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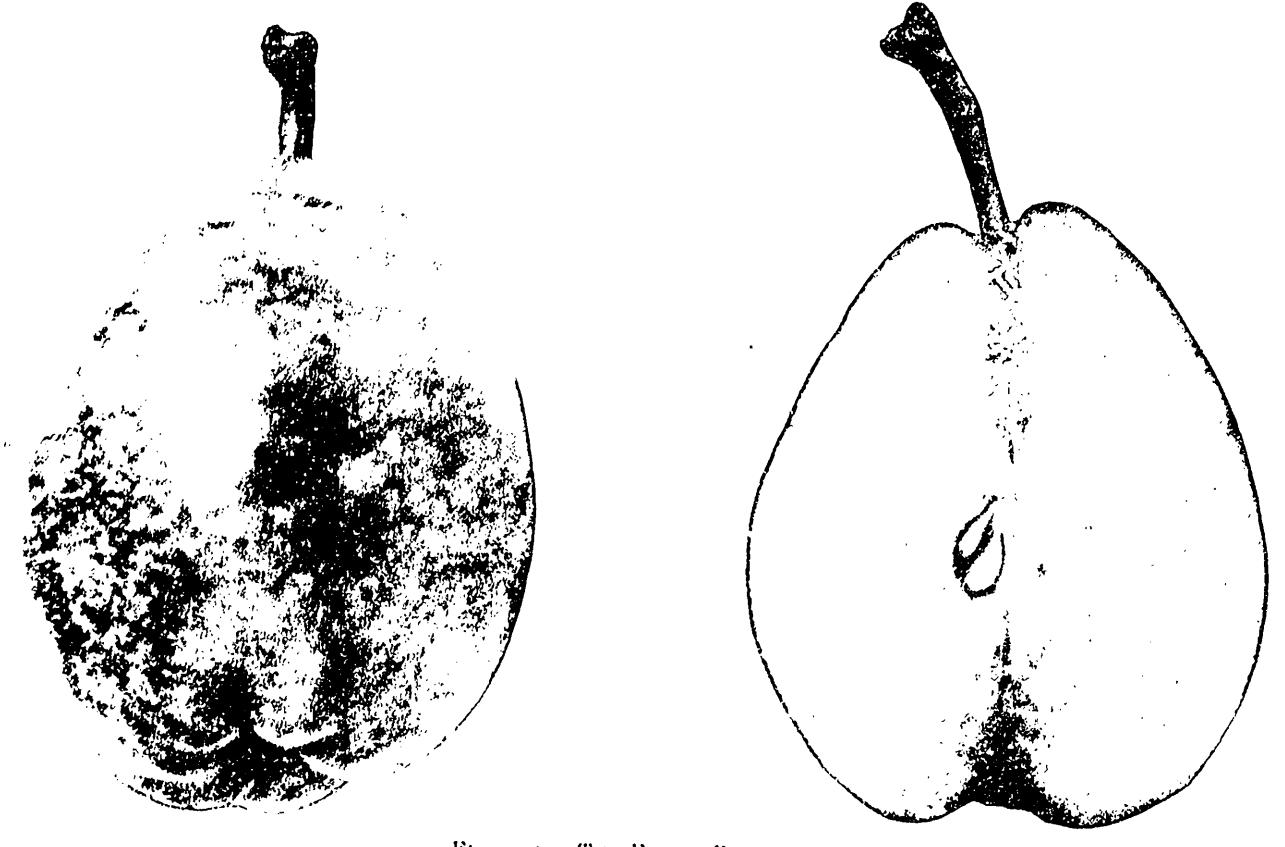

Fig. 2316. The Easter Beurre.

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✳ ✳ JUNE ✳ ✳

THE EASTER BEURRE.

AMONG the desirable pears to grow for export we must not overlook the Easter Beurre, which, though green and unattractive in appearance at time of harvesting, keeps well through the winter, is an excellent shipper and is of very good quality. A warm climate and favorable soil seems to be necessary to its best development, and accordingly we find it a favorite shipping variety in the Californian pear orchards. On deep, rich, sandy loam, in the southern parts of our province, it succeeds well, either as a dwarf or as a standard tree ; and it would no doubt be profitable in the commercial orchard.

Although some writers have claimed that this pear originated in France, because some old trees were found near Laval, yet the majority agree that the variety originated in Belgium, at the old University town of Louvain. Van Mons, in his Album de Pomologie in 1847, says, "This variety was found in the ancient garden of the Capucins, at Louvain, where the original tree still stood in the year 1825, under the name of Pastorale de Louvain."

In the old countries, much confusion has existed regarding the names of pears, and consequently much difficulty exists in the identification of varieties ; this pear, for example, is given no less than twenty-four different names in Leroy's Dictionnaire de Pomologie, as for example, Doyenne de Printemps, Canning, Beurre d'Austerlitz, Beurre d'Hiver, etc., the last named being adopted by LeRoy, while Hogg, of England and Downing of America, both adopt the name so well known with us, Easter Beurre.

DESCRIPTION.

Tree, fairly vigorous, upright and productive, and may be grown either as a dwarf or as a standard ; if as a standard it needs good rich soil and a warm climate for the best success. In Great Britain it does not seem to succeed as well as in Canada, for Hogg says it frequently happens that this delicious pear is of an indifferent and insipid flavor, which is caused by unfavorable soil, and Blackmore of Teddington says, "It cracks and spots and is seldom very good." Our experience with it, as grown at

Maplehurst on a dwarf tree, is very favorable.

Fruit, above medium size, irregular obovate; skin pale green at harvesting time, yellowing somewhat toward maturity, with numerous russet dots, russet patches around the stem and calyx and often a brownish check. Stem, about one inch long, stout, swollen at base, set in a narrow, deep cavity; calyx small, closed, set in a much plaited basin of moderate depth. Flesh: color white, texture fine, melting and juicy; flavor, sweet and agreeable.

Season—January to May, under ordinary conditions.

Quality—Dessert, good.

Value—Export, good.

Adaptation—Southern parts of the province.

CHOICE VARIETIES OF GOOSEBERRIES.

BY STANLEY SPILLETT, FRUIT STATION, NANTYRE.

The Question.—*What variety or varieties of gooseberries do you advise one to plant for profit?*

This question has been asked more frequently than any other and is difficult to answer, but, as I have had quite an experience along this line, I will give, in as few words as possible, the conclusions I have come to.

The gooseberry is not a popular fruit and I am satisfied this unfavorable opinion arose from the custom of canning or preserving it green, as we did ourselves years ago.

Nine people out of ten will tell you they have no use for gooseberries. I have asked a good many why they put up their gooseberries green any more than their plums, and the only reason given was "the skin of the fruit becomes tough and disagreeable if allowed to get ripe." This is true of a good many of the foreign varieties but not of our own native varieties.

Large vs. Small Berries.—Growers often say if they were able to grow the large berries they would have no trouble in finding a market. I am certain this is an error; people do not buy the gooseberry because it is small or large, cheap or dear, but because they fancy they do not like it; but I have never met a man yet who said he had no use for the gooseberry preserved, but who, if he ate it or was induced to buy a basket of ripe fruit, quickly changed his mind.

Fifteen years ago I sold 20 twelve quart baskets ripe to neighbors, mostly farmers. Three baskets went to Lefroy, one to each store and one to hotel. Every year since, these same people want to get their basket of ripe gooseberries, and the hotel, noted for its good table, takes 3 or 4 baskets. Nearly all these people put in their order a year ahead, for fear they will miss getting them.

Now many of these have tried the large varieties, but, in every case, have pronounced in favor of the medium sized berries such as Downing, Pearl and Red Jacket. One gentleman said "the big berry is no better than the medium berry, and most of our family say not so good, so the only advantage with the big berry is that it can be cleaned a little more quickly." Our own experience is just the same. Year before last we kept all our large berries for our own use; last year we sold the large and used Pearl and Red Jacket, and in our opinion the smaller berry is the nicer.

Foreign Varieties.—Of the fifty varieties sent to this station from England, fully 40

per cent were smaller than Red Jacket and several were as small as Downing when grown on old black wood and among grass. These foreign berries have very thick skins, so thick that there is very little pulp. Old country people who visit my garden inform me that these small berries are used altogether in the old country for jam making; and that they never saw the large berries used for that purpose. I was therefore prepared to hear from Prof. Beach that the Downing has been introduced into England, and that it is highly prized there for jam making. The largest apples, plums or even strawberries are not always preferred for cooking but often the medium size is preferred if they are nice in color, shape and condition. Now, sir, if you are willing to do as Green of Rochester did, go right out and sell gooseberries direct to the consumer, peddle them if you like to call it so, I advise you to set say 1,000 Red Jacket and 800 Pearl for selling ripe and 500 Champion to sell green for sauce, pies, etc. This advice is of no use to the big grower who piles his fruit into the market. It does not make any difference to him which variety will continue in favor, but you must please your customers, therefore you must know the best quality and supply it.

Money in Them.—Let me say, if I had my life over again with my present experience, I should buy 5 to 10 acres of land within a mile or two of some village, so as to get manure which is the secret of success, and grow strawberries and gooseberries for home market. I began with strawberries as a hobby and the first year I had all I could do to sell $60 worth! Stores took a couple of twenty-four quart crates the first year, farmers took from one to two dozen boxes; but the next year everybody wanted twice as many. I saw that there was a fine opening for someone, so I induced a smart honest laborer with a big family to take it up gradually. He first raised plants and sold a few berries but was stuck for capital, he went into partnership with a young farmer and now they can sell the product of seven acres of strawberries on this little market! Well I know the gooseberry market cannot be expanded like that but I do know that almost every farmer in the township will buy gooseberries at five cents a quart and the working men in the villages will go in for this fruit for canning or preserving as soon as they learn its valne. By this means one or two families in every township in Canada can be supported in comfort and independence. My own family uses a lot of fruit and to-day the gooseberry and plum are our favorites preserved, and I have no hesitation in saying that the gooseberry is ahead of the strawberry preserved.

Red Jacket.—I do not doubt that the big fruit grower can grow the big berries and find a more ready market for a time; but his customers will not be long in discovering what mine discovered, that the big berry cooked is no improvement in quality upon the medium sized berry, and any grower can afford to grow Red Jacket or Pearl for five cents a quart better than the big berries at 8 cents. Red Jacket when properly ripened is certainly the most beautiful berry I ever saw. It does not mildew and need not be sprayed, and is of a clean, bright, pinkish, transparent color. I had just one basket of this variety to spare last year and took it to the store where the campers deal. This was at the end of the season when all were apparently supplied, and the merchant had informed me that no more could be sold. Well this basket was noticed at once and bought up, and orders came in at once. I should just like to see one dozen baskets of well-grown Red Jackets exposed for sale in Toronto beside the biggest berries grown, and see which would sell the best.

NOTES AND COMMENTS.

Canker Worms are at work, and must be killed while small, with Paris green spray, three ounces to forty gallons of water; or with the Kedzie mixture described on page 184.

Codling Moth and Plum Curculio should be fought at once, and the same spray advised for Canker worms is useful if applied as soon as petals fall.

Borers are often very troublesome in an apple orchard that is not growing vigorously. There are two kinds, the Round Headed and the Flat Headed; and the latter is the more common in Ontario. The eggs are deposited in June and July, under the loose bark; and the young worm soon eats its way through the bark, and sometimes girdles a small tree completely. Washes of soft soap, reduced to the consistency of paint by the addition of a strong solution of washing soda in water applied once in June and in July, is a preventive. If the insect is already established, nothing will do but the knife.

The Peach Tree Borer, if neglected, increases in the orchard to such an extent that the trees may be almost ruined by its girdling them. The eggs are deposited on the bark just at the surface of the ground, in the summer season, and the young larva works its way downward, devouring the bark of the root, and causing an accumulation of gum, which often forms in a thick mass around the base of the tree, a sure guide to the presence of this borer. When once it is in the root, the only thing to do is to dig away the earth a little, and to search it out with a knife and destroy it. One of the most convenient preventive measures is to heap fine earth about the trees early in June, and this will prevent the borer from reaching his chosen place for oviposition. Some years ago we had a hard fight with this insect, but routed it entirely in the way above described and have had no return of it since, worth mentioning.

Apple Scab, which has wintered on the bark and old leaves, is now sending out its young spores to fix themselves upon the new leaves and the young fruit. Spraying with the Bordeaux mixture, the preparation of which was described on page 103, March number, will largely prevent the scab from affecting the fruit, if it is kept well whitened with the mixture. Some kinds are especially subject and should be sprayed faithfully, viz: Fameuse, Fall Pippin and Early Harvest. Some other kinds, such as Baldwin, Ben Davis and Duchess, are seldom affected.

The Deutzia Lemoinei, sent out this spring to our members, is a valuable acquisition and when it blooms will be much appreciated by all. The bush is quite hardy, and reaches a height of about three feet; it is a very profuse bloomer, making it a very fine ornamental shrub. The flowers are pure white, with yellow stamens, larger and more showy than those of the well known but smaller and more tender variety D. gracilis. There are several other varieties, as rosea, scabra, crenata, but none so desirable for Ontario gardens as Lemoinei.

Oriental Markets for Fruit.—No one can foresee the unlimited extension of which the export trade in North American fruits is capable. The obstacles that have hitherto

hindered, will soon be so entirely overcome that we shall no longer see a glut of good fruit, no matter how excessive our crop; for always some other part of the world will be eager to swallow up our surplus, providing it is accessible.

Our own great Northwest is opening up a vast market for our grapes, which are so unpopular in England, and likewise for our excellent plums, which can be grown along our lakes in such quantities. Germany, France, Russia and Austria, all want our fancy high colored apples; Scotland and England want our fine pears; and now even the Orient is beginning to ask for our apples. This latter statement is based upon the following report by United States Consul Miller, at Muchwang, China, concerning fifty boxes of apples sent from Portland, Oregon, on September 28th, 1901, and which reached China November 10th, in good shape, and every box arrived intact. The percentage of loss was greatest with the Red Russian variety (75 per cent), and least with the Ben Davis (2 per cent); the Spitzenberg lost 10 per cent, the Shannon Pippin 25 per cent, and the Jonathan 50 per cent. California ships a quantity of third-grade yellow Newtons to China.

