer buds should be left, because there will be only sufficient sap for one or two buds. The more a shoot is cut back the longer will be the new growth. To get rid of the insects that trouble rose-bushes, they require to be sprayed in spring with a solution of whale oil soap, or handier. "sulpho-tobacco soap," and a firstrate thing is to turn the hose on and spray them well and frequently with cold water.

Establishing Lilies

R. B. WHYTE, OTTAWA, ONT.

Could Mr. Whyte, whose garden was described in the March Horticulturist, tell me about establishing lilies. I know many amateur growers have failed. Of the last lot I got from Vermont none grew. I never have succeeded in establishing even one lily and would be glad if I could.—(Mrs. Rudolf, Seaford, Ont.)

Lilies succeed best when planted in a well drained, sandy loam, with a gravel or sand subsoil. As they should be planted deep there should be at least 12 inches of good fertile earth above the subsoil. Many growers fail from planting too shallow. The small bulb varieties like *Tennifolium*, *Martagon* and *Superbum*, should be planted about six inches deep, while the larger bulb sorts, like *Croceum*, *Auratum*, *Excelsum*, *Longiflorum*, etc., should have not less than 10 inches from the top of the bulb to the surface.

Lilies should be heavily mulched during the winter. As soon as the ground freezes cover with three or four inches of rotted stable manure, and over that six or eight inches of straw or light manure. Even with the greatest care many of the most beautiful forms do not become established. The *Auratums*, *Brownii*, *Longiflorum*, *Krameri*, *Lennifolium*, *Pardalinum*, and sometimes the *Speciosums* die out after two to four years' blooming and have to be replanted, but there is a long list of varieties that are perfectly hardy and easily grown if properly treated, including *Proceum*, *Martagon* (pur-

ple and white), *Superbum*, *Candidum*, *Tigrinum*, *Excelsum*, *Hansonii*, all the elegant varieties, of which *Citrinum*, *Incomparable* and *Houtti* are the best, all the *Umbellatums*, the best of this class I have grown are *Tottenhami*, *Sensation*, *Grandiflorum* and *Aurantiacum*. A very beautiful and hardy lily is *Pomponium Verum*, the most brilliant red in the family, but unfortunately the odor is very offensive.

Growing Sweet Peas Continuously

PROF. H. L. HUTT, ONT. AGRI. COLLEGE.

What fertilizer should be used to permit the growing of sweet peas in the same ground year after year. The ground is loam above with clay one and a half feet below?—(G. T. Clarkson, Toronto.)

It is best, if at all possible, to avoid growing sweet peas year after year on the same ground. Where attempted not only the growth of the vines but the quality of the flowers deteriorates. If the ground is so small that the location cannot be changed it might be advisable to change the soil by digging up a trench one and a half feet deep and about two feet wide and filling in with good fresh soil, which might be obtained from some other part of the garden.

The best soil for sweet peas is a good heavy loam with a fair mixture of clay. It should be enriched with a general fertilizer, such as well rotted manure, or if this is not obtainable, it would be well to apply a small quantity of some complete fertilizer, that is

one providing nitrogen, phosphoric acid, and potash. As a rule the sweet pea does not require much nitrogen, as it is able to take its supply from the atmosphere. It requires a liberal amount of potash and some phosphoric acid, which can be supplied in an excellent form in unleached wood ashes. In a fairly rich garden soil a liberal application of wood ashes would probably be all that is required.

Growing Early Tomatoes

GROWING of early tomatoes and other vegetables was the subject of an address delivered recently at Leamington by Professor Taft, superintendent of farmers' institutes for the State of Michigan.

Those who live along the north shore of Lake Erie, according to Prof. Taft, should have every advantage in growing early vegetables and the best varieties of fruit. The growing of early vegetables or the forcing of vegetables in winter should be very profitable.

Crops, especially those grown out of season, are peculiarly sensitive to injury or disease. If the weather is too warm or there is a defect in the drying of the soil, or if the temperature is too cold, the growth is checked and the plant injured. The right kind of plant food should be provided and the right quantity. The great danger is in giving too little food, but sometimes too much fertilizer or manure is used and the plant makes an abnormal growth.

Stable manure well rotted is perhaps the best food that can be provided for vegetables, but for fruit growing much more care should be taken in supplying plant food. Wood ashes is one of the best fertilizers for fruit trees. The great trouble is that ashes do not contain nitrogen, and if used for vegetable growing, good partly decomposed manure should be mixed with the ashes. In the growth of vegetables for profit fertilizers must be used in most soils. Potash and

phosphoric acid and nitrogen form component parts of the best fertilizers. Thus a grower who understands the elements in the soil, and who knows what his land requires, and is willing to expend a little, can generally be successful. Many of the fertilizers on the market contain a considerable percentage of valueless elements. The man who is able to get his goods on the market the earliest is the one who makes the money. Push the vegetables as fast as possible. Don't neglect them.

The best early kind of tomato is the Earliana. For late tomatoes or for factory use the Stone has given the best satisfaction. It is imperative that the seed for the early kinds should be sown before March 1 in suitable houses, with the right soil and plenty of water, and an even temperature of about 60 degrees. The plants should be transplanted two or three times and should be well filled with fruit before setting out.

The stalk should be tied to a stake and trimmed to a single stem, as the fruit will ripen earlier and the returns be better. Too much manure must not be used, and potash and phosphoric acid should be added to check the tendency to too much growth of the plant.

Castor Oil for Plants

GEORGE VAIR, TORONTO, ONT.

ALADY last year came to me with a rubber plant that wanted doctoring the worst way. It was in a sorry plight. I found the soil full of castor oil, which she confessed she had put on, a drop or two once in a while. She also had not hesitated to pour on a little weak tea.

I said I would draw the line at castor oil, but I would not mind the weak tea, if it was just the strength she gave her husband when he happened to be a little late. It is singular, sometimes, the remedies some people try on their flowers.

THE MUSHROOM BED

PERCY CASBURN, DESERONTO, ONT.

THE first step in making a mushroom bed is to collect enough horse manure. This should not be allowed to become wet and should be put under a shed to heat. Turn it several times to prevent drying.

Prepare the beds by placing boards 14 inches deep around the sides. Two or three feet will be wide enough for the beds. Put the manure in and pack firm. When the temperature is down to 85 degrees break the spawn into pieces about two inches square, make holes and plant the spawn 12 inches apart all over the bed. Cover the spawn and beat firm.

After the spawn has been in a week, cover with two inches of good loam and beat firm and smooth. Water carefully with a fine spray, with water the same temperature as the bed. Do not allow the bed to become dry, as after the mushrooms appear, which will be in about six weeks, no water can be given. If watered then the mushrooms damp off.

