Technical and Bibliographic Notes / Notes techniques et bibliographiques

Canadiana.org has attempted to obtain the best copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

Canadiana.org a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☐ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☐ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☑ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☑ Showthrough / Transparence
- ☑ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary materials / Comprend du matériel supplémentaire
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.

☑ Additional comments / Commentaires supplémentaires: Continuous pagination.

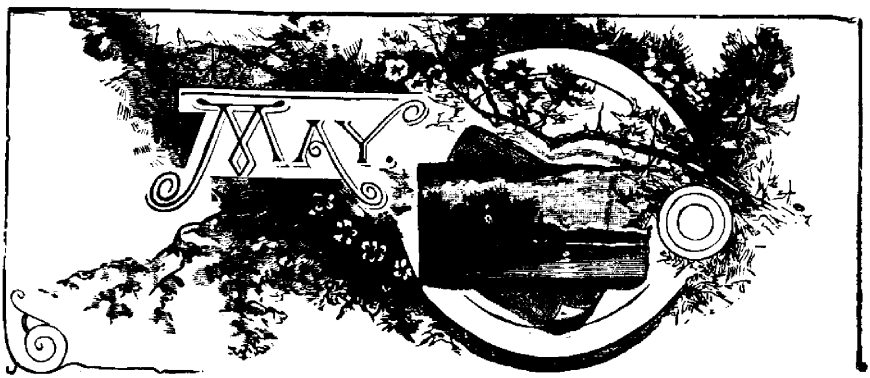
THE SPRAY PUMP CONTEST AT GRIMSBY.

ECLIPSE. IDEAL. CLARKSBURG. EMPIRE. REID'S. ROTARY. ANDERSON. POMONA. SPRAYMOTOR. DEFENDER. GEM.

THE

Canadian Horticulturist

VOL. XIX. 1896. No. 5.



THE SPRAY PUMP CONTEST.

THE illustration heading this article is a little snap-shot of the camera, showing a novel and unique pump exhibit, the first of the kind ever held, so far as we are aware, in the world.

The importance of spraying our fruit orchards and gardens having been so plainly demonstrated to the public, by the Department of Agriculture of Ontario, through Mr. A. H. Pettit, director of spraying experiments, the Board of Control shouldered the responsibility of testing and reporting upon the merits of the various spraying pumps, all of which claimed to hold the highest place.

The judges were Prof. Hutt, Horticulturist O. A. C., Guelph, and Mr. M. Pettit, of Winona, our president. The appointed day, Thursday, April 2nd, was a cold stormy day, and yet the trial proceeded.

There were eleven exhibitors, and eleven rows of apple trees in Mr. E. J. Woolverton's orchard were selected. Each man drew his number of row, mixed his Bordeaux and proceeded in order to the orchard, followed by the judges and an interested crowd of fruit growers. Each exhibitor had to put his pump to a practical test, by applying about forty gallons of the mixture to the orchard. The second day each exhibitor was required to take his pump in parts, for the information of the judges.

The points on which the judgment was based were :—

Ease of operation	15
Evenness of distribution	10
Compactness and general style	15
Durability	15

Power	10
Agitator	10
Accessories (including hose, extension rods, stop-cocks, barrel, nozzle, strainer)	25
	100

The following is the list of pumps tested, named in order of standing, as found by the judges :—

Spraymotor, of London ; Eclipse, of Benton Harbor, Mich. ; Anderson, of Aylmer ; Pomona, of Seneca Falls, N. Y. ; Clarksburg, of Clarksburg, Ont. ;