"Some of these," says Mr. Miller, "are consumed by foreigners, but most of them go to the Chinese fruit stands and restaurants and are eaten by natives. The Chinese appetite for fresh fruit is strong, and apples are in great flavor; the only obstacle to the creation of a large market is the inability of the masses to purchase. The average Chinaman does not distinguish the different varieties of apples, and if inferior grades could be sent at low rates an extensive outlet could be created.

"Northern routes are the best for shipping green fruits. All shipments of apples for the northern ports of China should be sent by Oct. 1, on account of the danger of freezing if they arrive late in the season. If the fruit reaches North China in good condition, it will keep well on account of the dry, cold climate. The presence of the Russians in Vladivostock, Port Arthur and Dalny will increase the market for our apples, as the Russians like this fruit very much."

THINNING FRUIT.

If present appearances are at all indicative of the season's crop, there will be a phenomenal yield of almost every kind of fruit. Peach, apple, pear, cherry and plum trees, all seem to be competing to see which can make the best showing, and if one half the fruit were to hang until mature, our orchard trees would be exhausted for years to come. We therefore warn our readers to be on their guard against such an evil by thinning the fruit most carefully.

Effect on Peaches.—Experiments made at Maplehurst, during the last few years, have clearly proved that thinning of peaches very much increases the size of the fruit, gives it more color, largely increases the quality of No. 1 fruit, and in some cases increases the total number of baskets harvested. In some cases it was found to increase the net income in cash for the trees thinned, over those not thinned.

Effect on Plums.—Experiments made at the Wisconsin Experiment Station seem to prove that equally good results may be had from thinning plums, as we have had with peaches. About four-fifths of the fruit was removed from a portion of a tree of Gale Seedling plums, leaving the fruit about two inches apart on the branches, shown in Fig. 2317; while the other branches are left untouched. The increase in size is quite evident in our illustration, which is taken from a photograph.

Effect on Apples.—While the results in the case of apples may not be so clear as with peaches and plums, still the effect on the tree is no unimportant factor; for when our

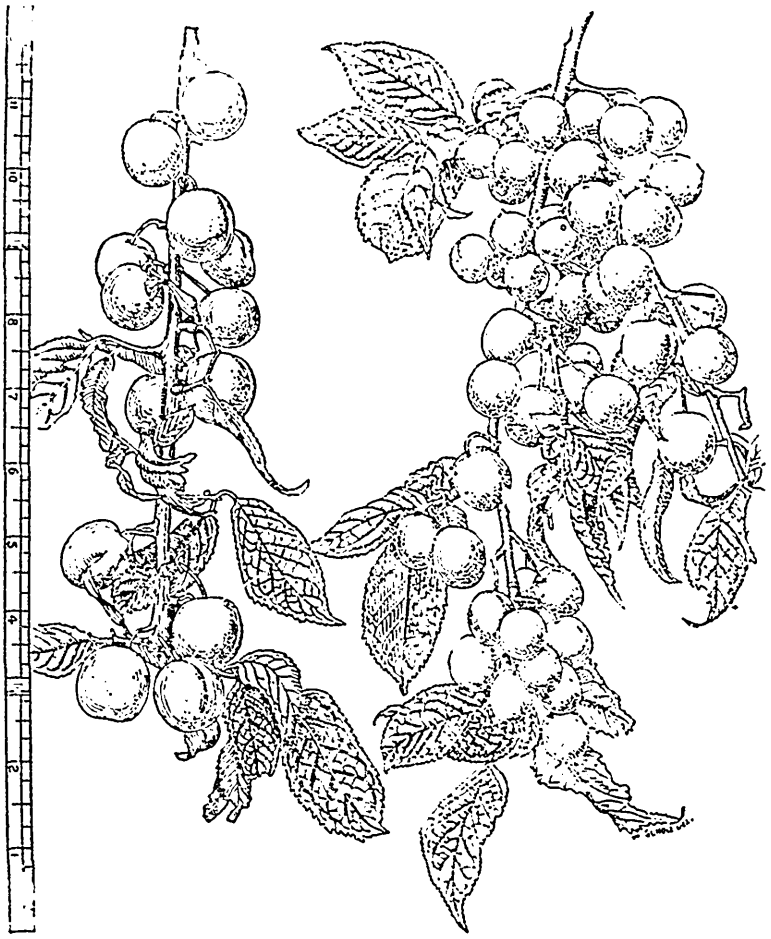


FIG. 2317. PLUMS THINNED AND UNTHINNED COMPARED.

orchard trees overbear, as they did in 1896, it takes three or four years for them to fully recover their vitality. Indeed, if one may judge from evidences, it is only this year of 1902, six years after that enormous exhausting crop, that our apple trees have recovered their wonted vigor!

The Massachusetts Station has reported on results of thinning apples, as follows:—

A tree each of Gravenstein and Tetofsky apples was thinned on July 1st, and a similar tree of each variety left unthinned as a check. In case of the Gravenstein, the yield on the thinned and unthinned trees, respectively, was first quality fruit, 9 bushels and 2½ bushels; second quality fruit, 1 bushel and 2½ bushels; windfalls, 9½ bushels and 10½ bushels. In the case of Tetofsky the thinned trees gave 1 bushel of windfalls, and the unthinned tree 3 bushels; of second quality fruit, the yield was one-half bushel from each tree; and of first quality fruit the thinned tree yielded 2 bushels and the unthinned tree none at all. Allowing 60 cents per bushel for firsts and 25 cents per bushel for seconds, the market value of the thinned Gravenstein apples was over twice as much as that of the unthinned and of the thinned Tetofsky apples eleven times as much as that of the unthinned. It

cost 48 cents to thin the Gravenstein and 25 cents to thin the Tetofsky. The net gain due to thinning was 85 cents for the Tetofsky and $1.85 for the Gravenstein. It is thought that the results would have been more pronounced if the thinning had been done two weeks earlier. The large percentage of windfalls in case of the Tetofsky was believed to be largely due to the fact that the apples have very short stems and are borne in clusters of from three to eight fruits each, so that as they grow they become very much crowded. With trees having this characteristic, therefore, thinning is especially valuable.

Absurd Statements.—The New York Fruit Trade Journal, after speaking of the superiority of American over Canadian fruit packing, is further responsible for publishing the following paragraph as part of a speech by Michael Simons, of Glasgow :

> The question of selection or grading is also one of importance, even with honest packers. We say 'honest' packers, for it is regretful to say that there are men who are actually dishonest ; and to such an extent did false packing obtain in the Dominion of Canada that the Legislature has thought fit to pass a special act making false packing a criminal offense, with special penalties, including the possibility of imprisonment attached to it.
>
> There are various methods of resorting to this false packing in order to deceive the unwary. What is called stove-piping is supposed to be the most general, the modus operandi in connection with which is something as follows: A barrel is taken and the bottom of it layered with a few good apples put in in perfect regularity. A stove pipe, the circumference of which might be about half that of the barrel, is then introduced into it. Apples are then poured in round the stove pipe, reaching up to the chime. Then the inferior apples are poured into the hollow space in the stove pipe. When it is filled up, the pipe itself is removed, the result being that all the rubbish is in the center of the barrel, where it is difficu't to observe it. The top, bottom and sides are comprised of good fruit. The packing is then completed in the usual way, a special press being used for the purpose, in order to insure the impossibility of movement, which at the outset we spoke of as the chief desideratum.

This statement is too absurd to contradict. We venture the assertion that Mr. Simons never saw an instance of such packing as is here described. If, as our contemporary infers, Canadian packing is inferior to American, how is it that Canadian Baldwins always bring a higher price in Liverpool than American Baldwins ; and is not the fact of our passing a fruit inspection Act rather a proof of our intense desire to do honest work, than an evidence of our dishonesty? Such a paragraph is most unfair and unjust.

The Spring Frost —Nearly every year, toward the end of May or early in June, we are alarmed at the serious danger to our fruit crop from frost, and very often we lose a large part of our cherries and strawberries in realization of our fears. This season our spring began early in March, and the fruit buds were unusually advanced the first week, 9th of May, when a period of cold came which lasted three days.

In the most favored sections, near the lake, the temperature was down to 30°, and in many places much colder. At first the usual peach scare prevailed in the Niagara district, but the damage is less than was anticipated. The petals of the cherries are frosted, but the young cherry, hidden and protected by them, is found to be quite uninjured ; the strawberries which were formed are blackened and spoiled, but there are plenty still to come to make an average crop.

Injurious Degrees of Cold.—Hammon gives (1896), a table showing at what temperature plants are liable to receive injury from frosts, from which we cull the following as being those more interesting to us in Ontario :

Fruits.	In Bud.	In Blossom.	In Setting Fruit.
Apples	27°	29°	30°
Grapes	31	31	30
Peaches	29	30	30
Pears	28	29	29
Plums	30	31	31
Strawberries.....	28	28*	28

*In our experience, strawberries in blossom are injured at 30°, and we think in this particular he has given them more credit for hardiness than they deserve.

The Codling Moth is one of the worst enemies of the apple grower, and every year the percentage of wormy apples in untreated orchards is increasing. We have known instances where fully one-half of the crop was wormy and the affected apples were otherwise the finest of the fruit. Since only about thirty days elapses between the deposition of the egg and the appearance of the adult moth, it is evident that we have in Canada at least two broods in a single season, and farther south there are three and sometimes four.

Now a man with a small orchard will try and keep down this worm by poultry and stock, but for the large orchard, faithful spraying with Paris green (4 ounces to 50 gallons of water) is about the best treatment. It is an expensive job, and for this reason many neglect it and their orchards become breeding places of worms to ruin their neighbor's fruit. When neglect of spraying is general, the work of keeping one's own orchard clear is almost hopeless, but if the work be at all general, one may spray with the more confidence of success. The first spraying should be within a few days after the blossoms fall, and should be repeated several times at intervals of about a fortnight, if one is determined to succeed.

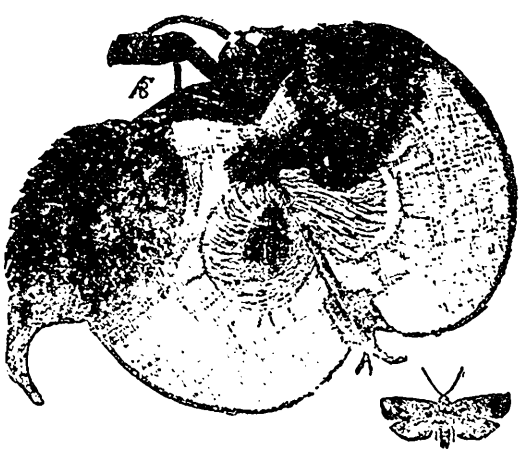
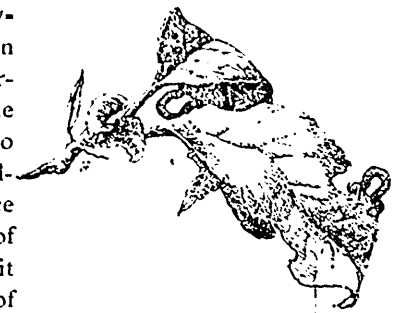


FIG. 2318. WORK OF THE CODLING MOTH.

Shelter For Strawberry Plantation.—On page 126 some reference was made to the beneficial results to plants from night shelter, and now we notice in the April number of the Southern Fruit Grower, a record of excellent results from covering a strawberry plantation with thin muslin, from the time the berries begin forming until picking time. Protection of this kind was estimated to increase the crop fully fifty per cent., to largely increase their size and to make them earlier in ripening. Notwithstanding that the cloth hung limp and close over the blooms, yet pollenization was absolutely perfect, because the confined air, laden with pollen, reached every blossom.



Possibly this protection more nearly resembles nature's wild strawberry garden, where the vines have semi-protection from grass and wild plants, in fruiting season.

In fastening the cloth, stakes were used, projecting six inches above the ground, through the upper end of which a gimlet hole was bored, and a six inch piece of small soft wire run in, of which one end was twisted about the stake, and the other bent into a hook to hold the cloth, set one and one-half yards apart in rows less than three feet apart.

Canker Worm.—This is a troublesome enemy of the apple tree in some sections of Ontario, and if neglected, will quickly increase to such an alarming extent as to threaten the life of the trees. The first evidence of its work is the perforation of the leaves with small round holes, which gradually increase in size until nothing but skeletonized leaves remain, and the trees look as if scorched by fire.

These worms were very bad around Bur-

lington Bay and in the Niagara District last year, and seem to be gaining ground year by year, owing to neglect of proper remedies. One of the most reliable preventive measures is suggested by a study of the insect itself. The male moth is winged, but the female is not winged and therefore must climb the trunks of the trees to deposit its eggs.

Therefore a tree protector of some kind about the trunk will effectually prevent the eggs from being deposited upon the tree above it, or the worms from crawling up if hatched out below. Bands of heavy paper tightly fastened around the trunk and besmeared with some sticky substance, such as coal tar or printer's ink, will serve the same purpose. Some report using a mixture of 3 pounds of resin to 2 pounds of castor oil, melted together and applied directly to the trunk of the tree. The writer tried sticky bands in his own orchard some years ago, and succeeded in completely routing the worm, hundreds of females being caught fast trying to walk through a sticky bandage of coal tar. There are two species of Canker worms, Anisopterix vernata (the spring canker worm) and A. pometaria (the fall canker worm) so that one must be vigilant both in spring and fall, and the bandages should be applied toward the end of October, and kept sticky until about the 1st of May.

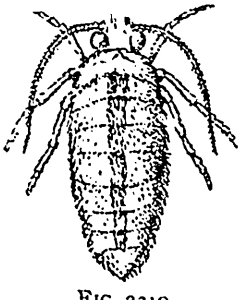


FIG. 2319. FEMALE MOTH OF CANKER WORM.

The common remedy, spraying with Paris green at the rate of one pound to 150 gallons of water, is effective if applied while the worms are very young, but, if delayed until the worms are even half grown, it is not very effective. A better remedy is the strong solution of white arsenic known as the Kedzie mixture, which was given on page 184 (May No.). Prof Kedzie used 2 lbs. white arsenic, 4 lbs. sal. soda and 2 gallons of water. This was boiled until the milky color disappeared, showing that the arsenic was dissolved. Then 1 pint of this was added to 40 gallons of water. The addition of 2 lbs. of lime to each barrel of this mixture made the arsenic solution insoluble and less apt to scald the foliage.