I generally start my first beds in early April. Where there is artificial heat the beds can be made at any season. Mushrooms require a temperature of 45 to 50 degrees.

I have had beds bearing until September. If artificial heat is applied, and a mixture of dried cow manure given with a little fine soil, covering the bed with half an inch of the preparation, and a good watering is given, a second crop will soon appear. The best soil for covering a bed is good sandy loam, such as is used for potting plants.

Asparagus roots should be planted at intervals of 12 inches in the row, the crowns four to six inches below the surface. Spring is the preferable time. Two year old roots should be used. It is not desirable to cut asparagus for the table until the second season, or two full years from planting, as this interval is necessary for the proper establishment of the bed.

Any soil that will produce a good corn crop will make a good strawberry bed.



The Mushroom Bed of Mr. Percy Casburn, Deseronto, Ont.

A MARKET GARDENER'S GARDEN

"I GAVE up growing raspberries and strawberries," said Mr. Thos. Finucan, of Toronto, to a representative of *The Horticulturist*, "and am giving my attention principally to vegetables. There are so many brickyards in our neighborhood that men and boys can find employment at higher wages than we can afford to pay. I have 14 acres, three of which are orchard. When my trees were small I found it a great advantage to grow beans in the orchard.

"I grow five or six acres of early potatoes, which are sprouted first in beds under glass. They are planted the end of March and transplanted about the middle of April, when the sprouts are three or four inches long. They are covered to avoid frost. I have had them ready for market by June 20, and they come in between then and July 1. They bring \$1.50 a bushel at that time. About two acres are sprouted for very early potatoes in the way indicated, and early potatoes only are grown.

"I manure heavily and aim to secure early vegetables. Radishes are a specialty. The seed is sown broadcast, harrowed and

rolled. The grub is kept down by the use of lime or plaster. I thin out as they are ready and keep sowing every 10 or 12 days. My land is heavy and I keep growing all season. The Scarlet Turnip and the Scarlet White Tip are the two best varieties.

"I grow a good many onions—Yellow Globe and Yellow Danvers principally, with a few of the Prize Taker. They are started in the greenhouse and transplanted into drills six inches apart, 18 inches between drills. Nitrate of soda is good for onions. When they are three or four inches high I sow it along the drills and cultivate it in, using a hand cultivator.

"Stable manure is used principally for the vegetables. I can get all I want for ten cents a yard. What I get at the east end is good because of the system of draining the water off. A little artificial fertilizer, bone dust, etc., is used, and sometimes a little land plaster. My tomatoes did not do as well as usual last year. They rotted, as there was too much rain, and a hail storm cut them up. I do not trim the vines. My vegetables are sold principally to the butchers."

THE HOME VEGETABLE GARDEN*

MRS. MARGARET CLOSE.

A SURFACE that slopes gently to the south, a light sand loam, and a good fence to keep out chickens are needed for the home vegetable garden. The soil should be broken fine, as deep as the plant roots may be expected to grow. Fertilizer, as well rotted barnyard manure, is required. Lime may be used with good results. It is beneficial on both clay and sandy soil, as it corrects acidity, makes clay soil more friable and holds sand closer together. Wood ashes are a ready source from which to obtain potash. I have used them with advantage on all kinds of soil and all kinds of vegetables and fruit.

The time for planting can only be learned by experience. The blooming of the peach is a suitable time for seeds that will resist a slight frost, such as peas and spinach. When the oak leaf breaks from its bud start beets, turnips, corn and tomatoes. Seeds that thrive only in warmer soil, as beans, cucumbers, watermelon and squash, may be planted when the blackberry is in blossom. The soil should be moist when the seed is put in.

Seeds require less depth of cover in spring than in summer. If beet, carrot, parsnip or beans are soaked over night they come up a day or two earlier. The best time for

* Extract from a paper prepared for a Women's Institute meeting.

transplanting is when the weather is cloudy or rainy. I prefer the evening. Fine earth should be put closely round the roots, and if the sun comes out hot they should be shaded. I use large leaves, or paper held in place by stones. Some clip off half the leaves before planting. Cabbage require rich land, well worked, and abundant light and warmth.

I once asked a gardener his method of dealing with the root maggot. He said, "I go out in the morning early, and wherever I see a plant cut off I search for the maggot and kill it. I have used black currant leaves to wrap the plant loosely just above the roots. For the cabbage worm use kerosene emulsion. Hot water dropped on the worm will kill it."

As soon as the rain is over the atmosphere is free of moisture and evaporation from the soil sets in. If the tubes formed by the pores are broken evaporation from the ground is much lessened. This can be done with a rake or other implement. It will also

kill the weeds. In watering, the earth should be thoroughly wet, so the moisture will get to the lower and outer roots of the plant. The surface should be broken as soon as dry enough to work! If watering is necessary always do it in the evening.

A warm, light sandy soil, well supplied with humus, is recommended for cucumbers. Some start them in hot beds on up-turned pieces of sod, six inches square, covered with rich soil. I never make high hills for cucumbers or anything else. I prefer level ground. Hills might do if it were very wet, but in dry weather they dry out, and if there comes a rain it runs off. Deep preparation and plenty of manure will make good potatoes on almost any soil. They require a temperature of about 60 degrees and thorough cultivation. I always set them deep in the ground so the roots will not dry out. I have had them so firmly set in the ground that I found it needed a good pull to get them out in the fall when the frost came.

THE CULTURE OF POTATOES*

W. T. MACOUN, HORTICULTURIST, CENTRAL EXPERIMENTAL FARM, OTTAWA.

IN order to obtain heavy yields, potatoes should be kept in good condition at planting time; the more dormant the better. Potatoes should be kept near the freezing point.

At the Experimental Farm at Ottawa experiments were tried for a number of years to determine what kind of sets were best. Large whole potatoes, medium sized whole potatoes, small potatoes, half potatoes, stem ends, seed ends, sets with one eye, two eyes, and three and more eyes were tried, even potato peelings being given a test. The largest crop was obtained from large whole potatoes, but the most economical kind of set was found to be one with three or more eyes and a good amount of flesh. Grow-

ers lose many bushels of potatoes every year from using too little seed. It is not an uncommon thing to find fully 10 per cent. of the hills in a field of potatoes missing, caused by the failure of the seed to grow, the reason usually being that either the seed has dried up before or after planting, or that the single eye, which is often all that there is to the set, has not sprouted.

Our practice is to make four sets of a medium sized potato, cutting it lengthwise and then across. The practice of using small potatoes for seed should be discontinued. Although fairly good crops are obtained from small potatoes it stands to reason that immature potatoes, as small potatoes really are, will not give as good re-

* Continued from the January issue.

sults as sets from thoroughly matured, medium sized potatoes. The continued use of small potatoes is sure to reduce the crop.