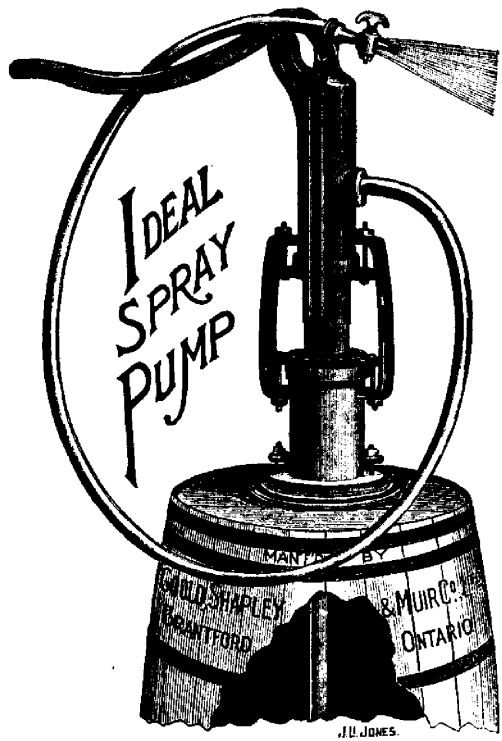


FIG. 941.—THE IDEAL.

Ideal, of Brantford ; Empire King, of Lockport, N. Y. ; Gem, of Toronto, Ont. ; Reid's pump, of Hamilton ; Defender, of Catskill, N. Y. ; The Wilson Garden Pump.

Of course some of the pumps of medium standing are much lower in price, and might be the choice of many on that account, for they do excellent work. The report, which will be published at once, will describe each pump, and give prices ; and so it will form a very reliable guide to our fruit growers, when buying a spray pump. The report may be obtained on application to the Department of Agriculture.

CAUSES OF FAILURE IN APPLE CULTURE—III.

FROM AN ADDRESS BY THE SECRETARY.

5. The Ravages of Insects.

THE ravages of insects is no less important a factor in producing failure in apple growing for profit, than the others I have mentioned. The man who neglects to spray his apple orchard in June, with Paris green, must expect his crop to be thinned out one-half by the Codling Moth in September.

Some people, even yet, need to be convinced of the importance of this; but those who have given it careful trial agree in its benefits. I have tried spraying for the Codling Moth for ten successive years, and where carefully done and repeated if washed by rains, I have found a great saving of my apples, and a general improvement in their quality.

Few of us growers are exact enough with our experiments to say precisely

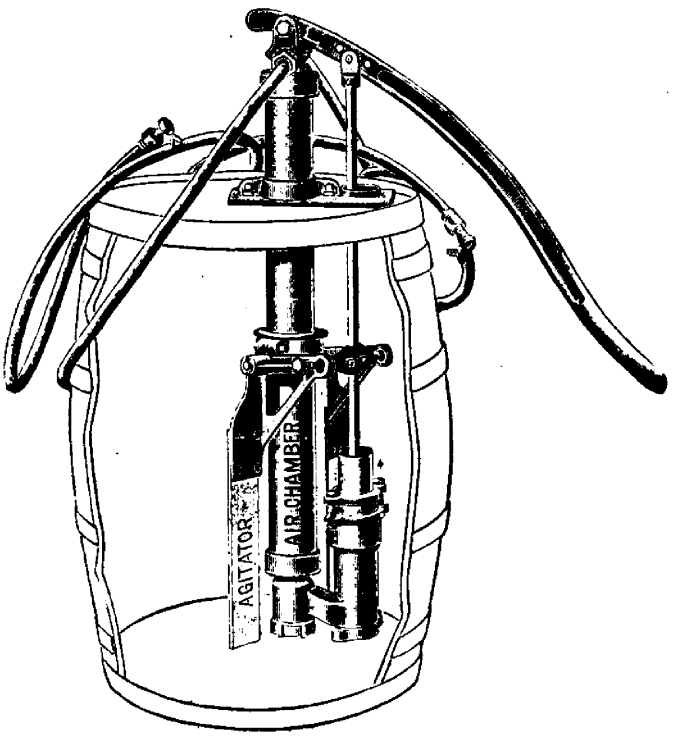


FIG. 942.—CLARKSBURG PUMP.

what proportion of the crop is saved by spraying. A careful experiment was made on one occasion, at the Geneva Experiment Station, N. Y. The trees were mostly Fall Pippins,, and every alternate tree was treated twice in the month of June, first about the 3rd, and then again about the middle. The total number of apples was carefully counted, also the total number of sound and of wormy apples, and the percentage of wormy apples was carefully estimated for both sets of trees. The result showed 13 per cent. of wormy apples on the sprayed trees, and 35 per ceut. of those not sprayed. This would amount to 22 barrels out of a hundred saved by spraying ; and estimating the value at $1 per barrel, the gain would be somewhere about $22 per acre of orchard.