The Georgian Bay Fruit Growers' Association seems to be a most active and enterprising society. That they mean business is evident from the work undertaken, which may be classed under such heads as, co-operative buying of baskets; pumps and material for spraying; uniformity in methods of cultivation, pruning and packing; co-operative shipment and sale of fruit. At Montreal a special forwarding agent for the Georgian Bay packages of fruit is retained during the shipping season, who will report the condition the fruit arrives in Montreal, the manner in which it is handled and placed on shipboard. The secretary is Mr. Fred. Marsh, whose ambition is to make the Georgian Bay brand hold the top place in the market.

Spraying Demonstrations.—Actions speak louder than words, even in horticulture, and the man who can do a thing as well as tell about the doing, is the man who is needed these days. Secretary Creelman writes that he has engaged Messrs. McNeill, Carey and Lick for spraying demonstration meetings to be conducted in connection with the local fruit growers' associations in the various parts of the province.

MEN WHO HAVE SUCCEEDED III.

LUTHER BURBANK.

The Wizard of Horticulture—Wonderful Results of Hybridization.

"If little labor, little are our gains;
Man's fortunes are according to his pains."

For some years past the name of Luther Burbank, of Santa Rosa, California, has been familiar to fruit growers the continent over, but it was only recently that we have been able to trace anything about the person behind the name, when Prof. Wickson, of California, in a monthly journal called "The Sunset," gave us a beautiful sketch of "The Man, His Methods, and His Achievements."

Our young readers, who wish to become horticultural experts, can study no biography that will be more suggestive of useful enterprise than that of our subject, for his work has been one of real and honest effort to do and be, rather than to get and seem to be.

There is no line of scientific and at the same time practical horticultural effort that brings greater good to fruit growers than that of hybridization, and the production of new and valuable fruits, and yet how few of our horticulturists have the patience needed to pursue this work. The celebrated M. P. Wilder, of Boston, is said to have always carried with him a pair of nippers and a camel's hair pencil, and a piece of netting, and his great pleasure was to nip out the stamens of the flowers of one fruit, and with his camel's hair brush touch the pistil with the pollen dust from another. Then he would tie the fertilized bloom in the netting to prevent insects bringing other pollen, and wait patiently for the time when he could plant the resulting seeds, and so originate some new and valuable hybrid. This work takes years, it does not always pay in hard cash, but it brings more lasting reward to him who thus works in the interests of his fellows.

Luther Burbank was a Massachusetts boy, born in 1849, with no especial chances of success. He was slight of build, retiring in disposition, but even as a child he showed a love for plants by making a doll of a cactus plant, and grieving deeply over its loss. At school he lacked confidence enough to speak before his comrades, but he was gifted in composition, and succeeded in making a bargain with his teacher to accept essays in place of declamations.

It was while reading an agricultural paper that he noticed the need of an improved variety of potato, and set himself the task of producing it. His efforts were successful and he gave the world the Burbank. Concluding that California offered him a good opening to carry on the plant and seed business, which he had taken up, he removed there in 1875, with little stock in trade except ten Burbank potatoes, which he had reserved when he sold out the stock to a Massachusetts seedsman, and these helped to give him business standing in the new country.

After some ten or twelve years Mr. Burbank found that his time was too much divided, and that he must concentrate his whole time upon his chosen life work, the production of new varieties, and in 1893 he published the first of that notable series

of announcements, which he called "New Creations in Fruits and Flowers," and which has interested so many people in his wonderful productions.

The Burbank home is very humble, less pretentious even than his greenhouse or barn adjoining. Here, on four acres of ground, most of his work is done, an example truly of intensive culture. The beds of plants about the house are collections for working purposes; in one of them, for example, there are forty varieties of golden rod, set there for the express purpose of studying their habits of growth and of bloom.

Santa Rosa is a town of about nine thousand inhabitants, and here Mr. Burbank has lived during a decade of years with his aged mother. The home is small, and there are no attempts at display of any kind, no special show plants, no laboratory, no medals or diplomas, no special library, and yet this man is widely read, he is abreast of the times, indeed in his own work he is in advance of any books.

Modest worth certainly is one of his characteristics, and so rare is this trait, that we look upon such a man with surprise and find it hard to understand how he can place the doing before the reward, and forget the dollar in the effort to bring about some great and good result of his labor. But such a man is Mr. Luther Burbank, and the work he is doing is of such scientific and expensive character that most persons would at once seek the aid of the state or of some millionaire; but he, in carrying it forward, has asked no favor, he loves his work, and the reward comes in the doing.

A Boys' Institute.—Quite a new departure in the education of boys has been made by Mr. C. J. Atkinson, Supt. of the Broadview Boys' Institute, Toronto. This gentleman has a class of city boys, a number of whom have signified their intention of becoming farmers. He has secured a plot of land and is giving each boy a portion of it upon which to set different plants this year, each one for himself. In consultation with Mr. C. C. James, the following programme of lectures has been drawn up:

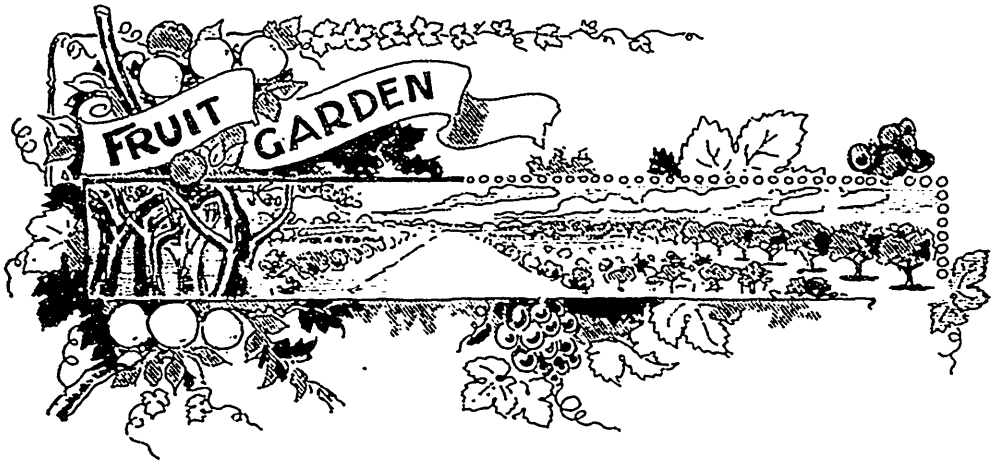
Agriculture and Nature Study, Lecture Course, Season 1902—

1. May 5—Introductory, G. C. Creelman, Ontario Dept. Agriculture.
2. May 12—"How to Make a Vegetable Garden," John Barton Weston.
3. May 19—"How to Make a Flower Garden," Wm. Tyrrell, Toronto, Pres. Horticultural Society.
4. May 26—"Seeds and Seedlings," Prof. Lochhead, Guelph, Ontario Agricultural College.
5. June 2—"Relation of Plants to Soil and Air," C. C. James, Toronto, Deputy Minister of Agriculture.
6. June 9—"Insect Life," W. N. Hutt, Southend.
7. June 16—"Our Birds," C. W. Nash, Toronto, 108 Waverly Road.
8. June 23—"Poultry," Poultry Manager Dentonia Park Farm.
9. June 28—"Poultry," Poultry Manager Dentonia Park Farm.
9. Aug. 4—"Nature Study in Parks and Gardens," Principal Scott, Normal School, Toronto.
10. Aug. 18—"A Tree," Thos. Southworth, Division of Forestry, Toronto.
11. Sept. 1—"Farm Animals," J. B. Ketchen, Director of Dentonia Park Farm.
Sept. 6—"Farm Animals" at Dentonia Park Farm, J. B. Ketchen, Director of Dentonia Park Farm
12. Sept. 15—"Flowers and Fruits," L. Woolverton, Grimsby, Editor "Canadian Horticulturist."

This institute is interdenominational and has Lord Strathcona as Hon. President. It includes many departments of work, classed under four divisions, viz.: Mental, physical, spiritual and social, and will surely be a source of great inspiration to boys who are choosing their life work.

The first of the series of lectures has been given by Secretary Creelman. It was quite an inspiration to see the eagerness of the boys, who listened for over an hour and a half as Mr. Creelman told of the making of the soil, and of the wonders of insect life.

We will watch with interest the carrying out of Mr. Atkinson's scheme and wish him every success in his work.



SOME PECULIARITIES OF FRUIT SPURS.

BY H. L. HUTT, PROFESSOR OF HORTICULTURE, O. A. C., GUELPH.

In the last two articles I dealt at some length with those forms of branches commonly known as fruit spurs. The importance of a thorough understanding of these, and the many erroneous ideas concerning them, is my excuse for again reverting to the subject. Only last week I received a letter from a correspondent who has been observing some of these for years, which shows something of the general lack of knowledge concerning such things, not only by men who care for trees, but by those who are expected to give information to others about them. In the course of his letter, he says:

"Five years ago I noticed, when pruning the Ben Davis apple trees, a small knot or bunch on the branches. Now it is spreading all through the Ben Davis trees. I send by this mail a sample of the knots. A question concerning them was asked at our last Farmers' Institute meeting, but could not be answered. I pruned 20 young Ben Davis trees last week, and, if this disease keeps on spreading, I think the trees should be destroyed."

I was, of course, pleased to inform him that such drastic measures were unnecessary, as this was not a disease, but a natural result of the fruiting of the tree.

The accompanying illustration, which is about three-quarters of the natural size, is made from a photograph of some of the knots in question. At the beginning, we may say that the swellings are more noticeable in the Ben Davis than in most other varieties of apples, although they are often quite common in pears.

They were at one time supposed to be something of the nature of a reservoir for the storing up of nourishment for the development of the fruit, but careful investigation has shown that this is not the cause. Prof. Bailey, in his Pruning Book, says: "They are swellings resulting from the strain of fruit bearing, and are not to be looked upon as conducing in any way to subsequent fruitfulness." A little study of the annual growth in fig. 2321 shows the correctness of this theory, and may help to a better understanding of the formation of such branches. Beginning

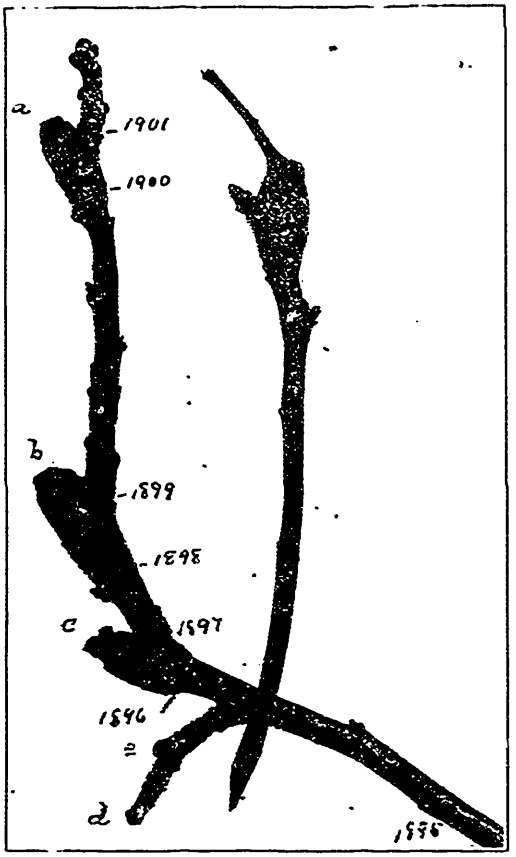


FIG. 2321. BEN DAVIS FRUIT SPURS.

at the end of the branch, we see about one inch of last year's growth, and it has at its extremity a good plump fruit-bud which will blossom this spring; and, if all goes well, should bear fruit. There is, as yet, however, no such swelling upon it as that which appears on the growth of 1900 just below it. In 1900 there was only a little over half an inch of growth, but at (a) is a large scar showing where an apple was borne that year; and, as a result, we see the large swelling of the spur at that point. In 1899 an unusually long shoot was produced, but this may be partly accounted for by the fact that the branch did nothing else that year, as there is no sign of there having been fruit. In 1898 there was only about an inch added to the length of the spur, but that year it had a good sized apple, as shown by the large scar at (b); and here again is another swelling. In 1897 the branch not only bore fruit, but it made very little new growth, which may be seen by the short piece between the swellings above and below. 1896 was another fruitful year, and the spur then terminating at (c), made an effort to bear two apples, but, for some cause or other, they failed to reach maturity, as shown by the two small scars at that point. They must, however, have reached a considerable size, as evidenced by the swelling of the spur below them. Below the ring at the base of this lower swelling we see the long growth of wood made in the year 1895.

The small shoot terminating at (d) has been six years in making its inch or more of growth, as may be seen by counting its rings. It has been outgrown by its more vigorous neighbor, and will after a time cease growth unless an accident should happen to the main branch, which would check growth in that direction. About three years ago it made an effort to bear fruit, but its effort was in vain, as the little scar at (c) shows that it could have done little more than blossom.

To summarize, we have in this small branch seven seasons of growth; the bearing has been in alternate years; four attempts have been made at fruiting, two of which have been successful, and two have failed; and at the end of the branch is a well-developed fruit-bud which promises well for fruiting this season. At each point where fruit has been borne, there is an enlargement of the part due to the addition of woody material, no doubt for the purpose of strengthening the spur to support the weight of the fruit.

ORCHARD CULTIVATION.

BY W. H. COARD, L. L. D., DEPARTMENT OF AGRICULTURE, OTTAWA.

It has been only within the last ten years or so that spraying has been regarded as an important part of successful fruit culture. Recognizing the value of anything that would prevent injury to trees and fruit, spraying has received considerable attention at the Central Experimental Farm, and many fungicides and insecticides have been tested to prove their relative merits. While experimenting with a lime mixture sprayed on fruit trees to prevent the swelling of the buds in early spring, Mr. W. T. Macoun discovered that the trees thus treated were practically rid of the oyster shell bark louse, an insect which does a great deal of injury to apple trees in the colder parts of Ontario and the Province of Quebec. The lime destroys the gelatinous matter which binds the scales to the tree, and the scales are then removed by the action of rain, frost, or wind.

In order to be most effective the spraying should be done in the autumn, and there should be two applications so that all the scales may be covered. Lime used in the proportion of two pounds to one gallon of water has been found to be the best formula so far, but it is possible that one pound of lime to a gallon will be sufficient if the lime be good. This new remedy for the oyster shell bark louse is simple, cheap, and very effective, and should prove a popular one. There is, in fact, no remedy so good, economical, and unfailing as this for the oyster shell bark louse.