THE PLANTING.

The soil being in good condition and the seed cut, the next consideration is the planting. Except for very large areas where planters are used, the best practice is to open the furrows with a double mold board plow. At Ottawa it has been found that rows two and a half feet apart is an economical distance. Experiments were tried in planting the sets 18, 16, 14, 12, 10 and 8 inches apart in the rows, but the best distance was found to be 12 to 14 inches apart. Experiments have also been tried in planting the sets one to eight inches deep, to find the best depth, and it has been found that for six years the potatoes planted in sandy loam soil one inch deep have given the largest yield. It is believed that the reason for this is that the soil is warmer near the surface and the sets sprout sooner, thus getting the plants growing thriftily while there is plenty of moisture in the ground. This shallow planting also comes nearest the conditions of the potato in the wild state.

Although sets planted one inch deep have given the largest yields, yet this is not the most economical way to plant them, as it is necessary to destroy the weeds in order to ensure a large crop of potatoes. For this purpose it is necessary to harrow the field just before or as the plants are coming up.

Early Potatoes.—"There is no reason why the market gardeners about Toronto should not make money raising early potatoes," remarked Mr. Charles Topping to a representative of The Canadian Horticulturist. "The freight on early potatoes brought from a distance makes them come high. California potatoes cost five dollars a barrel, containing three bushels, *i. e.*, \$1.67 a bushel."

If the sets were only one inch deep they would be dragged out, hence four to five inches deep has been found to be the most economical depth.

The potatoes are covered with the double mold board plow, and when the weed seeds have germinated the land is levelled with the smoothing harrow, thus killing myriads of weeds which would require hand hoeing if left until the vines grew up. If the soil gets two harrowings to kill weeds, so much the better.

As the conservation of moisture is very important in obtaining a large crop of potatoes, the soil should be kept thoroughly cultivated as soon as the potatoes are up enough to show the rows. The first one or two cultivations should be deep in order to loosen the soil, but the last two or three should be shallow to avoid injuring the roots and tubers. From four to five cultivations should be given during the season. Prof. Roberts, late director of the Experiment Station of Cornell University, found that the crop increased in proportion to the thoroughness and continuance of cultivation. At the Central Experimental Farm the potatoes are grown according to the level cultivation, the plants not being hilled, and this method has been found very satisfactory. In soils which are not quite loose hilling up may be preferable, but when the plants are hilled up there is more exposure to wind and the soil dries out sooner than with level culture.

(To be continued.)

Radishes will thrive in any good soil, but to be crisp and tender must be grown quickly. If a continuous supply is wanted make sowings every ten days or two weeks.

The advantages of sod mulching are: 1. To save washing on hilly ground. 2. To save depletion of soil. 3. To make the soil richer. 4. To conserve moisture by shading the soil.

The Canadian Horticulturist

The Only Horticultural Magazine in
the Dominion.

OFFICIAL ORGAN

ONTARIO FRUIT GROWERS' ASSOCIATION.

THE POMOLOGICAL AND FRUIT GROWING SOCIETY
OF THE PROVINCE OF QUEBEC.

PRINCE EDWARD ISLAND FRUIT GROWERS'
ASSOCIATION.

ONTARIO VEGETABLE GROWERS' ASSOCIATION.

H. BRONSON COWAN, Editor and Business Manager.

J. J. BELL, Associate Editor.

W. G. ROOK, Advertising Manager

1. **The Canadian Horticulturist** is published the first of each month.

2. **Subscription Price** \$1.00 per year, strictly in advance entitling the subscriber to membership in the Fruit Growers' Association of Ontario and all its privileges, including a copy of its report. For all countries except Canada, United States and Great Britain add 50c for postage.

3. **Remittances** should be made by Post Office or Money Express Order, or Registered Letter. Postage Stamps accepted for amounts less than \$1.00. Receipts will be acknowledged on the address label, which shows the date to which subscription is paid.

4. **Discontinuances**—Responsible subscribers will continue to receive *The Horticulturist* until the publishers are notified by letter to discontinue, when all arrearages must be paid. Societies should send in their revised lists in January: otherwise it will be taken for granted all will continue members.

5. **Change of Address**—When a change of address is ordered, both the old and the new addresses must be given.

6. **Advertising Rates** quoted on application. Circulation 5,500. Copy received up to the 24th. Responsible representatives wanted in towns and cities.

7. **Articles and Illustrations** for publication will be thankfully received by the editor.

8. **All Communications** should be addressed:

THE CANADIAN HORTICULTURIST,

507 and 508 Manning Chambers,

TORONTO, CANADA

THE FRUIT DIVISION.

Leading officers of every provincial fruit growers association in Canada, including British Columbia, Ontario, Quebec, Nova Scotia, New Brunswick and Prince Edward Island, have placed themselves on record as being strongly opposed to the chief of the fruit division being made subservient to the dairy commissioner. A number of these associations have passed resolutions protesting against the arrangement that has been made by the Hon. Sydney Fisher.

In his explanation in the House of Commons Mr. Fisher stated that the work of the fruit division would not be restricted, as its chief would have the same staff and would perform the same duties under the dairy commissioner as when he was under Prof. J. W. Robertson. This statement has not satisfied the fruit growers. Prof. Robertson had direction of not only the dairy and fruit divisions but of the live stock and seeds as well. Since Prof. Robert-

son resigned a commissioner has been appointed for live stock, one for dairying, and one for seeds, but the fruit division has been overlooked and placed under the dairy division. To Mr. Ruddick's credit it can be stated there is nothing to indicate that he sought an appointment so foreign to his regular line of work.

Fruit growers feel that while the chief of the fruit division may have the same powers he formerly had he cannot be expected to take the same interest in his work or to prosecute it with the same zeal that he would were he in sole charge and directly responsible to the public as well as to the minister of agriculture for its success. It has been intimated that there is not enough work to warrant the appointment of a fruit commissioner. There cannot, then, be enough work for the chief of a fruit division. The rapid growth of the fruit interests warrants the appointment of a fruit commissioner, who, if he is the proper type of man, will soon find plenty of work to occupy his attention. "Surely," as Mr. Brandrith writes from British Columbia, "Hon. Mr. Fisher will not go in the face of a united country and maintain an appointment that is unsatisfactory to those whose interests he is there to look after."

THE PROVINCIAL SHOW.

In deciding to continue the Provincial Fruit Flower, Honey and Vegetable Show at Toronto while making a special grant for the holding of an earlier show at Hamilton for the fruits and flowers which cannot be shown at the later show at Toronto, the Department of Agriculture has acted in the interests of the greatest number. The management of the show held at Toronto last fall for a start made a decided success of the venture. The various organizations that were interested in it worked together harmoniously and are in a position to do much better work this year, especially as Massey Hall has been secured for the next show. It would have been unjust to have taken the show out of their hands.