Judging from my own experience, I do not believe that this estimate is too high.

FIG. 943.—AYLMER PUMP.

While packing my apples and pears last season, I was more than ever convinced of the great benefit of spraying with Paris green. In some portions inaccessible to the waggon, this treatment was neglected, and, as a result, an immense crop of Codling moths was harvested, and innumerable apples wasted ; while those trees carefully treated were almost free from this mischief-maker. And that is not the only benefit ; indeed, quite as important is the perfection of form of the sprayed fruit. A Duchess apple tree always bore knotty fruit previously, but since being treated by Paris green its fruit has been perfect.

The Codling moth also attacks the pear, and therefore the pear orchard should also be sprayed in the same way as the apple for its destruction.

The Bartlett pear is especially subject to produce knotty specimens, due to the work of the curculio, and other insects. Indeed, fully half the crop has to be thrown out for seconds on this account. But for two seasons now, I have sprayed them carefully, and as a result, have had comparatively few knotty pears. The editor of the Country Gentleman, in a recent number, gives his experience in spraying Bartlett pears, and it corresponds with our own as given above. We copy from that journal, outlines of two specimens, showing the effect of the treatment as described above, but with us the disfigurement has averaged greater than is here represented.

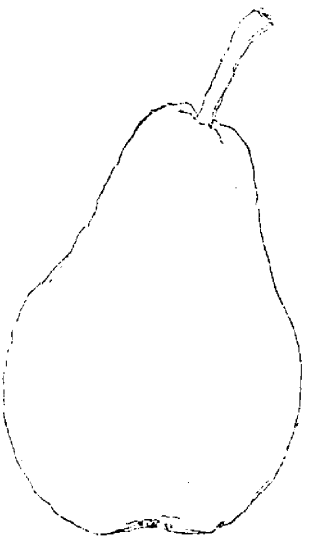


FIG. 944.—SPRAYED BARTLETT, ⅔ NATURAL DIAMETER.

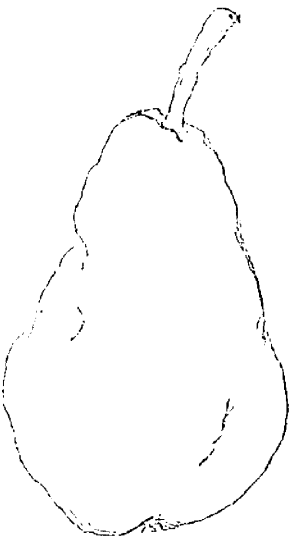


FIG. 945.—UNSPRAYED BARTLETT. ⅔ NATURAL DIAMETER.

But the advantages of spraying for insect pests having been once proved, it did not take long to find that it was of almost universal application. Our Experiment Stations soon discovered the benefits of copper sulphate for destroying fungi, and of kerosene emulsion for such insects as did not eat the foliage but only sucked their nourishment from the leaves. These discoveries are creating a revolution in fruit growing, and making possible the highest success for those fruit growers who will use to the best advantage the prescribed remedies. I will read a few lines on this point from bulletin No. 101, by Prof. Bailey, of Cornell, on Spraying Trees.