Kerosene emulsion has been usually used for this purpose, and with good success when the insects are running, but as they only run four or five days in the first week in June it is difficult to kill them all off in this way. By covering the trees with lime you are able to get at the scale, and the lime makes the trees white, so that you can see whether all the scales have been covered or not.

The advantage of clover growing in an orchard in the fall is that much of the plant food in the soil, which has been liberated and made more easily available by the constant cultivation during the early part of the summer, is prevented from leaching by being used by the growing plants, the clover thus becoming a "catch crop" as well as a cover crop. Where soils suffer from lack of moisture in a dry time, the clover should be plowed under as early in the spring as the land can be worked, and cultivation should be begun at once. This will conserve much of the moisture which would otherwise be transpired through the leaves of the growing plants until they are plowed under towards the end of May, which is the usual time. If the soil, however, always contains plenty of moisture, it would be better to let the clover grow until about the third week of May, as there would be additional humus and nitrogen obtained by this method.

Many orchards have been neglected so long and have reached such an age that it would not be profitable to attempt to renovate them. The best plan in such cases is to plant young trees. On the other hand, there are many orchards where the trees, if cared for, would be in the prime of life, and neglect is the only cause which prevents profitable crops

from being grown. It is of orchards such as these that a few suggestions are here offered as to how to bring them back into good condition. But the results desired cannot be got in one year.

The trees, to begin with, should be pruned, not too heavily at first, but enough limbs should be taken out to open up the top and permit a free circulation of air and the admission of sunlight to it. The trees will, probably, be much moss-grown, and both they and the fruit may be affected with various diseases. Injurious insects, too, are almost certain to abound.

Spraying should be begun early in the season, and the trees should be kept covered from top to bottom with Bordeaux mixture and Paris green until the fruit is almost fully grown. Scraping the trunks and large branches of the trees may be done if there is much moss, but as soon as the tree becomes more vigorous, and air and sunlight are admitted, much of the moss will disappear. If the oyster shell bark louse, or other scale insects infest the trees, they should be sprayed with the lime mixture, or other materials already mentioned.

As the orchard, if neglected, is almost certain to be in sod, the soil should be plowed shallow in the spring, turning under a good dressing of manure if it can be procured. If the sod is not too thick it might be worked up with the disc or be kept thoroughly harrowed until July, working in other fertilizers if the land be poor and manure is not to be had; and then red clover seed sown at the rate of twelve pounds per acre, and the ground rolled. A good cover crop should then be formed by autumn. This would conclude the first season's work. The results would, probably, be a greatly increased vigor in the trees, and the fruit, though, perhaps not plentiful, would be cleaner.

The second season additional but less pruning should be done, the trees kept sprayed as before, the clover plowed under in the spring, and the land kept harrowed or cultivated until July, and then seeded down to clover. The fruit should be better than the year before; but not until the third year should the trees be expected to bear heavily and the orchard be in good condition.

A PLEA FOR OUR HAWKS AND OWLS.

BY W. N. HUTT, SOUTHEND, ONT.

John Bunyan, the immortal dreamer, pictured the life of man as a continuous warfare. Perhaps to no class of men is this more applicable than to the modern Canadian horticulturist. The orchardist, the gardener, the florist, with engines of destruction, have just been hurling deadly tonics into the atmosphere, and now are laying mines for unseen foes and preparing for the devastating hordes of the future.

The husbandman of the soil seems to be at war with all nature. Or is it nature? Is it natural that the codling moth should destroy all our apples, the tent caterpillar strip all our orchards, or the potato beetle ruin all our potatoes? In a special degree, can it be natural that a pernicious scale should threaten our whole fruit industry, or a destructive fly drive our staple product from the market. It may be harsh, yet it is natural, quite natural. Na-

ture intended that the insect should live on the plant and the bird upon the insect, the fungus upon the green leaf and the parasite on the host-plant. She grants immunity to the apple tree growing in Canadian forests and to the potato struggling for life in the wilds of Virginia, but she refuses to protect forests of fruit trees or extended plantations of potatoes. By extensive planting of any one species of vegetation we disarrange nature's equilibrium and against odds we must maintain the balance ourselves. By adding acre to acre of any crop we increase the feeding ground of insects that live upon that crop, and of course they increase accordingly. But the question consequently arises, Why do birds not maintain the balance of nature and protect our gardens and orchards? They would do so if allowed, but sadly reduced in numbers they are quite unable for the task. Our native birds of late years are becoming alarmingly scarce. Decimated by the gun of the bird collector, driven out by the English sparrow, and robbed by the thoughtless small boy, birds are now scarcely a factor in the problem of crop protection. One is forcibly reminded of the fact at this time, in seeing birds returning from the south. Where are our old friends, the lovely blue bird, the old-fashioned phoebe, and the once ubiquitous barn swallow? We deplore their depleted numbers, and must ourselves do their work of destroying noxious insects and protecting our crops.

There are, however, worse injuries to trees than having their foliage eaten off or their fruit injured. Mice may in a few days in winter so girdle trees that they are completely ruined. Spraying, if carefully persisted in, will control insect pests, but over rodents working under winter snows we have little or no power. This spring, from Essex to Ottawa, complaints are heard of great destruction to trees by mice. Thousands of nursery trees have been destroyed, hundreds of orchards partially or totally ruined, and even vineyards are reported as suffering. This too is a very natural result of a natural cause. Our rapacious birds, the hawks and owls, which live chiefly on mice and other rodents, have become quite scarce. Hawks are not nearly as common as formerly, while owls are scarcely found except in museum cases. In suffering from this plague of mice, the orchardist is paying for the destruction of our rapacious birds. It seems almost a waste of time to take good care of an orchard in summer only to have it girdled and destroyed in winter. We would not by any means disparage spraying, or other means of protecting trees, but it seems that it would be wise to give more attention to the cause of the trouble.

By accurate examinations of their stomach contents, it has been found that rapacious birds are most useful, in spite of some small birds killed or an occasional chicken taken. Instead of running for a gun when a hawk or owl is seen, it should be protected in every way. It is deplorable that when a flock of northern snowy owls visit our shores it should be pursued till all are turned into bird mummies. The most practical thing that could be done for horticulture is the jealous protection of all birds, and particularly those of rapacious habits. Our boys should be taught their great value, and shown that during resting season birds should never be molested. If hunting were done with camera instead of with gun, the pleasure and profit of the chase would be increased, and the whole country would rejoice at the decrease of injurious pests and the increase of native birds.

RECLAIMING A BARREN ORCHARD.

Cultivation and Spraying Effect a Most Wonderful Improvement.

People ask if there is any help for the old orchard. The problem of the renovation may or may not be a simple one. The mere statement of the conditions of an orchard would seem to suggest the solution. Still there may be local causes for unfruitfulness that may not be apparent. Perhaps the conditions may be such that renovation is impracticable. These questions have to be taken into account.

A simple story of experience may have its lesson. In my possession are several small apple orchards, aggregating twenty acres. The soil varies from a light drifting sand to a somewhat heavy clay. The lighter sand is leachy and the clay is tough and cloddy. A small part of these orchards had been pruned, sprayed, tilled, and fertilized in an experimental way for several years, with very satisfactory results. Another part, before it came into my possession, had been used for hay, pasture, and various farm crops. Farm manures had sometimes been used, and the soil—a moist, sandy loam—was considered to be fairly good. The trees had received little if any pruning, and they were very thick and bore many dead branches. Although most of the trees were twenty-eight years old, the largest crop on the three acres in this plot previous to the adoption of the improved methods was about thirty bushels, mostly culls. The larger part of these orchards was covered with grass and weeds, and while in this condition many trees had been killed by being girdled by mice. No manure had been applied since the two were set. It was supposed that the barrenness of the orchards was due mainly to the impoverished soil.

In the spring of 1894, these orchards for the first time were all brought under a uniform system of treatment, which has continued until the present time. The trees have received moderate annual pruning, and the heads have been retained as low as possible, merely training high enough to permit the teams to pass under the limbs, the ends of the pendant branches being cut back to the desired height. Trees have also been removed when found to be encroaching on those neighbors which were designed to remain permanently, and spraying mixtures have been applied to keep the insects and fungous diseases under control. The spraying is done just before the flowers open and twice after they fall, and the material used is Bordeaux mixture and Paris green. The soil has been shallowly plowed, and well fitted as early in the season as conditions would permit, and it has been thoroughly tilled until midsummer for the purpose of conserving the moisture.

Cover crops have been sown, although not always with satisfactory results. The simple statement of the bare outline of these practices may make a little impression on the reader, but they are nevertheless the fundamental means of bringing old orchards into profitable condition.

Feed them by improving the soil.

Keep them healthy.

Prune.

Save the moisture.

Add humus to the soil by means of cover crops.

Then wait.

In the beginning mineral fertilizers were used on all the orchards, except certain rows which were reserved as checks—for experimental purposes—in that part of the orchard that had never been manured. As the expected benefits from the use of these fertilizers did not appear they were gradually abandoned except on certain rows near the check rows, upon which the use of the fertilizers has been continued up to the present time for experiment.

The results of this fertilizer experiment have thus far been entirely negative, and it has been valuable chiefly in emphasizing the importance of certain other factors in the renovation of these orchards. It is shown conclusively that the mineral elements were not deficient in this soil, and if they were not formerly available it was probably due to the poor soil-conditions, and to a lack of a regular and abundant supply of moisture. Improved soil conditions and the increased supply of moisture have rendered these elements more available, and the healthy leafage—due largely to spraying—enabled the tree to make profitable use of them.

The greatly increased vigor and fruitfulness of these orchards, continued through a term of years, furnish very convincing evidence of the value of these methods—good tillage, cover crops, pruning, spraying. While it may be possible under other conditions to pursue quite a different course with favorable results, yet the objects to be attained must be essentially the same under all circumstances. The tree itself must be protected from its enemies, and food and moisture must be abundant and available, the leafage must have sufficient exposure to sunlight, and the fruit must be protected from parasitic injury.

Perhaps no better testimony in regard to the results can be presented than a statement of the actual amount of fruit produced during the six years, beginning with 1895, the year following the adoption of these methods, and including three "bearing" and three "off" years. The total amount of fruit sold during that time was 35,672 bushels—an average of nearly 6,000 bushels per year—the smallest crop being about 3,000 bushels. Of the total amount 78.5 per cent., or 9,337 barrels, was classed and sold as No. 1 fruit.

Further evidence of the effectiveness and value of these methods is found in the fact that the farmers of the vicinity have almost without exception adopted them, and are practising them more or less thoroughly, with a very marked increase in the health and productiveness of their orchards.—Willis T. Mann, in Country Life in America.

W. H. BUNTING, St. Catharines, writes to the Sun:

The cherry crop is somewhat in doubt; trees blossomed well, and it is thought that the very early and late blooming sorts will show fair crops, while midsummer kinds are seriously injured by the frost.

Peaches and plums are in somewhat the same condition, some varieties in some localities having escaped injury, while in other cases the damage is quite serious, more especially with regard to the Japan plums and the yellow fleshed peaches of the Crawford type.

The opening buds of the grape were in some cases cut off to the extent of 50 per cent, but as the season is early it is probable that beyond reducing the crop to a moderate degree, unless further injury from rot or mildew follows, there will be a fair crop of this valuable fruit. The area under grape culture is rapidly increasing.'

It is a little early to speak with any degree of assurance regarding the apple and pear crops, but present indications point to a large production of these standard fruits.

SPRAYING DEMONSTRATION.

FIG. 2322. SPRAYING DEMONSTRATION BY G. E. FISHER, AT GRIMSBY.

Mr. George F. Fisher, Provincial Inspector of the San Jose scale, has his hands full in explaining to fruit growers the best methods of treatment. In an interview on the 30th April he said the scale was rapidly spreading, and it was evident it had come to stay. At first it had been said that the scale could not endure our climate, but it was breeding faster in Canadian orchards than in those farther south, perhaps because the predaceous insects which were able to keep it in check were less hardy than the scale.

Individual Work, Mr. Fisher says, is the only hope for the fruit grower, for there are always a few careless men who will neglect their orchards, and no law can compel such men to do thorough work.

What shall we do with our big orchards of large apple trees when the scale gets into them?

It will be no light task, said Mr. Fisher, should scale once appear in them as it is sure to do sooner or later. You will have to construct a high frame work on your wagon, with a platform for one man to reach the tops of the trees while another works from beneath. Every tree will have to be treated annually, before the foliage appears in the spring, and it will be a very considerable expense. Mr. McCardle, of St. Catharines, says spraying will cost him $400 to $500 this spring, treating his peach orchards for the destruction of San Jose scale.

It is the aim of the Department of Agriculture to encourage those who are willing to help themselves in ridding their orchards of this dreadful plague. My aim is to put every man in a position to care for his own orchard, so in time the industrious man will prosper, while the careless fruit grower must "go to the wall."

Are township inspectors compelling treatment?

They have the power to do so, if the township backs them up in such a course. Saltfleet Township Council has appointed fifteen inspectors, who are already at work. Only yesterday I visited them, furnished them with hand glasses and gave them full instructions. They mean business. I have done the same with the two inspectors appointed by the Township of Grimsby. I am advis-

FIG. 2323. MAKING FISH OIL EMULSION AND BOILING LIME, SULPHUR AND SALT MIXTURE, AT ST. CATHARINES.

ing the inspectors to keep a record of every orchard inspected, showing the number of trees of each fruit, the number treated, the results, etc., so that we may work the more intelligently in future.

Crude Petroleum will kill not only cherry aphis but also the larvæ from all overwintered eggs as well as insects that have wintered alive on the tree. I am now using a crude petroleum emulsion which is good, and it may be applied with an ordinary pump, although a good agitator is desirable. I have used such an emulsion, made mechanically with the pump, with good results on peaches.

This crude oil emulsion is prepared as follows: Crude petroleum 2 gallons, whale oil soap (dissolved) 5 pounds, boiling water 1½ gallons. Churn violently 5 minutes, then more slowly, adding water to make 10 gallons.

This will contain ½ pound soap to the gallon of mixture and 20 per cent. crude oil; it costs about two-thirds the cost of fish oil emulsion, or 4 cents per gallon. This quantity of soap seems necessary to emulsify the crude oil and hold it, and also to lessen the severity of the oil treatment. The emulsion may be diluted more or less and thus vary the strength.