On the other hand, Hamilton is in an excellent position to hold a splendid show for early fruits through which the interests of the amateur flower grower as well can be promoted. If a horticultural convention is to be held again next fall it may prove advisable to hold it in connection with the Hamilton show, as those who attend the convention are interested in amateur and not in professional flower growing. The Hamilton show can be made a big affair. Possibly the Provincial Vegetable Growers' Association may decide to hold its annual convention at the Hamilton show, which would add to its importance.

Several interesting articles from papers read at meetings of the Ottawa Horticultural Society, and one read at a meeting of the Toronto society, appear in this issue. Every month numerous papers and addresses of interest and value to amateur horticulturists, are presented at meetings of horticultural societies. Were the officers of societies to see that copies of

these papers or the originals were sent to The Canadian Horticulturist their publication would add to the interest of our floral department and the papers would be of value to many people who would never otherwise hear of them. The printing of these papers would, also, serve to draw attention to the excellent work being carried on by many of our horticultural societies. Send in the papers.

Again this month have extra pages been added to The Horticulturist, this time ten, making this the largest issue we have ever published. This has been made possible by the great increase in advertisements. Very soon we hope it will be possible to continue these pages in The Horticulturist permanently, which will mean that the various regular reading departments can be enlarged and strengthened in other ways. Our readers can be of great assistance by buying from our advertisers and by telling them that their advertisements were seen in The Horticulturist. A glance through our advertising columns will prove them to be as interesting in their way as the pages of reading matter. Look them over and see if this is not the case.

Our handsome new offices in the Manning Chambers, Toronto, were greatly improved during April by lovely floral donations from friends. Two splendid ferns of the *Nephrolepis Bostoniensis* and *Nephrolepis Exaltata* varieties and a *Kentia Belmoreana* palm were given by Mr. Thomas Manton, of Eglinton, of which the *Bostoniensis* fern is particularly beautiful. It occupies a prominent position at the end of the editor's desk. Some lovely cut flowers were also sent in by Mr. Manton. Even roses have not been lacking, as a large bouquet, containing some grand specimens of the *Bride and Bridesmaid* varieties, was received from Mr. A. J. Frost, of Toronto. Truly they were welcome and the kindness of the donors is appreciated.

The fruit growers of the Niagara district know what they want and they do not hesitate to ask for it. During the past two months they have had strong deputations wait on the Hon. Nelson Monteith, Minister of Agriculture, to ask for assistance in holding a series of meetings, for the conducting of special spraying demonstrations by Prof. Lochead, for the establishment of a horticultural college and experimental farm, and for an annual grant for the Niagara District Fruit Growers' Association. A deputation representing the Ontario Fruit Growers' Association also waited on the Department to ask for aid in forming cooperative fruit growers associations and to have the act, which provides assistance in the erection of cold storage houses, extended for several years. It is evident the fruit growers are alive to their needs, which is a good sign.

Owing to the rapid increase in the circulation of The Canadian Horticulturist and to the many requests that have been received for back copies it will be impossible for us to furnish any more

copies of the January, March or April issues of this year to new subscribers. Slightly over 400 new subscriptions for The Horticulturist have been received during the past month. These and numerous requests for sample copies exhausted the supply of the April issue early in the month, although several hundred extra copies had been ordered. While the rapid growth is encouraging it is difficult, sometimes, to provide for it in advance. If any of our readers can furnish us with spare copies of the January, March and April issues their kindness will be greatly appreciated.

A reader has called our attention to an error which occurred on page 102 of the March issue by which Mr. W. H. Bunting, of St. Catharines, is made to speak of a dust spray composed of 30 pounds of lime, 15 pounds of sulphuric acid and two pounds of sulphate of copper. Instead of sulphuric acid it should have read sulphur. It is just about as difficult for us to prevent occasional errors among the thousands of words that appear in each issue as it is for a fruit grower to thoroughly control all his insect pests. Some of them get by us in spite of our best efforts. We are, however, doing our best to improve.

NEW ADVERTISERS.

The following new advertisements appear in this issue of The Horticulturist:

Adams Furniture Co., Toronto.
R. Olmstead, Hamilton.
Elwood Tatum, West Branch, Iowa.
Ontario Agricultural College, Guelph.
J. H. Lock, Toronto.
Colling Manufacturing Co., Toronto.
Canada Camera Co., Toronto.
Preston Metal Shingle and Siding Co., Preston.
McWilliams & Everist, Toronto.
Dawson Commission Co., Toronto.
Pilkington Bros., Toronto.
A. M. Smith, St. Catharines, Ont.
Superior Manufacturing Co., Toronto.

The result of cold storage appliances on ocean steamers is well shown by a letter received by Messrs. McIntyre & Barnard, of Niagara-on-the-Lake, who recently shipped 450 barrels of apples to Liverpool on the steamer Lake Champlain. The consignee writes as follows: "The apples reached us in almost perfect condition, there being only five barrels that were in any way slack or open. The sale was the best that has taken place for the class of fruit in Liverpool this season, and we congratulate you on it." The net proceeds from the shipment amounted to about \$1,500, indicating the high prices that may be realized for Canadian apples in the British market when properly packed and shipped.

The fruit growers of Owen Sound and vicinity have formed a company to be known as the Owen Sound Fruit Growing Co., for the purpose of adopting the cooperative system in growing, packing and shipping fruit.

FRUIT TREES AND BUSHES HAVE WINTERED WELL

Reports which have reached The Canadian Horticulturist from the principal fruit districts in Canada show that fruit trees and bushes have come through the winter in unusually good condition. The only loss reported is in Nova Scotia and Prince Edward Island, where the heavy snow broke down some of the trees and where mice have done some damage.

In the leading fruit sections spraying is on the increase. Where fruit is not grown extensively but little interest in spraying is being shown. There has not been a marked increase in plantations in any of the provinces.

EASTERN ONTARIO.

Mr. Harold Jones, Maitland, Ont.: Fruit trees of all kinds have come through the winter in excellent condition. Apple trees especially look bright and healthy, and the fruit bud is in good condition. With favorable weather the chances are for a good crop. Mice did some damage to trees near fences, but the injury is not serious, a few trees having portions of the bark chewed, but hardly any girdled. Strawberries are coming out bright and healthy, no winter injury even in plots that had no covering. There is practically no planting being done in this vicinity. The farmers and fruit growers are discouraged owing to losses and low prices for their fruit the last two or three years. Spraying is also being neglected in some cases. There are some of our most careful growers spraying as carefully as ever, but the tendency is to neglect the work.