He says: Spraying is of some value every year, upon apples, pears, plums and quinces. Nearly all the sprayed orchards are carrying a better foliage than those which are untreated, and where the codling-moth, bud-moth, case-bearer,

and other insects are plenty, it is of decided benefit. So, wholly aside from the idea of insuring against risk, it is advisable to spray for those insects which are more or less abundant every year. Some insects and diseases appear late in the season, so that the spray may be needed at some epoch in the season. Spray thoroughly, or not at all. I should say that fully half the spraying which I have seen in Western New York in the last two or three years is a waste of time and material. Squirting a few quarts of water at a tree as you hurry past it, is not spraying. A tree is thoroughly and honestly sprayed when it is *wet all over*, on all the branches and on both sides of all the leaves. An insect or

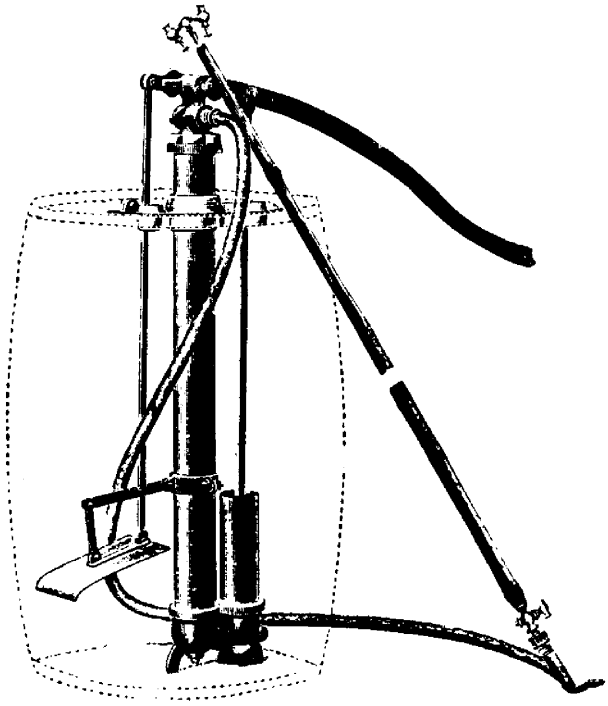


FIG. 946.—THE ECLIPSE PUMP.

fungus is not killed until the poison is placed where the pest is. Bugs do not search for the poison, in order that they may accommodate the orchardist by committing suicide. The one spot which is not sprayed may be the very place where a bud-moth is getting his dinner. On the other hand, there are many fruit-growers who spray with the greatest thoroughness and accuracy, and they are the ones who, in the long run, will get the fruit."

Prof. Panton, of the O. A. C., Guelph, has issued a most convenient spraying calendar, which every fruit-grower should have (a copy of which is here appended), which may be had on application to the Department of Agriculture, Toronto.

SPRAYING CALENDAR.

Plant.	First Application.	Second Application.	Third Application.	Fourth Application.	Fifth Application.
1. *Apple*. ..... Scab, codling moth, bud moth.	Copper sulphate about the time buds are swelling.	Bordeaux just before blossoms open; Paris green for bud moth, when buds open.	Bordeaux and Paris green, when blossome have fallen.	9-12 days after Bordeaux and Paris green.	Bordeaux 10 15 days later.
2. *Pear*..... Leaf blight, scab, codling moth.	Copper sulphate when buds are swelling.	Bordeaux just before blossoms open.	Bordeaux and Paris green, after blossoms have fallen.	9-12 days after Bordeaux and Paris green.	Bordeaux 10-15 days later.
3. *Plum*..... ..... Rot, etc., and curculio	Copper sulphate before buds open.	Bordeaux and Paris green as soon as blossoms fall.	9-12 days after Bordeaux and Paris green.	Bordeaux 10-20 days later.	Ammoniacal copper carbonate 10-20 days later.
4. *Cherry*..... .. Rot, aphis, slug.	Bordeaux as the buds are breaking. If aphis appears, kerosene emulsion.	Bordeaux when fruit has set; for slugs dust leaves with air-slaked lime. Hellebore is good against slug.	Bordeaux, 10-15 days after, if rot appears.	Ammoniacal copper carbonate 10-15 days later.	
5. *Peach* .... Rot, mildew.	Copper sulphate before buds swall.	Bordeaux before flowers open.	Bordeaux when fruit has set.	Ammoniacal carbonate when fruit is nearly grown.	Repeat fourth 5-10 days later.