ORCHARD TILLAGE.

AT nearly every Farmers' Institute and Fruit Growers' Meeting held this season the most prominent topic seems to be Tillage of the Soil.

Some years ago it was Commercial Fertilizers. A year or two ago it was Cover Crops, and then when these questions were well understood by the cultivators of the soil, the itinerant professor turns the attention of his farmer students to the importance of physical conditions, and the conservation of soil moisture by tillage. When such valuable instruction is being given free of charge in such a popular and interesting fashion, surely no farmer can afford to miss a single visit of these instructors. Certainly the man who does not attend will soon find himself far behind in the intelligent cultivation of his farm or orchard crops.

An excellent resume of the subjects referred to was given lately by Mr. G. H. Powell in a recent number of the American Agriculturist as follows:

High intensive tillage has the result of making plants grow better. The first object of Tillage is to make soil fine, so that plants can grow into it. The next object I wish to lay down, that we till primarily to make land rich. The principal elements of food that plants use are potash and phosphoric acid. Every acre of soil, I judge, in New England, has from 5,000 to 40,000 pounds of this in the first foot of soil over an acre of ground. This store is wisely locked up so that it is not easily extracted, and if it wasn't some enterprising Yankee would be getting it to sell. It is not how to buy commercial fertilizers, but first how to utilize the stores of plant food already in the soil. Talk about the New England soil, all it wants is stirring up. I judge if most of the abandoned farms were properly stirred up they would show an astonishiagly large amount of plant food. Our fruit crops suffer more from lack of moisture than lack of good plant food.

Advantage of Weeds.—If it had not been for weeds we would not have learned about tillage. Soil is made up of mineral matter and of vegetable matter. A piece of new land is rich in vegetable matter. A cover crop for an orchard is simply a plant that stays upon the ground until you plow the ground the following spring. First I want to define the fundamental object. The most extensive element of plant food is nitrogen. It is soluble and dissolves quickly.

The greatest loss of this element occurs in winter unless there is something to take it up and then be turned under in the spring.

Cover Crop.—One of the dangers of winterkilling through the insufficient ripening or hardening down of buds is overcome through the use of a cover crop. Fruit buds are tender when growth continues too late in the fall. The whole of the fall ought to be used in hardening down. One of the best ways to accomplish this is to put in a crop on the ground that will grow and take up the available plant food and thereby stop down the fruit trees so they will harden down. Another object of the cover crop is to dry out the moisture in the spring. By a cover crop you can plow from one to two weeks earlier in the spring on this account. It is a mistake to allow the cover crops to go too long in the spring before plowing under and to remove too much moisture from soil.

A cover crop adds vegetable matter to the soil and replaces the matter burned out year by year by culture. One of the advantages of the cover crop is to make the soil spongy so that it will hold moisture. The ideal time of sowing cover crops depends on the season, but should be about the time the trees cease their growth. Some allow the cover crop to grow in spring, and if it is crimson clover, to do so till it comes into bloom. I believe that this is wrong. The best growth we can get on a orchard is in the spring. Two weeks in early May are worth more than six weeks later. The cover crop should not be allowed to absorb too much from the soil in the spring, and early plowing is best for early growth of the orchard. Crimson clover, cowpeas or other crops that have the power of gathering nitrogen from the air make good cover crops. Turnips, rye, oats and others do not.

NEW IDEAS IN STRAWBERRY GROWING.

OUR friend, Mr. R. M. Kellogg, of Three Rivers, Michigan, was to have given us a full text copy of his address before the New York State Fruit Growers at Rochester last January. His ideas were so radical that we asked him to allow us to publish them in full. Since, however, the manuscript has not yet come to hand, we will substitute a report of his address which appeared in the Michigan Farmer.

Fifty years ago the stockmen stood just where we horticulturists stand now. Individuality counted for nothing. All they wanted to know was the pedigree. An animal might be ever so much deformed and a perfect runt, but if it was of a pure breed, they said they could feed and house it to develop its good qualities. The case is different now. They want to know the skill of the breeder as well as the description of the animal's ancestry, and above all they want individual perfection. We talk continually of varieties. Any old thing of a plant will do if it is of the right variety. We have lost sight entirely of the individuals composing the variety. It it not true that they are all the same? They are constantly changing. The life of a strawberry plant is only for two or three years. Its vascular system cannot be changed and moulded into perfect development in so short a time. It often requires years of time to do it.

We do want **new seedlings** with constitutional vigor and a vascular system which manufacture larger berries and impart to them a brighter color and firmer texture, but we want also to know how to maintain their ability to continue this heavy fruitage. I quite agree with Prof. Bailey when he says: "We need not so much varieties with new names as we do a general increase in productiveness and efficiency of the types we already possess."

No one should question for a moment that soil, location and treatment are potent factors in fruit growing. Varieties of plants are like races of men. Change the Hottentot to the land of the Eskimo and he is a failure. A born merchant fails as a farmer. One man is happy in a hovel, while another

craves the environments of a palace. One man has the knack of pleasing a particular plant and it succeeds under his treatment, while it fails with another grower.

Let me give you my **plan of propagating plants,** one which I have practiced with the greatest care since 1884. I always propagate from ideal bearing plants. First, they must be grown under the best natural conditions, usually in hills, and have special care; be kept under restriction and protected during the winter by careful mulching. No one should think of growing plants for a propagating bed in the field with those to be fruited. Our field plants are always set in the spring, and while tillage is going on a careful watch is kept for any specimens which may show superior qualities to their fellows. Where this is marked we place a a numbered stake by it and make a scale card, noting its foliage, vigor and freedom from fungi, size of its crown, disposition to throw out runners, and in the fall whether it has well developed fruit buds. In the spring those showing the highest scale are selected for restriction, and as soon as blossom buds appear, about one-half are carefully removed and the balance allowed to bloom and set fruit. This is done to prevent weakness through excessive pollenation. When fruit is set all the berries are removed except two or three on each stem, and as the growth proceeds, size, color and firmness are noted, and when all have ripened we finish the scale and can then determine which plant has the best physical organism. Special care is then given it, and its new runners are rooted and transferred to a special bed, where they are allowed to make runners for next spring's planting. Thus, every year we discard those plants making undesirable changes, and give our care to those only which are physically able to respond to generous treatment. The next year selections are again made, and thus all bad variations are discarded every year and only the strong well-balanced plants absorb my labor and occupy my land.

Another reason why plants should be grown in a special bed is, that the runners should be layered so they will root early and become well matured both in root and bud. They must not be thrown around in a bunch, but each must have plenty of room with leaves fully exposed to sunshine or they will not be perfect.

The old wide matted row must go.—The cultivator throws the runners around in clusters, crowding the leaves together so the sun can only shine on the edges. The plant should always have room for each leaf to lay flat in order that it may have the full benefit of the sun's rays. No plant should be allowed to play the role of a weed and encroach upon others. The ideal way is to grow them in a hedge, making the rows from 30 to 36 inches apart, according to vigor of growth, and setting the plants about 30 inches apart in the row, and layering the runners so the new plants will stand eight to ten inches apart, and after that the new runners are cut with the rolling disk and finished by hand. If the physical condition of the plant is what it should be, when you check vine growth by cutting a runner, it will at once proceed to build up a new crown and fruit buds with added roots, but if it is weak in fruit bearing it will proceed to throw out new runners.

Berries grown in this way are always large, of an even size, bright in color and rich in flavor. The yield will be larger than if grown in any other way unless the land is too poor to grow berries at all. This system permits maintaining the loose earth mulch over all the ground with the cultivator. We give frequent tillage until we have copious fall rains and during the drought our plants are always irrigated, but if land is not especially favorable for irrigation I would not spend large sums of money in elevating water, but would depend on the loose earth mulch.

A strawberry grower must be something of a general. He must plan his work through a series of years, and must not only breed his plants right, but he will, by a system of rotation of crops, bring the soil into perfect condition for setting the plants. He must see his farm in imagination just as it will appear years hence and always work to a definite plan. He must discipline his men as well as himself to do every part of his work deftly and without a false motion. I drill my men like soldiers and often form an awkward squad of the inexperienced ones. The men learn to set the plants at one time and with three movements, and do it exactly right, and handle a hoe as

skillfully as a mason shoves his trowel. In other words only expert cultivators touch the handles of our harrows or lift a line. My berry pickers were taught how to pick a berry and put it into the box without injuring it.

When you come to recommend varieties of strawberries there are so many that will do well in one particular locality and not well in another that it is exceedingly difficult to do. The best you can do is to experiment; try Senator Dunlap. I have fruited it every year for five years. Then we have the Clyde, which is very popular on some soils, but fails on others. If you haven't got strong, rich soil, that will enable it to do its heavy work, don't set it. Strange to say, I never had the Dunlap. I have the Clyde and many others. One of my very choicest is the Brandywine. It does much better with me than Bubach (No. 5), and a great deal better than the Rough Rider, for which such great claims were made a couple of years ago. For canning we like the Brandywine just as well as our old canning favorite, the Wilson. Clyde and Brandywine undoubtedly require strong soil; but it may be said that the majority of strawberries will do well under high culture—that is, on strong, heavily manured soils. Manure and cultivation are the things that make big strawberries and big crops. For ordinary soils and treatment I would recommend Haverland, Wilson, Warfield, Splendid. Haverland often gives an immense yield of fairly good and fair-sized berries under somewhat indifferent treatment, but as a pistillate or imperfect-flowering variety it must have some other sort, like Splendid, Wilson, etc., planted close by or in mixed rows, in order to insure free fruit-setting. Experiment will show which do best in your locality.

FIG. 2124. EAST CENTRAL FRUIT STATION.

East Central Fruit Station. This testing station is situated near Whitby, and is in charge of Mr. R. L. Huggard. At this place we have planted nearly every variety of pear known in Canada, and in time we hope for most valuable reports of their value. Mr. Huggard sends a view of his place and says:

The photograph was taken from the west, which shows part of the north orchard, with a row of spruce planted 25 years, many of them over 30 feet high. The roof of the house and of the barn is almost hidden. This place was all commons 27 years ago, and now many of our trees are 25 to 30 feet high. We are making syrup from the sap of some of the maples shown in the picture.

APPLES AND THEIR ENEMIES.

How to Spray and What to Spray.

BY W. N. CARD, LL.D., DEPARTMENT OF AGRICULTURE, OTTAWA.

THE demand for Canadian apples of good quality and in good condition is an ever-increasing one, and in Great Britain the market appears to be unlimited, while the prospects for opening and continuing an extensive trade with other European countries are equally promising. Canadian fruit growers, packers and shippers are exhorted to see that the fruit that is exported is well and honestly packed, and that it is of such a quality that the demand shall not only equal our most sanguine expectations, but more than fulfil the desire of the most hopeful growers. In advocating the strictest regard to the requirements of the foreign market the Department is not sacrificing legitimate home markets; because if the produce be equal to the necessities of the European consumers it must of necessity be all that the home consumer can desire. In this way the advocacy of perfection catches two birds in one trap.

The apple grower is anxious to get the most out of his orchards, but sometimes circumstances combine to thwart his well-intentioned efforts, and to help him out of his difficulties this article is issued. The Department thus takes a hand in fighting some of his deadliest foes, in case he is willing to wield the cudgels provided for his succor.

There are four kinds of insect enemies against whom the apple-grower has to fight. There are those which devour the foliage, those which bore in the wood, those which occur in the bark, and those which attack the fruit. But all insects fall within two classes, which can be separated by the nature of the mouth parts. In the intelligent use of remedies a consideration of this point is of the utmost importance. In the class of biting insects, which have jaws with which they consume the substance of their food, such as caterpillars, all that is necessary is to place on the food plant some poisonous material which will be eaten with the food. For sucking insects, which instead of jaws have a beak or hollow tube with which they suck up their food in the liquid form, such as the plant louse, something must be used which will kill by mere contact with their bodies. For borers in the wood, which cannot be reached by those remedies, preventive measures may be taken by which the plants are rendered distasteful to the mature insects when seeking a suitable place in which to lay their eggs. For this purpose various alkaline or strong smelling deterrent washes may be used.

It cannot be too forcibly emphasized that the operation of "spraying" does not mean sprinkling or showering. "Spraying" means applying liquids by means of a force pump and spraying nozzle with such force as to break up the liquid so thoroughly that it falls upon the plants treated as an actual mist or spray. Unless you carefully spray and not sprinkle you cannot get an even distribution of liquids, therefore you cannot get the best results.

The remedies are numbered for easy reference and to avoid confusion.

1. Kerosene Emulsion.—Dissolve half a pound of whale oil soap in one gallon of rain water by boiling; take from fire, and while

hot turn in two gallons of kerosene (coal oil) and churn briskly for five minutes. Before using add nine parts of water.

2. **Paris Green.** — One pound of Paris green, one pound of fresh lime, and add 200 gallons of water.

For dry application, take one pound of Paris green, with 5 pounds of flour, land plaster. slaked lime, or any perfectly dry powder.

3. **Whale Oil Soap.**—For young insects (scale) use one pound in 5 gallons of water. For aphis use one pound in 8 gallons of water. For San Jose scale in winter use 2 pounds in one gallon of water.

4. **Tobacco and Soap Wash.**—For plant lice or aphis. soak in hot water for a few hours 10 pounds of tobacco leaves (home-grown will do), strain off and add 2 pounds of whale oil soap. Stir until all is dissolved and dilute to 40 gallons. Apply early and two or three times at short intervals.

5. **Alkaline Wash.**—For Borers. Reduce soft soap to the consistency of thick paint by the addition of a strong solution of washing soda in water. If applied with a brush during the morning of a warm day, this will dry in a few hours and form a tenacious coating not easily dissolved by rain.

5. **Poisoned Bordeaux Mixture for Fungi and Insects on Fruit Trees.**—Dissolve 4 pounds of copper sulphate (bluestone) by suspending it inside a wooden or earthen vessel containing 4 or 5 gallons of water. Slake 4 pounds of fresh lime in another vessel. If the lime, when slaked is lumpy it should be strained through course sacking or a fine sieve. Pour the copper sulphate solution into a barrel, or it may be dissolved in this in the first place; half fill the barrel with water, add the slaked lime, and 4 ounces of Paris green, fill the barrel with water and stir thoroughly. It is then ready for use. Stock solutions of dissolved copper sulphate and of lime may be prepared and kept in separate covered barrels throughout the spraying season. The quantities of bluestone, lime and water should be carefully noted.