THE GRIMSBY DISTRICT.

Mr. Linus Woolverton, Grimsby, Ont.: The past winter has been a favorable one for fruit. The cold has not been severe enough to injure the fruit buds, and there has been an excellent covering of snow to protect the roots of trees and fruit crowns of strawberry plants. Indications point to an excellent fruit year, giving good profit to the fruit grower if better methods of sale can be found. Planting is always going on in the Niagara district, but not of apple trees, especially on its rich sandy loam, where even the Baldwin goes too much to wood to produce abundant crops. A great many apple orchards are being grubbed out on this account. Intelligent spraying is being practised, and power sprayers are coming into common use.

NEAR WINONA, ONT.

Mr. Murray Pettit, Winona, Ont.: Everything, including small fruits, has come through the winter in first-class shape. Prospects are excellent. The ground was covered with snow, and strawberries were well protected, and there has been little freezing or thawing since the snow left to cause injury. It has been several years since fruit came through the winter so well.

AROUND ST. CATHARINES.

Mr. W. H. Runtz, St. Catharines, Ont.: Winter has been favorable for all kinds of fruit, and except where vitality has been weakened by San Jose scale or other causes trees are in good condition. Prospects are for a good crop. Not many apples or grapes are being planted, but there is a considerable increase in peaches and cherries. Spraying is on the increase.

Mr. R. F. Robinson, St. Catharines, Ont.: Trees, vines, bushes and strawberry plants have wintered extremely well, as the wood was well ripened last fall, especially where the land was plowed early and a cover crop put in. Most varieties are sufficiently full of fruit buds for an average crop. Strawberries wintered well but did not thrive last year sufficiently to make a very big crop, and the acreage was lower than usual owing to the difficulty in securing plants last spring. If the rot is controlled in sweet cherries this year there is excellent showing in most varieties. The acreage of fruit in this section is not increasing very rapidly for three reasons: 1. Expense of nursery stock; 2. The ravages of the winter of 1903-4; 3. Anxiety as to the possibility of controlling the San Jose scale. Of peaches the Yellow St. John, Niagara, Fitzgerald, Alberta, early and late Crawfords, Toronto and Smocks seem the favorite varieties. Of plums the later varieties such as Coe's Golden Drop, Reine Claude, Monarch and Grand Duke, but not so many Japanese plums as formerly. In cherries, E. Richmond, Montmorency and English Morello of the sour kind, and comparatively few sweet cherries are being set. The Cuthbert, and where the land is suitable, the Marlboro raspberry. Strawberries, Michael's Early, Brandywine and Williams are the most popular. There is considerable increase in spraying, especially with the lime and sulphur. Practical men now consider it an absolute necessity. However, there is yet room for much more enthusiasm in this cause.

IN QUEBEC.

Mr. A. C. Abbott, Hudson Heights, Que.: Trees, vines and bushes have stood the winter well and are in good condition. The fruit buds indicate an average crop of apples and plums. There are only a few large orchards in this vicinity, and outside of these planting is only done with a view to supplying the needs of the home or the local demand. Apples principally, with plums and a few pears, are the only varieties of fruit planted. Spraying is not on the increase. It is only the larger growers that spray.

PROSPECTS BRIGHT IN NOVA SCOTIA.

Mr. D. C. Crosley, Berwick, N. S.: Apple, plum and pear trees have wintered well, but have been badly broken by snow drifts, and mice caused great loss. Strawberries and other small fruit have wintered better than usual. The prospect is bright, but late frosts may ruin it. Last year's market prices discouraged planting of increase areas. The favorite varieties of apples are Stark, Wagner, Ben Davis, Baldwin, Gravenstein and Bishop Pippin. Spraying is on the increase, many growers believing it to be the only method of securing good fruit.

Mr. A. A. Blight, Waterville, N. S.: On account of the unusual depth of snow quite a percentage of trees were broken down. Mice also caused considerable damage, especially in orchards under sod. Small fruits and strawberries wintered well. Fruit buds indicate a good crop. There is only about 40 per cent. of the average amount of planting, growers being discouraged by low prices last season. The favor-

ite varieties are: Apples, Stark, Gano, Baldwin and Wagener; plums, Burbank; pears, mostly winter varieties. A number are preparing to spray this season for the first time.

PRINCE EDWARD ISLAND.

Mr. A. E. Dewar, Charlottetown, P. E. I.: A lot of trees were damaged by snow, otherwise

they are in good condition. There are a few complaints of damage by mice. Strawberries promise well. The season is later than usual. There is an increase in the area planted of fruit, principally winter apples, with some plums and a good many strawberries. More attention is being given to spraving.

The Standard Apple Box.

THOS. BEALL, LINDSAY, ONT.

On page 161 of *The Canadian Horticulturist* for April I find an article headed "A Standard Apple Box Adopted." I was pleased to learn that its adoption was a certainty and hope that the measurements given may be generally acceptable as a suitable apple box for market purposes. I regret, therefore, to see errors in the first paragraph which may cause some uncertainty about the measurements, and hope it may be corrected at once so that no further cause for discussion may remain.

The errors referred to are contained in the following quotation: "The standard size provided for is 10 x 11 x 22 inches inside measure, or 2,200 cubic inches. It holds one bushel and is equivalent to one-third of a barrel." Now, the measurement given, 10 x 11 x 22 inches, is 2,420 cubic inches, not 2,200 cubic inches, as stated. Then again, if it is intended that the box may be either 2,200 cubic inches (about 18 cubic inches less than a bushel), or may be the measurements as given in the act, which gives 2,420 cubic inches, it is an error to say that "it holds one bushel," for the first is less than a bushel and the latter more. Our standard bushel is a small fraction over 2,218 cubic inches.

As a rectangular box, although measuring an exact bushel, can not contain a bushel of apples because of the loss of space at the sides and in the angles, it is well to have the box a little larger, as has been done in this case to compensate for that loss. A standard apple barrel contains a shade over three bushels, and will hold the contents of three such boxes of apples as above referred to. I think, therefore, that the box adopted ought to satisfy all parties concerned and should not be changed.

Note.—The error referred to by Mr. Beall occurred in printing the figures 22 instead of 20. The measurements of the box should have read 10 x 11 x 20 inches, inside measurement, or 2,200 cubic inches.—Editor.

Cold Storage Buildings.

The Fruit Division, Ottawa, has received an interesting letter from Mr. Albert W. Swalm, American Consul at Southampton, England, in answer to enquiries with reference to the success of the Southampton cold storage buildings for fruit. Mr. Swalm asserts that the cold storage houses have succeeded beyond expectations and it would seem as if such fruits as the Russet, Canada Red, Baldwin and Ben Davis could be kept almost indefinitely. He draws,

however, attention to the fact that there was a serious loss in storing bruised and scabby fruit and windfalls. He could detect no great difference between the keeping qualities of the American and Canadian apples.