SPRAYING CALENDER.—(*Continued*).

6. *Grape* ..... Mildew, etc., flea beetle.	Copper sulphate when buds swell. Paris green for flea beetle.	Bordeaux when leaves 1½ inches in diameter; Paris green for beetle.	Bordeaux when flowers have fallen; Paris green for beetle.	Bordeaux 10-15 days later.	Bordeaux 10-15 days later if disease still appears.*
7. *Raspberry* ..... Anthracnose, rust.	Copper sulphate before buds break.	Bordeaux if rust appears during summer.	Bordeaux if the trouble appears to continue.	The only remedy, as yet, for orange rust is to cut out diseased plants.	
8. *Currant* ..... Worms and mildew.	Paris green or hellebore for worms.	Hellebore 10 days later for worms; Bordeaux for mildew.	Hellebore if necessary for worms.		
9. *Gooseberry* ..... Mildew and worms.	Bordeaux as soon as leaves expand for mildew, hellebore for worms.	Bordeaux 10-15 days later. Worms as before.	Ammoniacal copper carbonate 10-15 days later.	If further treatment required for mildew repeat third 10-15 days later.	
10. *Tomato* ..... Rot, blight.	Bordeaux as soon as rot or blight appears	Bordeaux if trouble continues.	Bordeaux if necessary.		
11. *Strawberry* ..... Rust.	Bordeaux when first fruits are setting.	Ammoniacal copper carbonate when first fruits are ripening.	Bordeaux when fruit is taken off.	Bordeaux if trouble continues.	
12. *Potato* ..... Blight, beetles.	Paris green as soon as beetles appear.	Bordeaux when plants are about six inches high.	Bordeaux 10-15 days later.	Repeat if necessary in 10-15 days.	
13. *Cabbage*	Pyrethrum may be applied in solution or dusted on, 1 part pyrethrum to 6-8 parts flour.				

Solutions Recommended.

Copper Sulphate Solution.

Copper sulphate	1 pound.
Water	20 gallons.

To be used only before the buds burst, and never to be applied on the foliage. When applied to peach trees, use 25 gallons of water instead of 20 gallons.

Bordeaux Mixture.

Copper sulphate	5 pounds.
Lime (fresh)	4 pounds.
Water	40 gallons.

Prof. Bailey advises a stock solution of copper sulphate, in case of large orchards, as follows: A simple method is to dissolve 40 or 50 pounds of the sulphate in as many gallons of water, pulverizing the material and hanging it in a coffee-sack in the top of the barrel. A gallon of water, therefore, means a pound of sulphate. The lime may also be slaked and kept in readiness for use. Slake it into the creamy condition familiar to masons, cover lightly with water, and then close the box or vessel to prevent the water from evaporating. When making the Bordeaux mixture, pour the requisite quantity of the stock solution of sulphate of copper into the barrel, and then dilute with four or five times the quantity of water. Now add the lime, and then add enough water to complete the formula.

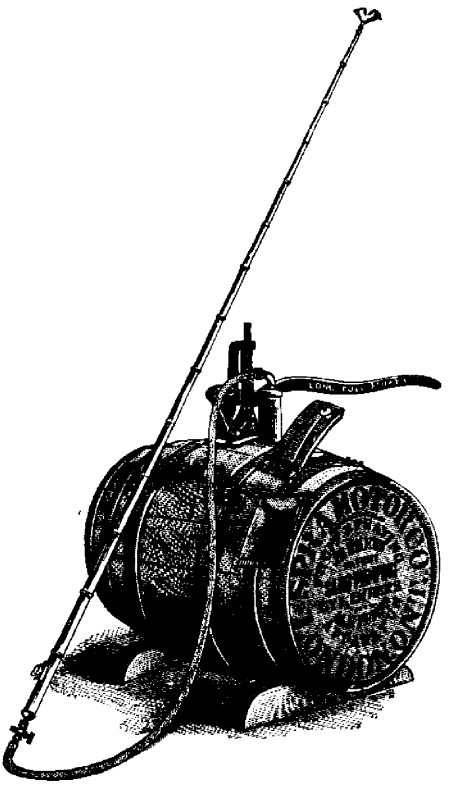


FIG. 947.—THE SPRAYMOTER.