7. **Copper Sulphate Solution.**—This is prepared by dissolving one pound of bluestone in 25 gallons of water. As soon as dissolved it is ready for use, but must be used only before the buds open.

The worst enemies of the apple tree, attacking the foliage, are the eye-spotted bud-moth, which can be destroyed by spraying early with a strong Paris green wash consisting of one pound each of Paris green and fresh lime, in 100 gallons of water; the Cigar Case-bearer, the Pistol Case-bearer and Leaf Rollers, all of which can be destroyed by the same means.

Destroy tent caterpillars by spraying the trees with poisons as given in either number 2 or 6 directly the young caterpillars are noticed. All tents should also be cut off and destroyed early before the leaves hide them

Green fruit worms should be treated to number 6.

Cankerworm can be destroyed with 2 or 6 as soon as the caterpillars appear.

The apple aphis can be destroyed with 3 or 4.

The insects attacking the wood are principally the flat-headed borer and the round-headed borer, and the best remedy for both is a regular treatment every June just before the time the eggs are usually laid, with deterrent washes such as number 5, or the same with crude carbolic acid added in the proportion of one pint to four gallons of the wash, to be applied with a large brush to the bark of the tree trunks and larger limbs. When a tree is infested, the presence of the grub may be detected by the borings which it pushes out of its burrows and by the sunken discolored appearance of the bark. By cutting through the bark the

grub can be destroyed. If it has penetrated into the wood it can be killed with a piece of stout pliable wire.

For the oyster-shell bark-louse use 1 or 3.

There are several other kinds of scale insects which occur upon the apple which may be treated in the same way as the oyster-shell bark-louse.

The woolly aphis is seldom a serious pest in the East, but it is very troublesome in British Columbia. The best remedies are to spray the colonies of these white downy lice on the branches and trunks with kerosene emulsion or a wash made with one pound of whale-oil soap in five gallons of water. For the root colonies remove the surface soil to a depth of six inches for a foot or two around the trunk and dig in tobacco dust or refuse from a tobacco factory.

The codling moth is the parent of the destructive apple worm so well known to all growers and consumers of apples throughout the world. In eastern Canada there is only one regular brood of the insect; but west of Toronto there are two broods, the latter of which is by far the more destructive. When there is only one brood spray with 2 or 6 three or four times in the spring, beginning immediately after the flowers have fallen, at intervals of ten days. That is all that is required. Where there are two broods, band the trees in autumn with strips of burlap, whisps of hay or any "tree protector."

Number 6 will destroy, also, many other enemies which feed on the foliage, such as cankerworms, tent caterpillars, leaf-rollers and the like.

Spraying is useless for the apple maggot. The remedy most to be relied on is the prompt destruction of windfalls so as to prevent the maggots going into the ground. This can best be done by keeping a sufficient number of pigs, sheep or other stock in the orchard. The penning up of poultry beneath infested trees has been found a most useful practice.

The San Jose scale is the most difficult insect to eradicate that the fruit growers have to contend against, and active experiments are still going on to discover a remedy for this pest. Up to now the two treatments our experts have found to give the best results are the spraying of trees in winter, or before the buds burst, with a solution consisting of two pounds of whale-oil soap in one gallon of water, or with 25 to 30 per cent application of crude petroleum and water.

These are facts which are of the utmost importance to apple growers at this season, and are the ascertained results of years of patient study, research and experiment on the part of Dr. James Fletcher, the Entomologist, Mr. W. T. Macoun, the Horticulturist, and Mr. Frank T. Shutt, M. A., Chemist, at the Central Experimental Farm Ottawa, and other parts of the Dominion.

FRUIT CROP REPORT.

Damage by Frost—Replies from Various Sections.

A. E. SHERRINGTON, Walkerton.- "At the present time, May 10th, the prospects are good; everything is full of bloom but very little out yet. Very little damage from frost, although we had twelve degrees of it, on the night of the 10th. My apricot was in full bloom, still it is apparently setting considerable fruit."

R. L. HAGGARD, Whitby, May 10th.—"Frost did no injury to fruit so far, as blossoms were not developed, except apricots, which were in bloom and are some-

what damaged. If blossoms count for anything, there will be a great abundance of fruit, as almost every tree is full of buds and the bloom is just beginning to develop. Grapes are very backward, as the land is cold and growth slow. The foliage is coming out slowly. The weather is chilly, just about at the freezing point every night."

S. D. WILLARD, Geneva, N. Y.- "There is now no doubt that quantities of the early fruits have been destroyed by the frost. It is unprecedented in the history of this section. Nothing like it has visited this section at this time of the year within my memory."

GENEVA EXPERIMENT STATION, N.Y. —"In the frosts of the two nights it is estimated that in the region of Geneva and vicinity the loss will reach the enormous sum of three-quarters of a million dollars. This territory, being more extensive in fruit growing, except grapes, than any other fruit district of the State, the loss will be felt most seriously."

W. W. HILLBORN, Leamington.— "We have had little or no injury from frost. May 16th I examined the strawberry blossoms and failed to find any injured by frost. The frost was so light that it could be seen only in very few places. The prospect is good for a large crop of cherries, peaches, apples and pears. Plums light; most varieties had such a heavy crop last season that no blossom buds appear this spring. Small fruits promise a large yield, but the acreage is light."

W. W. BUNTING, St. Catharines.—"I think it would be immature to give any estimate of the damage by frost for a few days. The impression is that grapes are cut about fifty per cent, Crawford peaches almost destroyed, other fruits less seriously injured. On the whole, outside of tomatoes, Japan plums and yellow peaches, other fruits will probably make up loss in better quality."

G. C. CASTON, Craighurst, (May 19).— "Frost seems to have done very little damage here, so far as I am able to judge. Owing to the previous cold weather, things were not far enough advanced. A few early varieties have suffered to some extent. Prospects for fruits of all kinds were never better."

W. H. DEMPSEY, Trenton (May 21).— "Apples not injured. Pears slightly damaged. Plums and apricots were caught in full bloom, and damaged. All small fruits that were in bloom badly injured, and in many cases the foliage killed back. Walnuts and butternuts killed back and forcing new buds. All fruits are blooming heavily and are out about eight days later than last year."

HAROLD JONES, Maitland.—"The strawberry crop in this section will likely prove less than one half an average. All advanced bloom was injured by the frost of May 10th and only a small percentage of late bloom to follow. Other small fruits and the smaller tree fruits such as plums, cherries, etc., are not grown to any extent. These fruits have suffered to some extent but there is enough bloom left to give a scattered crop. The apple crop is the staple for this section and I am glad to report the injury by frost as light. The center blossom in many clusters have suffered but there is an abundance left to give a good crop. The general condition of the orchards is all that could be desired, where mice did not injure them, and insects have been held in check by continued cool weather."

ROSE PESTS.

BY W. HUNT, SUPT. GREENHOUSES, O. A. C., GUELPH.

WITH the advent of June blossoms, and the increasing heat of the sun, insect pests are sure to make their appearance. The old adage "that an ounce of prevention is better than a pound of cure" is one that flower lovers will do well to bear in mind, and apply practically its teaching at this season of the year.

Much of the success to be attained during the summer season both in the flower and fruit garden, depends very largely on prompt and vigorous action in preventing the development and increase of the many kinds of insect pests that prove so troublesome and destructive in our gardens. Too often the application of remedies and preventive measures for the extermination of insect pests, etc., is left until the plants have become so badly infested that they are hopelessly spoiled for floral or decorative purposes for the greater part of the season.

How often do we see rose bushes with the foliage and buds partly eaten and destroyed by the rose-worm or slug, long before the buds have had time to develop even the faintest tinge of the gorgeous colors of their beautiful petals, when an early and timely application of a little dry hellebore powder, sprinkled over the bushes before the flower buds developed, would have prevented the disfiguration of the plants as well as the loss of the roses. I have found it a wise course to always give rose bushes a sprinkle of hellebore powder as soon as the foliage has partially developed, before the flower buds are showing very prominently. By doing this and repeating the operation about once a week, until the flower buds commence to open out into flower, the foliage as well as the flower buds can be saved from disfiguration and partial ruin. The best time to apply the hellebore is early in the morning, whilst the foliage is damp with dew.

Take again the rose-thrip, that is so troublesome to rose-growers from the time the rose buds appear until early autumn. This insidious little white fly or midge, that secretes itself on the under side of the leaves, is oftentimes not detected until the foliage has become bleached and whitened by its destructive attacks. Its presence, however, can usually be detected if a close

inspection of the foliage is made soon after the first leaves appear on the bushes. At this time the insects are so minute that it requires careful search before they can be seen. This is the proper time, however, to commence the application of insecticides, as if left until later, when hot, dry weather prevails, it is almost impossible to eradicate them from the bushes.

An application of tobacco in some form or other is the best and safest preventive of the development and increase of the rose-thrip. I have found that an application of dry powdered tobacco leaf or dust, sprinkled once or twice on the bushes as soon as growth commences in early spring, and the operation repeated once a week until the flower buds are developing, has proved very successful in preventing the appearance of these troublesome pests of the rose grower.

A rather strong solution of tobacco water, made by pouring boiling water on tobacco, especialty the raw leaves or stems, is a good preventive for the rose thrip. This solution should also be applied early in the season and at intervals as before recommended. There are several preparations specially prepared as insecticides that are very useful to the rose-grower. Most of these preparations are largely composed of the essence of tobacco and are perhaps easier to obtain than raw tobacco. Nicoticide and Sulpho-Tobacco soap may be mentioned as amongst some of the best preparations of the kind. It should be remembered however that one application early in the season does more good than perhaps three or four will do later on when the insects have become well established and numerous. A weak solution, made by dissolving about a teaspoonful of whale oil soap in two quarts of water, will prove of great service in preventing the ravages of the rose thrip. The solution should be applied with a syringe or wisk to the underneath part of the foliage as much as possible.

Another enemy to the successful culture of the rose, is the red spider. Climbing roses are more liable to attacks from this little pest than are bush roses.

The red spider delights in a dry arid atmosphere, and roses that are trained near to, or perhaps close to, a wall or fence, offer splendid inducements for its attacks. These pests are also very minute and oftentimes hard to locate until they have done considerable mischief. The first intimation of their presence is the unhealthy, whitish appearance of the leaves, and finally the constant dropping of the dried, half-devoured leaves; unless they are stopped before they have reached this stage. Constant syringing and sprinkling with cold water is the best preventive of the appearance of red spider, as they cannot exist in a damp atmosphere. It is almost impossible to prevent the attacks of these little pests on climbing roses planted close against a house or wall having a south aspect. Those of our readers who have roses planted in such a position will do well to syringe or sprinkle their bushes with water well up to the time of flowering, and for the greater part of the summer after the flowering period, if they would have good healthy rose plants. An open, airy position suits roses the best. If planted against a wall or fence an east or north east aspect is by far the best for their successful culture. The aphis or small green fly is also troublesome to rose growers. Constant syringing, or an application of tobacco water, usually rids the bushes very effectually of these less destructive insects than thrip, red spider, or the rose slug.

Those having rose bushes or similar plants that are liable to attacks from insect pests will find by using the different insecticides early in the season that much time and labor can be saved, and much better results obtained from their plants than by leaving the application of remedies until the insects have obtained a strong hold on the plants.

CLEMATIS PANICULATA.

BY A. GILCHRIST, TORONTO JUNCTION.

FIG. 2325. CLEMATIS PANICULATA.
Photo furnished by A. Gilchrist.

I AM surprised to find that this creeper, is so little known throughout the country, and that there are comparatively few even in Toronto. The Clematis is undoubtedly the best hardy climber, suitable for our climate. Nothing adds so much to the beauty of the home surroundings as creepers, clinging to and festooning our walls and verandas. We have a very meagre list of climbers suitable for that purpose that will stand our climate.

Prof. L. H. Bailey, in his Cyclopedia of American Horticulture, describes it thus, "Clematis paniculata (white) introduced from Japan, has proved a wonderfully valuable acquisition in this country, and has already become exceedingly popular. It is of remarkably vigorous habit, often making a growth of twenty to twenty-five feet in a season. It seems thus far to be entirely free from disease, is delightfully fragrant, and so floriferous that the blossoms form a dense sheet of bloom and remain in full beauty for several weeks. The foliage is very thick and heavy, making it very desirable for covering porches and arbors. But, according to Nicholson's Dictionary of Gardening, it has taken over one hundred years to become popular, for Nicholson says, "It was introduced from Japan in 1796". It is described as flowering in July and August, the description of the foliage differs somewhat from the Clematis paniculata, as we know it; with us it flowers in September and October. There seems to be some points here which Prof. Bailey has not yet cleared up. Every householder in the land should have this climber. Clematis paniculata stand in the same relation to climbers that Hydrangea paniculata does to shrubs, the best late flowering plants of their respective classes. I send you a photo of a plant which is four years planted. In looking at a distance you would imagine a fall of snow was resting on the green glabrous foliage, which makes it exceedingly attractive. Individual flowers measure about an inch across.

FIG. 2326. A CORNER IN A GARDEN.

THE WORLD BEAUTIFUL.

ENTRANCE TO A HOME.

WE seem to be entering upon quite a new era of landscape art, and our leading cities are being stirred up as never before. The Hamilton Horticultural Society and the City Improvement Society have joined hands with the Hamilton Spectator in a laudable effort to work out a placid civic improvement through the agency of the children, to whom numerous prizes of considerable value are to be given for well kept gardens; while Toronto is exerting herself to secure an island park that shall do credit to the city. Doubtless the excellent address by Dr. Saunders, given in the Association Hall, on the 15th of April last, has gone a long way in enthusing Hamilton citizens in the judicious planting of trees and shrubs for the embellishment of their town. The City of Cleveland, Ohio, has set a notable example of the possibilities of a movement such as that undertaken by our Hamilton friends, and, when the results are worked out, we are promised a collection of amateur photographs which we will engrave for our readers. In the meantime we give some of the Cleveland views, showing how well this, that was at one time called "The Forest City," is now becoming famous as "The City of Flowers."

FIG. 2527. A BEAUTIFUL APPROACH.