There was no attempt to store English apples, which he asserts will not likely, under any circumstances, be used for the winter markets. They will go into consumption directly, although many of them are fair keepers and some very fine in flavor. The English apple crop is not likely to show an increase that will in any way interfere with importations from America. The most serious defect that was to be noted in the cold storage stock was the want of care in the selection and grading of the stock that was put into cold storage.

Working of the Fruit Marks Act.

An account of the working of the fruit marks Act was given to the Committee on Agriculture at Ottawa recently by Mr. A. McNeill, chief of the fruit division of the Department of Agriculture. He reported that shippers of apples had observed the law fairly well for the last two years. Last year the apples of 811 shippers were inspected, and 264 were found to have violated some section of the act, but as many of these were careless rather than criminal, he gave the figures in another form. Of this number 153 violated the section regarding marking, and 170 violated the section regarding the grading of fruit, but of those only three violated it a second time. Forty-six were found to have faced barrels too highly, but only four committed the offence a second time. Therefore, Canadian apple shippers had a high reputation for honesty of packing.

Mr. McNeill read an extract from a recent issue of the *Market Growers' Gazette*, of London, England, with quotations for imported apples. After quoting various kinds of American apples, it referred to Canadian apples as "Canadians, all round, two shillings more." When, as year before last, Canada shipped 1,500,000 barrels of apples, the advantage of two shillings, or even one shilling, a barrel was more than compensation for the slight cost of inspection. Now, several of the states of the United States are imitating our act, but Mr. McNeill doubted if they would be successful, as they had not centralized federal power, as we have in Canada, to make uniform laws and enforce them.

Demonstrations in Spraying.

With a view of demonstrating the effectiveness of the preparations which have been recommended for the control of the chief insect and

fungus pests of the orchard and vineyard, the Minister of Agriculture for Ontario has arranged for a series of experiments and demonstrations at eight centres in the Niagara peninsula. The first round were held April 13-21 at the following places: Mr. Murray Pettit's, Winona; Mr. Ambrose Pettit's, Grimsby; Mr. R. Kelly's and Mr. Bartlett's, Beamsville; Mr. J. Fretz's, Jordan; Mr. George Robertson's and Mr. Pay's, St. Catharines; Mr. Jas. Hutchinson's, Virgil; Queenston and Niagara Falls.

The following substances were used in the plum and vineyard experiments: Copper sulphate, and the lime-sulphur wash on dormant vines, and Bordeaux and soda Bordeaux at intervals during the growing season.

Prof. W. Lohhead, of Guelph, has charge of the demonstrations.

The Price of Tomatoes.

The fight this spring between the tomato growers and the canning factories in regard to the price of tomatoes has to a certain extent ended in a draw. In some sections the growers have given in and have accepted 25 cents a bushel, the price offered by the canners, while in other districts the growers have refused to grow tomatoes for that figure. This has forced the companies to contract with growers living at considerable distances from the factories, with the result that the cost per bushel to the factories will probably be as high as if they had paid the price asked for by the growers.

In a letter received by The Horticulturist early in April from Mr. W. C. McCalla, of St. Catharines, it is made clear that the growers in that section have stuck to their guns. In part the letter is as follows:

For a time it seemed probable that our association members would get contracts totalling 60,000 bushels at 30 cents, and on the strength of this hotbeds were put up and seed sown. Negotiations, however, failed, and as many growers in other districts had contracted at the old price, some of them officers of associations who had pledged themselves not to grow for less than 30 cents, we felt that there was no hope of getting contracts at the advanced price this season. These facts were faced and discussed by our members at a recent meeting. The roll was called and in response every member present (47) reaffirmed his determination not to grow tomatoes for less than 30 cents. Many thousands of seedlings will be destroyed by our members.

While we have not secured the price asked for we feel that by loyally standing together under trying circumstances we have gained much, and are in a good position to continue the effort another year, when, with the aid of a strong provincial association we should be able to obtain our reasonable demands.

THE STAMFORD GROWERS.

The secretary-treasurer of the Stamford Fruit Growers' and Market Gardeners' Association, Mr. Thomas R. Stokes, of Niagara Falls South, has written The Horticulturist as follows:

As regards the tomato situation the Consolidated Canning Company is going to outsize places to contract for tomatoes at 25 cents a bushel, supplying crates and paying freight for shipping and in some cases the plants. This must make the price of a bushel of tomatoes 22 to 35 cents. They also pay the weighing. We are wondering what kind of stuff a dead ripe tomato will be after it has been jolted in a wagon and bumped in the cars. It is not likely to be fit to make first class or second class canned goods.

Items of Interest.

The sum of \$9,700 has been subscribed for a canning factory at Milford, Prince Edward County, Ont., and Bloomfield, in the same county, is talking of a similar factory owned by a joint stock company of farmers.

The county of Huron is said to lead in the number of apple trees—373,613. Northumberland is a good second with 366,381. Leeds has 93,717 and Grenville 68,145.

A cooperative canning company has been formed to operate at Niagara-on-the-Lake, where the steel works have been rented for this purpose. A new building will be erected in the fall.

California fruit growers are receiving 44 to 55 cents a box for oranges. Every box of Canadian apples, grown, graded and packed with the same care and intelligence as Californian oranges, has brought a higher price than this. It would seem then that a man does not need to leave Canada to do a profitable business in fruit, but Canadians do not yet appreciate the lesson taught to Californians by much bitter experience that it pays to export only the best.

The Fruit Division, Ottawa, has received word from British Columbia that there are very heavy importations of nursery stock coming in this spring: as much as six carloads in a single day was received of Oregon stock, all of which was carefully inspected and fumigated. Mr. Thos. Cunningham, Inspector of Fruit Pests for British Columbia, estimates that there will be 500,000 trees imported and planted in addition to the homegrown stock.

A strong deputation representing the Ontario Vegetable Growers' Association waited on the Hon. Nelson Monteith, Minister of Agriculture, early in April, and asked for an annual grant of \$1,000, that arrangements be made to include an exhibit of vegetables in the Provincial Fall, Flower and Honey Show, and that the professors at the Agricultural College at Guelph be requested to conduct experiments in the growing of vegetables. The deputation was introduced by Hon. J. W. St. John, and received a favorable reception. Mr. W. A. Emory, of Aldershot, Ont., and Mr. Joseph Rush, Humber Bay Ont.,

the president and vice-president of the association, were leading speakers. Several members of the local legislature acted on the deputation and spoke strongly in regard to the importance of the vegetable growing industry.