Suspend the copper sulphate in five gallons of water. This may be done by putting it in a bag of coarse material and hanging it so as to be covered by the water. Slake the lime in about the same quantity of water. Then mix the two and add the remainder of the 40 gallons of water. Warm water will dissolve the copper sulphate more readily than cold water. If the lime is at all dirty, strain the lime solution. Use wooden vessels.

Paris Green Mixture.

Paris green	1 pound.
Water	200 to 300 gallons.

Use about 200 gallons of water for apple trees, 250 for plum trees and 300 for peach trees. When used upon peach trees, add 1 pound of lime to the mixture. When Paris green is added to the Bordeaux mixture to form a combined insecticide and fungicide, add 4 ounces to every 50 gallons of the Bordeaux mixture.

Hellebore.

White hellebore (fresh)	1 ounce.
Water	3 gallons.

Kerosene Emulsion.

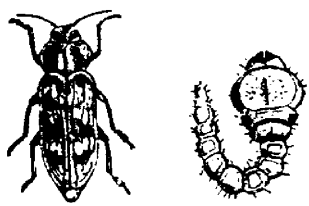
Hard soap	½ pound.
Boiling water	1 gallon.
Coal oil	2 gallons.

After dissolving the soap in the water, add the coal oil and stir well for 5 to 10 minutes. A syringe or pump will assist much in this work. Dilute with from 9 to 15 parts of water.

Pyrethrum.

Pyrethrum powder (fresh)	1 ounce.
Water	4 gallons.

The Flatheaded Apple tree Borer is a most formidable enemy to the apple orchard. The months of June and July constitute the season when the parent beetle is most active in her search for a place under the scaly bark, or in the crevices of the trunks of the apple trees. When an orchard is growing vigorously the young larvæ seems to be outwitted by the rapid growth of the wood, but when an orchard is grass bound and growing very slowly, the trees are almost sure to suffer, and oftentimes, if neglected, will be wholly destroyed.



(*a*) FIG. 948. (*b*)

The beetle is about half an inch long, of a shining greenish black above, and like burnished copper underneath, and will be readily recognized from the engraving. It is said to sometimes attack the pear and plum trees, but we have never been troubled with it except in our apple trees, where it was trouble enough until we knew how to fight against it. The presence of the larvæ may be detected by the rough, dark and sometimes cracked state of the bark, usually on the northwest side of the trunk, or by the fine chips which they exude from their holes when quite young. A sharp

pointed knife will soon discover the hateful intruder, which will be at once seen to be truthfully represented in Fig. 948 *b*, with its great flat head, which is altogether out of proportion to its body. Washing the trunks of the trees at this season with some alkaline solution of washing soda and water, the latter in the proportion of a quarter of a pound to a gallon.

Another formula—Take one quart of soft soap boiled in two gallons of water, and while hot stir in one pint of carbolic acid.

The Oyster Shell Barklouse is insignificant in size, but terrible by reason of its numbers Very few have any idea how common a pest this is in our Canadian orchards. Many people are wondering why their orchards are so unfruitful, and why they are so stunted in growth, and look so sickly, when the whole trouble is due to this pernicious little louse, which, unnoticed by them, is preying upon the bark of their apple trees in immense numbers, sucking out their strength and life.