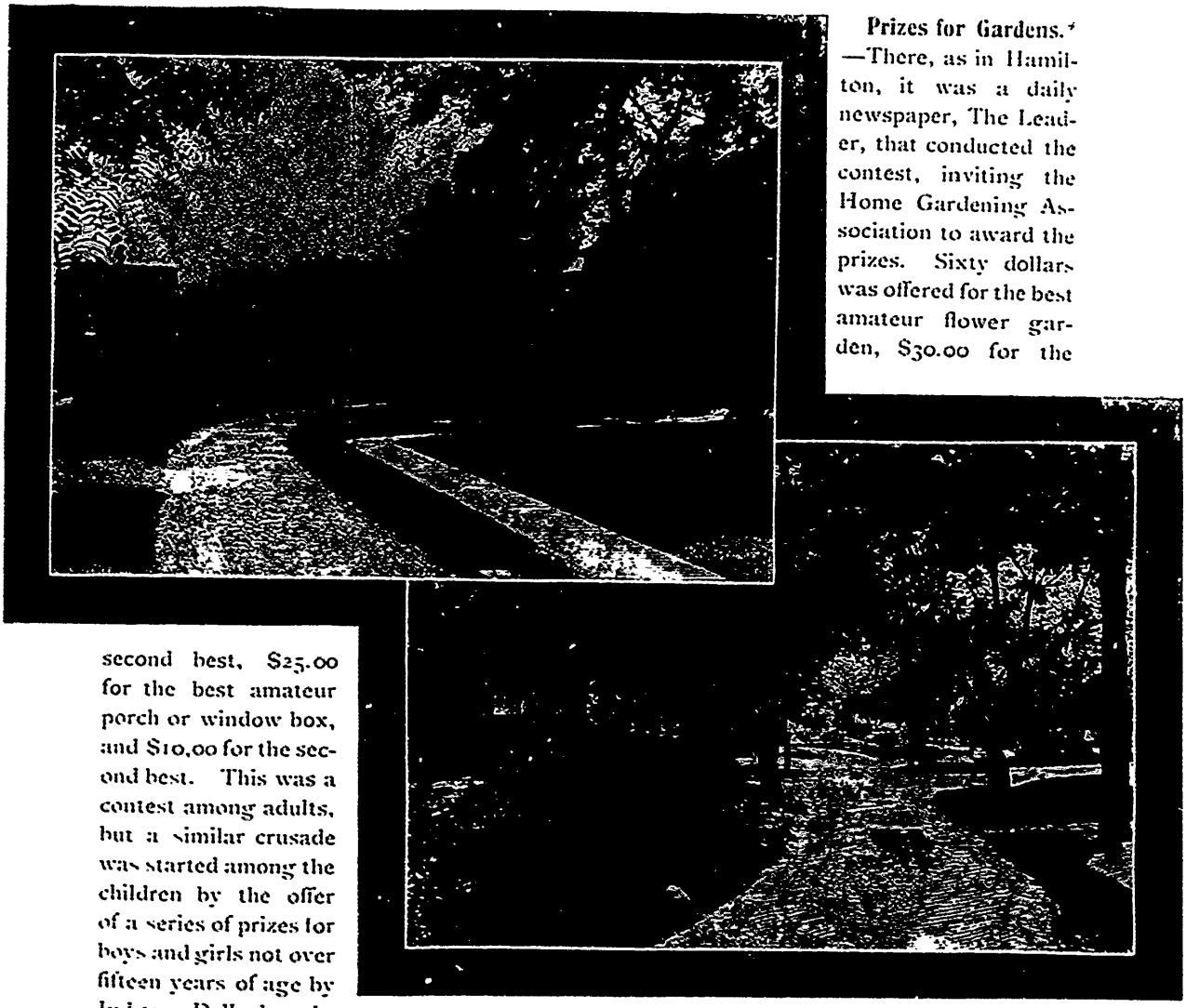


FIG. 2328. VISTAS IN HOME GROUNDS.

Prizes for Gardens.[*] —There, as in Hamilton, it was a daily newspaper, The Leader, that conducted the contest, inviting the Home Gardening Association to award the prizes. Sixty dollars was offered for the best amateur flower garden, $30.00 for the second best, $25.00 for the best amateur porch or window box, and $10.00 for the second best. This was a contest among adults, but a similar crusade was started among the children by the offer of a series of prizes for boys and girls not over fifteen years of age by Judge Dellenbaugh. He offered eighty prizes, and thousands of children went to work making gardens. The Home Gardening Association distributed, principally through the teachers of the public schools, thousands of packages of seeds, a prize being given for each variety.

Results. —The effect was marvellous. Back yards that had been receptacles for rubbish became places of beauty, and front yards decorated with flowers needed no fences for protection, so universal was the public appreciation of them. Even strangers were impressed and went away saying "How many lovely homes there are in Cleveland."

Now let us hope for similar results in all our Canadian towns and cities.

[*] Credit for the illustrations, Figs. 2326 to 2329, 2330 and 2331 is due to Home and Flowers, a Cleveland Journal.

FIG. 2329. A BACK GARDEN IN [illegible]

FIG. 2330. A PRIVATE GARDEN.

Back Yards.—It is not yet too late to sow some varieties of annuals for late flowering, and many a city and village back yard might be transformed from a barren waste, with rubbish heaps, to a place of beauty by a little attention during odd moments. Town boys and girls delight in helping in such work, and, judiciously planned, the work may be made to them both a source of health and of instruction in nature study. Fig. 2329, from The Garden, shows what can be done with such a back yard by utilizing every foot of space for flowers. Here the husband finds recreation from his office duties in the cultivation and care of his gladioli and other plants, while the wife has the benefit of that out of door life so necessary to her health and happiness, in the training of the bushes and the preparation of her table bouquets. In our illustration the Rudbeckia (Golden Glow) is seen to grow to such a height that the lady requires an eight foot step ladder to gather the flowers, an instance of the excellent results attainable under such conditions.

FIG. 2331. A GARDEN BED.

FLOWER GOSSIP.

Be sure to have plenty of mignonette. You want so much of it that you feel safe in cutting freely. It is one of the most useful flowers we have for cutting.

The variegated hop is a charming plant for covering screens and verandas. Its leaves are quite as beautiful as many flowers are. This reminds me to say that the old hop of our gardens is one of the best vines for covering large surfaces, because it grows so rapidly and luxuriantly. It isn't a pleasing plant to handle without gloves, but it is pleasing to look at.

If you have a tiny lawn, don't spoil it by making it look as if it had an eruptive disease, as it will if you scatter flower beds all over it, but leave a solid space of green between the house and the street.

If you want a grand show, plant half a dozen hydrangeas, the hardy kind, in a group. A dozen will give greater pleasure if your lawn is large enough to allow it. Planted in a mass, the effect is exceedingly fine when the plants are in flower. One does not understand the decorative possibilities of this plant by seeing specimens planted singly. If possible, plant so that the group will have a background of evergreens.

Of course you will have Hollyhocks. Every amateur florist will, if he is wise. Like the hydrangeas, the hollyhock is most effective when grouped. I would never advise planting it singly. It is a good plan to sow a paper of Hollyhock seed each summer. By doing this you will have a fresh lot of young plants for each season's flowering, and it is from the young plants that you must expect your finest flowers.

If I were asked to name the best general purpose hardy border plant, I would select the perennial phlox. It gives an almost solid mass of color, blooms for many weeks, and its carmines, reds and purples are exceedingly rich in tone. And it is very easy to take care of. Give it good rich soil, keep the grass and weeds away from it, and that is all you need do for it.

All things considered, the gladiolus is the best of all the summer-flowering bulbs. It is a flower anybody can grow, and it is lovely enough to satisfy the most exacting. You can have it in the most delicate colors, if your taste runs in that direction, and you can have it in colors of extreme brilliancy if such are your preference. It is something you can depend on to do well if you give it half a chance, but the better you care for it the better it will do, and it pays to give it liberal treatment. It likes a soil that is light, mellow and rich. Any soil in which corn will grow suits it, and it likes to be planted in the open ground about the time corn is planted. That is early enough. If you have bulbs enough to warrant you in doing so, hold back some for planting about two weeks later. By making successive plantings you can prolong the season for a month or more, thus securing fully two months' display of beauty from this charming flower. I prefer to plant the bulbs in clumps or masses; in this way a much better effect is secured.

Bedding Plants.

Where striking and peculiar effects are desired, it has become customary to make use of what florists term bedding plants in summer gardening. The term is used

to designate such kinds of greenhouse plants as bloom well when planted out in beds, or have striking foliage whose colors take the place of flowers.

The geranium stands at the head of the list. No other "bedder" gives such a brilliant show of color, or keeps up such constant bloom throughout the season. All you have to do to keep a geranium blooming from June to frost is to remove the flowers as they fade and prevent the formation of seed. The double kinds are the most popular for bedding, as the flowers last longer and give a more solid color effect.

Tuberous begonias are becoming very popular for bedding purposes. They are rich in color and produce a fine effect.

Heliotrope is an excellent bedder, flowering very freely in rich soil. It will be found very useful to cut from.

The verbena is one of the best of all bedders, being a very free and constant bloomer, and having intensely rich and beautiful colors.

Among foliage plants, the most popular is the coleus. Very striking results can be brought about by its use. By planting it close together and keeping the plants cut in closely, solid effects of color can be obtained. The colors being so varied and distinct, it is much used in carpet-bedding in which a set pattern is worked out.

The achyranthes and alternanthera are brilliant little plants which bear cutting in and trimming well, and are therefore used in producing "pattern" effects.

The centaurea has a soft grey leaf which contrasts well with the coleus, and is used in connection with it. Golden feverfew is also used extensively for bedding purposes.

All the plants named, except achyranthes and alternanthera should be set out one foot apart. These should be six inches apart. Rapid growers must be trimmed frequently to keep them from getting the start of such kinds as are of slower growth, in order to produce satisfactory results. In carpet-bedding you want a smooth, even surface in which all the colors have a chance to equally display themselves.

In putting out plants, choose a cloudy day, if possible; water them well and shade for a day or two.

Tropical Effects.

One of the best plants for producing a strong tropical effect on the lawn, or in the garden is the ricinus. It can be grown from seed. It has immense palmate foliage if a rich green, shaded with red, with a metallic luster when looked at in the sun. It grows to be eight or nine feet high, branching freely. It is excellent for the center of a circular bed.

Another plant with large and striking foliage is Caladium esculentum. It has leaves two feet or more across and four in length when grown in very rich soil, each leaf being produced on a stalk sent up from the tuber. Fine for grouping about the ricinus.

The canna is a noble plant, with large rich foliage ranging through various shades of green and bronzy-red. Some varieties are tall growers, while others are quite dwarf. In addition to its fine foliage it bears very brilliant flowers.

The Musa ensete, or Banana plant, has very large leaves and is excellent for the center of a circular bed.

There are many plants such as palms, pandanus or screw pine, ficus and others of similar habit which can be put out of doors in summer with advantage to the plants. These can be used in helping to produce tropical effects.

The striped maize—a variegated variety of corn—can be used with excellent

results if several stalks are allowed to grow together. Its foliage is very much like the old "Ribbon Grass," though of course on a much larger scale. It should be planted in "hills," like the common corn, one stock not being sufficient to bring out the desired effect. As a plant to be used in the center of a group it is very desirable.

—*E. Rexford in Vick's Monthly.*

BEGONIA ERFORDII.

BY W. HUNT, HAMILTON.

FIG. 2332. BEGONIA ERFORDII.

THIS is one of the pearls amongst this useful and popular class of plants. Its habit of growth together with its free flowering propensity makes it a valuable addition to the numerous varieties of Begonias known to floriculture. Even a small plant of B. Erfordii, when laden with its delicate pink blossoms, is very attractive, but when used as a border around some taller growing variety out in the open ground in summer, its beauty and adaptability for bedding purposes, as well as a pot plant, can be thoroughly appreciated. Used as a bedding plant it requires a light, well drained soil and, if possible, a slight shade from the sun during the very hottest part of the day. Begonia Vernon and Begonia Ingrami are also good varieties for bedding out. Being of a more upright habit and of rather stronger growth, these are well suited for the centre of a small bed, whilst B. Erfordii is better suited as an edging plant.

There is no reason why this type of Begonia should not become quite popular as bedding plants as both the Erfordii and Vernon are raised easily from seed. The seed should be sown in February or March in a greenhouse or hot bed and grown indoors until early in June, when the plants can be put out into beds or borders after all danger of frost is over. The seed requires careful sowing, as it is very minute, but after the plants have passed the seed period they are as easy to handle as almost any seedling plant. These Begonias also strike readily from cuttings. The plant as shown in the photo is growing in a 2½ inch pot.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

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

REMITTANCES by Registered Letter or Post-Office Order addressed The Secretary of the Fruit Growers' Association, Parliament Buildings, Toronto, are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 25th.

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

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

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

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

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

PERSONALS.

Charles Forster, so well known as the New York forwarding agent of apples for Simons, Jacobs & Co., of Great Britain, died of typhoid fever on the 19th of April. Many of us remember this gentleman's able address on the export trade of apples before the American Pomological Society last September at Buffalo.

Mr. W. H. Hunt has been appointed superintendent of the greenhouses at the O. A. C., Guelph. He has been well and favorably known to our readers for some years past through his excellent contributions on floriculture, and in his new position he will have still better opportunities to help us in our work.

The Ven. Archdeacon Mulholland of Owen Sound, president of the affiliated local Horticultural Society of that town, passed away on the 19th of April. Foremost in every effort for civic improvement, as well as in matters educational and religious, the loss of such a man is a most serious one, not only to his own community but also to the country at large.

Export of Fruit.—Now that Mr. W. A. McKinnon is sent to Great Britain to remain a year studying the conditions of the fruit trade at the consumers' end of the line, we ought to reach some definite information which will help us in our business. So far however, we have not been given his Eng-

lish address, but we hope in time to be put in a position to correspond with him so that the fruit interests will be benefited as much as possible by his work.

Mr. Alexander McNeill, our well known director for Essex, has been made chief fruit inspector for Ontario and is one of the most efficient workers in our interest. Under his oversight the Fruit Marks Act will surely work out a revolution in the brands of Canadian apples.

Show at Wolverhampton.—Mr. A. McD. Allan of Goderich has the appointment to take charge of the Canadian Fruit Department at Wolverhampton. He writes as follows :—

"I will leave about the 1st of May for Britain, where I shall remain all season at the Exhibition. I will be glad to hear from all our good fruit shippers who desire to put up fine brands and sell direct. I think there will be no trouble in doing this, with proper care in establishing reliable brands so that our shippers can sell at a price F.O.B. here. My address will be 'The Fruit Department, Wolverhampton, England,' and I will be glad if you will kindly make a note of this in the Horticulturist. I hope to give you an occasional letter."