In a recent issue of the Maritime Farmer Rev. Father Burke, of Alberton, P. E. I., pays a well deserved tribute to Mr. W. T. Macoun, horticulturist, of the Central Experimental Farm, Ottawa. Readers of The Horticulturist will agree with Father Burke when he says: Mr. Macoun has reached the stature of the best of professional investigators; he can take his place anywhere, and he will take that place and do it credit despite the first impression he gives of great diffidence and shyness in public.

As a result of the use by the fruit division of a power spraying outfit in the neighborhood of Ingersoll last year there will be two power outfits operated by private individuals in that district this season. The spraying is done in very much the same way as threshing is done throughout the country.

Grimsby's Annual Distribution

A committee from the Grimsby Horticultural Society has prepared the following list of premiums for distribution this spring: A new white hybrid perpetual rose, "Fran-karl Druschke." This new hardy rose is of German origin. It has won many prizes and appears to be the ideal hardy rose. Its flowers, which are large, are snow-white in color, with large shell-shaped petals forming a beautiful flower. This plant sold at 75 cents last year.

The other plant for distribution is the Kriemhilde Cactus Dahlia, an exquisite shell pink shading to white in the centre, undoubtedly the finest and most perfect pink cactus dahlia to date. The retail price of this plant last year was 50 cents.

The above two plants and The Canadian Horticulturist are given to members of the society.

Glad They Are Canadians

The Lindsay Horticultural Society had a most interesting lecture given at a recent meeting by

Mr. T. H. Race, of Mitchell, who was sent out by the Department of Agriculture for the purpose. The subject spoken on was the social and moral influence of the home surroundings.

The description given by Mr. Race of the Canadian exhibit at the St. Louis fair, and the comparisons he made with other countries made the audience feel proud that they belonged to Canada and that Canadians are doing their mite to build up and beautify Canadian homes. After the lecture Mr. Race answered many questions from members present.—(F. J. Frampton, Secretary.)

A Generous Offer

The president of the Cobourg Horticultural Society, Mr. J. D. Hayden, has offered to give \$10 for the purchase of flower seeds to be given to the school children. The directors of the society have offered \$10 additional for prizes for the best flowers grown from these seeds. Rules governing this competition will be announced later.

In the distribution of flowers and plants to be given away by this society there are four shrubs, including a crimson Rambler, Japanese snowball, azalea mollis, and a Japanese pearl bush. There is a choice of four annuals or four perennials, with an additional choice to be made from four vegetables, a new potato, the Naught Six; Leviathan pea, Livingstone's new dwarf tomato, and Evan's Triumph celery.

Reorganization of Brockville Society

A meeting of representative and influential members of the old-time horticultural society of Brockville was held recently to discuss the advisability of reorganization. It was found that if the society was reorganized this year it would not receive the government grant for 1905. Mr. Geo. A. McMullen was appointed secretary-treasurer. Mr. McMullen held the same position in the old society and is an enthusiastic worker.

Although no grant can be secured this year a branch committee was appointed for the purpose of beautifying the town and taking an interest in lawns, flower beds, etc., among the members.

SHRUBS AT 15 CTS. EACH!

Until May 15th we will accept orders for any of the following very popular shrubs, as described in our Catalogue at from 20 to 30 cents each, for 15 cents each, not less than three to be ordered in any one collection: Boston Ivy (true) 2 year plants, Weigelas (Fairy Thimbles) pink and dark red, Spiraea Van Houttei, Syringas Golden Leaved (new), Hardy Hydrangeas, Deutzias (two varieties, Pride of Rochester and Gracilis or Snowdrop Shrub), Barberries (red berried), Forsythias (Golden Bell Shrub).

This is a great offer and is for first quality stock.

THE WEBSTER FLORAL COMPANY, LIMITED
HAMILTON, - - - ONTARIO.

A Handsome Premium will be Given Free to all Readers who buy goods from Advertisers.

Niagara Gas Sprayers.

More Ontario fruit growers have purchased Niagara Gas Sprayers this year than ever before. This company has appointed several representatives in the fruit districts who have been very successful introducing this machine. Some of the best known growers in the province are now using it.

In a letter to The Horticulturist Messrs. Blaikie & Freeman, of St. Catharines, give the following list of growers who are using Niagara Gas Sprayers, Messrs. S. E. Fisher, W. O. Burgess, of Queenston; James Titterington, W. H. Bunting, Louth Fruit Growers' Association, R. P. Robinson, C. E. Secord, E. McArdell, T. R. Merritt and F. Blaikie, of St. Catharines; C. M. Honsberger, of Jordan; J. L. Livingston, of Grimsby; Joseph Tweddle, Ira Vanduser and F. Hamilton, of Winona, and F. Fairbanks, of Oakville.

The number of these machines sold in the United States this year is already more than three times as great as the total number sold last year. A number of the state experiment stations have purchased them.

A New Departure for Peterboro.—As a substitute for its annual floral exhibition the Peterboro Horticultural Society will present every member, who becomes such by the payment of \$1. with a choice of bulbs, the commercial value of which will be greater than the membership fee. The member is always sure of a prize, consisting of the pleasure he or she can derive from the growth and culture of the flowers.

RUBBER STAMPS

The Superior Mfg. Co., - - Toronto, Ont.
Manufacturers

STENCILS

Classified Advertisements

Advertisements under this heading will be inserted at the rate of ten cents per line, each insertion; minimum charge, fifty cents.

REQUIRED BY 2 YOUNG MEN, WORK AT gardening. Five years' first class experience in England. Apply "Benfield," Woodstock, Ontario.

FLORIST BUSINESS FOR SALE IN BEST residential locality in Toronto. Good retail trade, small greenhouse, just the place for a beginner. A bargain if taken at once. Apply, The Canadian Horticulturist.

PLANTS FOR SALE OF THE NEW FIRST Prize Strawberry, of the St. Catharines Horticultural Society. Matilda, 50 cts. per doz. by mail, \$1.00 per 50 by mail, \$1.00 per 100 delivered at express. Address A. M. Smith, Dominion Fruit Gardens, St. Catharines.



KILMAHNOCK WEEPING WILLOW

F HELDERLEIGH
NURSERIES.

E. D. SMITH, - Winona, Ont.

Beautify Your Homes

Our stock of Ornamental Trees and Shrubs consists of only the best

Trees, Plants and Vines

of all kinds.

Write for our beautiful Illustrated Catalogue. Salesmen wanted.

THE CANADIAN HORTICULTURIST.

Brisk Demands for Nursery Stock.

Brown Brothers Company, whose model nursery plant at Brown's Nurseries, Ont., was described in our September issue, have finished their spring packing and shipping. Their many thousand customers are strongly complimenting them on their early shipments. Their large, frost-proof storage cellars enable them to handle all their packing under cover, so that they are practically independent of weather conditions and have their stock ready to be shipped as soon as the danger of frost is past.

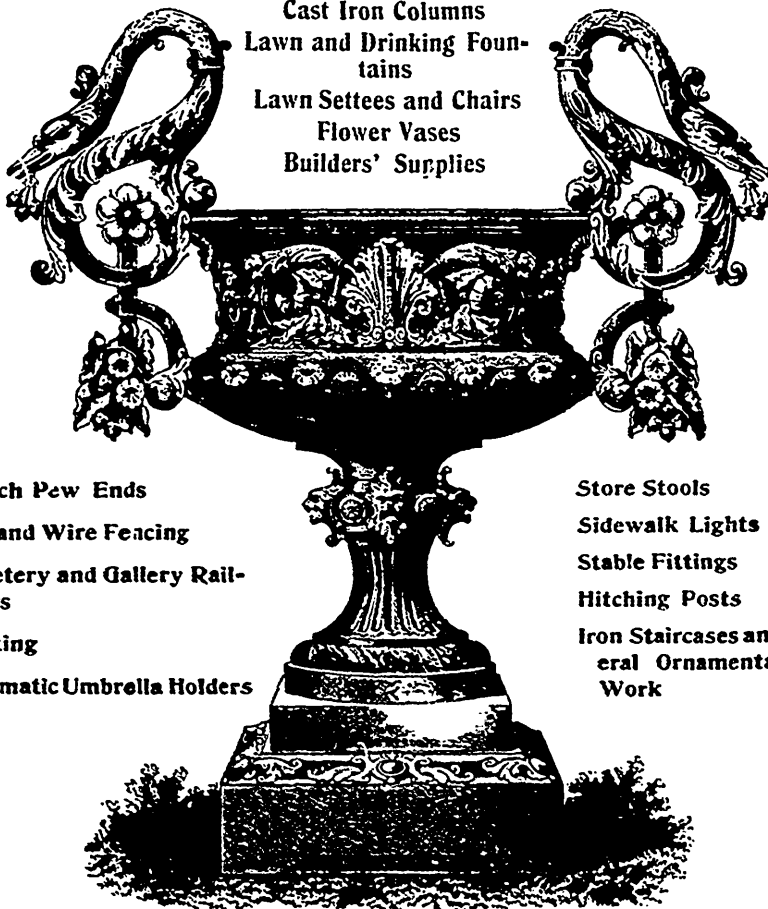
This not only gets the stock to customers at the proper time for planting, but also insures the trees being in prime condition, for they are

under cover from start to finish of the packing work and there is no exposure to sun and wind such as marked the packing of stock under the old methods when trees were trenched in for days and weeks on the open packing grounds. Brown Brothers Company have spent thousands of dollars in perfecting this equipment, and to their well known guarantee of "the best stock that can be grown" they can now add "delivered at the proper time in the best possible condition."

I consider The Horticulturist the most reliable paper on horticulture published in Canada. —(Robt. Davis, Hespeler, Ont.)

HAMILTON ORNAMENTAL IRON AND ZINC WORKS

R. G. OLMSTED, Prop. Manufacturer and Contractor



Cast Iron Columns
Lawn and Drinking Fountains
Lawn Settees and Chairs
Flower Vases
Builders' Supplies

Church Pew Ends
Iron and Wire Fencing
Cemetery and Gallery Railings
Cresting
Automatic Umbrella Holders

Store Stools
Sidewalk Lights
Stable Fittings
Hitching Posts
Iron Staircases and General Ornamental Iron Work

PHONE 1801

SEND FOR CATALOGUE

ESTABLISHED 1875

121 King Street West.

Hamilton, Ont.

A Handsome Premium will be Given Free to all Readers who buy goods from Advertisers.

Spraying Machines.

Another evidence of the prosperity of the fruit growers of Ontario is shown by the large orders for spraying machinery being placed with the leading makers. Among the growers who have purchased from the Spramotor Company, of London, Ont., are Messrs. E. M. Smith, A. Vance Cline, of Winona, and J. W. VanDyke, of Grimsby, who have secured power machines, and Messrs. M. Pettit, E. M. Smith, G. L. Brooke, of Grimsby, Robert Thompson, of St. Catharines, and W. M. Orr, of Fruitland, have purchased cart machines from the same firm. This ought to be a guarantee of the high standard of these machines. The manufacturers claim there are more Spramotor machines used in Ontario than those of all other makes combined.

Fine Dahlias and Asters.—Although Mr. J. H. Lock, of Toronto, has only a very limited space at his disposal and attends to them only in his spare time, he has succeeded in raising dahlias which have successfully competed against those grown by the largest growers in Canada. He also grew the asters which carried off the highest awards at the Toronto Industrial last year. His success as an exhibitor has created a demand for his stock.

Your paper is very valuable to anyone interested in fruit growing.—(F. T. Morrow, Mermaid, P. E. I.

Practice with Science.

The Earliest, Best Flavored and Largest Crops of

Strawberries, Tomatoes and Vegetables

are grown by feeding with

Arnott's Complete Concentrated Soluble Manures

MADE IN CANADA

under the supervision of Chemical Experts by

The Arnott Chemical Co.

Agricultural and
Manufacturing Chemists

114 Victoria St.

TORONTO

ANALYSIS GUARANTEED.

BOOKLETS FREE

Established 1853.

Long Shipments of Nursery Stock.

The Fonthill Nurseries, at Fonthill, of Messrs. Stone and Wellington, have been engaged this spring on the largest packing they have had since they have been in the business. The firm has shipped several carloads of stock to British Columbia, Manitoba and the Territories, and has even had a considerable shipment of stock to Manuchurla, as mentioned in the last issue of The Horticulturist.

The packing operations require a force of between 200 and 300 men. Notwithstanding the severity of the past winter this firm's stock come through in splendid condition, and has given its customers great satisfaction.

Are Your Goods the Best.—Sometimes a grower of fruits finds himself unable to get all they are worth, having to take the flat market price for goods of superior grade. The man who grows a strictly first-class article should brand his package and seek out some reliable fruit dealer or grocer whose business is large enough to take his output. In this way he can command a higher price than by consigning to a general market. An advertisement in The Canadian Grocer assists a fruit grower to find the right purchaser.

The Canadian Horticulturist obtains results for its Advertisers.



TRY

The Bottomless Plant Box

It is convenient, economical and gives better results than pots.

Write for sample and price.

Crates,
Baskets,

Georgia Fruit Case,
Berry Boxes, Etc.

C. W. Van Duzer

Manufacturer of Fruit Packages,
GRIMSBY.

Money Given Free to People who buy Goods from Advertisers in this Issue.
See Notice in Advertising Columns.