NOTES FROM OUR SECRETARIES.

CONTRIBUTED BY MR. G. C. CREELMAN.

Mr. Frank Metcalf, secretary of the Lake Huron Fruit Growers' Association, reports that their association is attracting considerable attention among the farmers. On Monday May 12th an orchard demonstration meeting was held in the orchard of Mr. A. W. Sloan. Mr. Alex. McNeill, of Walkerville, Dominion Fruit Inspector, and Mr. A. E. Sherrington, of the Experimental Fruit Station of Walkerton, gave practical demonstrations in spraying and talks on general orchard management.

Mr. R. Cullis, secretary West Durham Farmers' Institute, writes us of a successful orchard demonstration meeting held on the 8th inst., at Camborne, in the orchard of Mr. Wm. Parsons. Messrs. E. Lick, of Oshawa, and T. J. Carey, of Cobourg, Dominion Fruit Inspectors, were the speakers. As a result of the meeting a local Fruit Growers' Association was organized to be known as the Township of Hamilton Local Fruit Growers' Association. The following officers were elected :—

President—Mr. Thos. Davidson, Camborne.

Vice-President—Wm. S. Carr, Cobourg.

Sec.-Treas.—R. Cullis, Camborne.

Nearly everyone present joined the Association. An adjourned meeting of the society will be held in Cobourg on June 10th, at 2.30 p.m.

A Fruit and Produce Directory is to be issued in Boston, in July. We are asked to give a list of the apple growers of Ontario for this work. No doubt those whose names are inserted will be put in touch with buyers in foreign countries. We shall be glad if every apple grower will send in his name and address and we will include it in our list. Address L. Woolverton, Editor Canadian Horticulturist, Grimsby.

QUESTION DRAWER.

Cutting Back Cedar Hedge.

1289. SIR,—I have a Cedar (Arbor vitæ) hedge, five feet high. If I cut back to three feet will it grow out again all right.

W. H. CHAPLIN, Newcastle.

Such a hedge should be pruned annually or oftener, and never allowed to reach such an overgrowth. If trimmed to a conical form, or blunt conical, it will be found easier to keep its proper form than if cut square on the top. If the hedge is in this latter form and must be reduced from five feet to three feet in height, the owner must be prepared to see it unsightly on the top for two or three years, until the middle line on top recovers itself.

P. Barry and Mount Vernon Pear.

1290. SIR,—I am sending you to-day two pears of P. Barry, or at least that is what I ordered. Kindly let me know through the Horticulturist if they are true to name. Would it be a profitable pear to grow for export? I gathered the pears November 1st. I protected them from frost till gathered. Is our season long enough for them to mature properly? The other pear I got for Mount Vernon; is it true to name? Would it be profitable to grow for export?

GEO. H. NIXON Hyde Park, Ont.

The two pears are P. Barry. This pear does well in California, and fine samples are sent in to the New York market every spring, but the samples we have seen grown in Ontario are too small to be profitable.

The third sample is not Mt. Vernon, but probably some seedling. We do not advise planting Vernon for profit.

Mice in an Orchard.

1291. SIR,—Mice have done a great amount of damage in this neighborhood during the last winter, both to apple trees and to shade trees. Please advise me how to destroy them. Wrapping the trunks with new tarred paper protects them, but it is a great deal of trouble.

It is difficult to destroy mice in an orchard without also poisoning some friendly animals, and therefore the simplest means of saving the trees is by some kind of protection. We have had perfect immunity with a mound of fine earth about the trunk. Probably the simplest and cheapest thing would be the veneer tree protectors, figured on page 133. These are being made by the Grimsby Manufacturing Co.

Apple Canker.

1292. SIR,—Can you give us any information as to Apple Tree Canker, its cause and cure? If so, we will be very much obliged.

CAVERS BROS., Galt, Ont.

In his report of the Nova Scotia School of Horticulture for 1900-1901, Prof. F. C. Sears, in dealing with the subject of apple canker, says: "It attacks trees of all ages, but certain varieties seem to be very much more susceptible to it than others. The Nonpareil is more affected than any other sort, and in Annapolis County some orchards have been almost ruined by the ravages of this disease. It is caused by a fungus growing in the tissues of the tree just as the black spot fungus grows on the surface of the fruit, and at certain seasons of the year in the diseased areas may be found little brown pimples, in which are contained the spores or seeds through the agency of which the disease is spread. Just at what season or seasons these spores are scattered we have not yet determined, but they seem particularly prevalent in the early spring. The disease attacks the tree oftenest at a fork in the branches, causing an ugly grown wound, and often eventually causing the branch to break at this point. Not only this, but trees so attacked, even though they may not break, lose their vitality and become less and less profitable. Until we

can determine accurately just when the spores are spread, we shall lack an important item in our knowledge of how to combat this disease, but pending that discovery I would suggest removing as far as possible the affected branches, and careful and thorough spraying of the branches with Bordeaux mixture at the time the usual sprayings ings are made for black spot. I find this disease much more prevalent in Annapolis County than in Kings, and apparently very much on the increase there."

Winter Apple for Lanark.

1293. SIR,—Which variety of winter apple would you advise for this part of the province? The Pewaukee does well and is a fine apple, but drops its fruit badly. Please say how we should pronounce Bietigheimer?

You should succeed with Wealthy for early winter and Ben Davis for main crop. This latter hangs well on the tree, is a clean skin and colors well. We pronounce the name Bee-tig-ï-mer, with the accent on the first and third syllable.

Fish Oil Emulsion.

1294. SIR,—Would you please give me the formula for the fish oil emulsion as a spray to kill aphis on cherry trees after bloom? Will it kill them without affecting the foliage?

Fonthill. A. RAILTON.

The fish oil emulsion is rather strong in potash to be applied to the foliage. It is for application just before the opening of the buds, which is the best time to treat the cherry aphis. The formula was given in our May number, page 184.

Begonia Ricinifolia.

1295. SIR,—I send you a photograph of a begonia grown in a north window of my dwelling house. This plant has been in bloom since the 20th of January. The flower is pink, leaves green on face with a row of red fibrelike bristles on the under side along each vein. They measure 17x14 inches, with stems 22 inches long. Can you name it?

Lindsay. S. GALBRAITH.

The begonia as shown in the photo is probably "Begonia Ricinifolia," although I would not like to be positive, as there are several varieties of this type of begonia generally known as Giant begonias that are very similar in appearance to the one shown in the photo. The flowering habit of this plant and the extraordinary large size of the leaves would lead one to suppose it was "Begonia Ricinifolia," as the latter, or specific name, "Ricinifolia," is derived from the fact that its leaves resemble in a marked degree the foliage of the well known ricinus, or castor oil plant. I have referred the photo and questioned one or two experienced plant growers, who agree with me that as far as can be seen from the photo it is the variety mentioned. W. HUNT.

OPEN LETTERS.

Choice Fruits.

At the New York State Fruit Growers' meeting, held at Rochester, in January, 1902, the following replies were made through the Question Drawer, as to the best varieties of new fruits recommended for profit. In apples Mr. Willard and Mr. Woodward recommended Rome Beauty; G. T. Powell mentioned Hub. Nonsuch and Sutton Beauty; B. J. Chase named Twenty Ounce; Mr. Wadham and M. Hooker spoke of Jonathan. In peaches Mr. Willard mentioned Red Cheeked Melocoton; Mr. Woodward recommended Niger. In Japan Plums Mr. Willard claims Burbank and Red June; one member recommends Satsuma. In European plums Mr. Hooker recommends Reine Claude, Lombard, Damson, Diamond, German prune and Fellenburg or Italian prune. In pears Mr. Hooker recommends Beurre Bosc, Bartlett, Kieffer, Duchess and Beurre d'Anjou. In cherries Mr. Willard recommends Windsor. In blackberries Prof. Beach recommends Rathbun; Mr. Kellog recommends Mersereau. In red raspberries Mr. Kellog mentioned King as the best early.

Fonthill. E. MORRIS.

Spraying.

Now is the time every fruit grower should have his spraying outfit and material all ready for use and on the first mild day, just as the buds are beginning to open, should give his orchard a thorough spraying. If one observes carefully they will find the bud moth present, and although care must be taken to use the proper quantities of ingredients, this month and the next is the time when most of these mites can be destroyed, for when the foliage is on the trees it is more difficult to get at them. I have found this time better than later on, especially for scale insects. We are using whale oil soap with blue stone for the first application, and will add Paris green for the next and subsequent applicatians. I am also using crude oil on some trees that are troubled with bark lice, as it seems more penetrating than the soap. I tried it on a few trees last year with satisfactory results.

R. L. HUGGARD, Whitby.

OUR AFFILIATED SOCIETIES.

Paris.—An excursion is proposed by this society to visit the O. A. C., Guelph, certainly a good example for all our horticultural societies, who would find much to interest them in the extensive greenhouses in Prof. H. L. Hutt's department.

The society also donated some thirty trees and forty shrubs to be planted on the new South Ward School grounds, which command a fine view of the Grand River.

Orillia.—The joint committee of the Town Council, Board of Trade and Horticultural Society has addressed a circular to the citizens of Orilia asking their co operation in beautifying the town, by planting shade trees, caring for the boulevards, refraining from throwing waste paper in the streets, and improving the appearance of private property. The committee also calls attention to the Town Council's offer to place stone along the front of boulevards, where stone is provided by property owners, which can be done at about fifteen cents a foot; also to the offer to plant shade trees at twenty-five cents apiece.

London.—London, Ontario, is taking up the movement for beautifying the city, on lines similar to what has been proposed in Orillia: The movement to improve the appearance of the city by yet better kept lawns and gardens is taking root rapidly. Yesterday morning the Rev. Dr. Bethune called on Mayor Beck and said that the committee appointed by his Worship to prepare conditions for the proposed competition had already conferred and would soon have their report ready. They will include therein only those who do not employ assistance in the care of either garden or lawn. Citizens who can afford to secure help, they think, should not need any special stimulus. There is talk, Dr. Bethune said, of changing the name of the London Horticultural Society to that of the City Horticultural and Improvement Society. Members are now actively at work along this line. Some have taken up the effort to secure the consent of factory owners to the planting of vines that will eventually hide bare brick walls; others to get the consent of the civic authorities to the placing of window gardens in public buildings, and so on. Mayor Beck believes the City Council another year might give a grant of $100 or $200 to the work of the society.—*Free Press.*

Local Fruit Growers' Associations.—The Cobourg World says: Last week local branches of the Ontario Fruit Growers' Association were successfully organized at Grafton, Colborne and Brighton. The object of these local associations is the dissemination of information in reference to the fruit industry of this district so that our people may become more conversant with the best and most profitable methods of planting, cultivating, growing, harvesting and disposing of their garden and orchard products. Each member receives the valuable reports issued annually by the Fruit Growers' Association and Experiment stations, also the horticultural bulletins sent out by the Department of Agriculture from time to time.

The officers of the new association were elected as follows: Grafton—President, W. Winter; Vice-President, Jno. L. Grosjean; Secretary-Treasurer, T. Hoskin; membership, 20. Colborne—President, N. T. Lowe; Vice-President H. Purdy; Secretary, G. M. Peebles; Treasurer, K. J. Rutherford; membership, 35. Brighton—President, Jno. Jones; Vice-President, H. J. Scripture; Secretary-Treasurer, J. D. Sanford; membership, 40.

Pleasant, practical and profitable addresses were given at each meeting by Mr. G. C. Caston, of Craighurst, President of the Ontario Fruit Growers' Association; Mr. Elmer Lick, Oshawa, Director for District No. 6; Major H. J. Snelgrove, Cobourg, Director for District No. 5; and Mr. H. G. Vroom, Middleton, Annapolis County, N. S. Mr. P. J. Carey, Cobourg, Dominion Fruit Inspector, was also present. A demonstration in orchard practice, pruning, grafting, etc., was given at each place.

BOOKS FOR FRUIT GROWERS.

ALLEN—Cabbage and Cauliflower	$ 50
Bulbs and Tuberous Rooted Plants	1 50
BAILEY—The Nursery Book	1 00
Annals of Horticulture	1 00
Annals of Horticulture	1 00
Principles of Agriculture	1 25
Principles of Vegetable Gardening	1 25
The Pruning Book	1 50
Principles of Fruit Growing	1 25
Field Notes on Apple Culture	75
The Forcing Book	1 00
Garden Making	1 00
Horticulturist's Rule Book	75
Plant Breeding	1 00
CURTIS—Left Overs Made Palatable	1 00
ELLWANGER—The Rose	2 25
FISKE—Prize Gardening	1 00
GOFF—Principles of Plant Culture	1 00
GREINER—Celery for Profit	20
Practical Farm Chemistry	1 00
How to Make the Garden Pay	2 00
The Young Market Gardener	50
The New Onion Culture	50
GREEN—Vegetable Gardening	1 25
HENDERSON—Gardening for Pleasure	1 50
Hand Book of Plants and General Horticulture	3 00
Practical Floriculture	1 50
HEXAMER—Asparagus for home use or market	50
HATTON—Secrets of Rose Culture	50
HILLHOUSE—House Plants and How to Succeed with Them	1 00
HEINRICH—The Window Garden	50
JOHNSON—Fumigation Methods	1 00
KING—The Soil	75
LONG—Ornamental Gardening for Americans	1 50
MATTHEWS—The Beautiful Flower Garden	40
MORSE—The New Rhubarb Culture	50
PEACOCK—The Dahlia	30
PARSONS—The Dahlia	1 00
ROBERTS—The Fertility of the Land	$1 25
TAFT—Greenhouse Management	1 50
Greenhouse Construction	
VOORHEES—First Principles of Agriculture	1 00
WAUGH—Plum Culture	1 50
Harvesting, Marketing, Storing Fruit	1 00
Landscape Gardening	50
WEED—Spraying Crops	25
Insects and Insecticides	1 50
Fungi and Fungicides	1 00
WEIDENMANN—Beautifying Country Homes	10 00

Orders for any of the above books, accompanied by the Cash may be sent to Editor CANADIAN HORTICULTURIST Grimsby, and the books will be forwarded at above prices, postpaid.