Once toward the end of May a neighbor brought in to the writer a branch of a young tree from his orchard asking, "What is the matter with this tree?" The tree would not grow, and he had discovered that the bark was curiously rough with numerous tiny scales about one-sixth of an inch in length, Upon lifting one of these scales and using a hand glass the question was soon solved. To his astonishment, there were revealed nearly one hundred wee little lice, too small to be readily seen by the naked eye, and which ran about with the greatest speed over the bark as if delighted at their liberation from the confinement of the material shell. No wonder the tree was stunted!

This louse belongs to the genius *Coccidæ*, and is allied to the aphis, bedbug, and body-louse. It was introduced into this country some eighty years ago from Europe, and although the female cannot fly, and hence migrates slowly, it has now become more or less distributed throughout our whole country.

The time to destroy these bark lice is early in the month of June, because at that time the younger brood escape from under the scales where they hybernate, and which are actually the dead bodies of the mother lice. The loose bark should first be scraped off with a hoe, because the cunning youngsters hide away carefully beneath it, as if they were trying to escape discovery.

The trunks and large limbs must be washed with a strong solution of soft soap and washing soda, with enough water to enable one to apply it with a paint brush, or scrubbing brush. If the lice have spread over the limbs, the whole tree must be sprayed with a solution of washing soda and water in the proportion of half a pound to a pailful, or potash and water, two pounds to seven quarts. Caustic soda and water is recommended as still more effective.

There are several insects which prey upon the bark louse, as also some insectivorous birds, but unfortunately this hateful insect increases out of all proportion to the number of its destroyers, and unless vigorous remedial measures are employed, some of our best orchards will die of premature old age.

WESTERN NEW YORK HORTICULTURISTS.—II.

ON entering the hall of meeting one is surprised at the variety of spray pumps and other requisites for the fruit grower on exhibition. The pumps we need not speak of now, as our own trial of sprayers on the 2nd of April affords the best of all proofs of their efficiency, and the result will be fully published.

Among other appliances was a potato bug killer, which consists of a bellows with long handles, which puffs out the Paris green through the spout in a blast, scattering it in such fine particles that one pound answers for an acre of potatoes. The inventor is Charles Mills, Fairmount, New York.

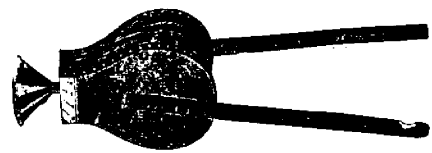


FIG. 949.—POTATO BUG KILLER.

THE SEELEY FRUIT BASKET was shown by Mr. J. B. Seeley, 1027 Walnut Street, Philadelphia; apparently a handy package for choice tender fruit. It is packed from the bottom, allowing fine display facing on top; admits of shipping without crating; convenient for transportation, and is a convenient and acceptable package for the consumer.

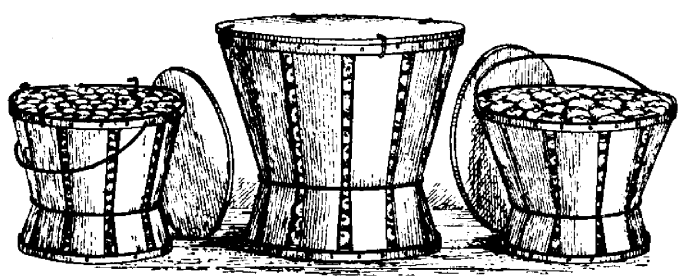


FIG. 950—THE SEELEY FRUIT BASKET.

THE PEACH BUDS are largely destroyed in New York State. In reply to an inquiry concerning them, growers from various parts of the State reported a temperature below 15° on the 6th of January, and blackened buds. In Southern Ontario the weather has not been so severe, and the prospects of the Grimsby and Niagara peach growers is better than those of their New York State cousins. On examination since coming home, and after the cold days of February and March, the writer finds that fully one-half the buds are alive at Grimsby, and this ensures a crop. Peach growers in Essex say they have not lost any buds through cold weather this season.

THE NEW STRAWBERRY CULTURE was the subject of a paper by L. J. Farmer, of Polaski. Following the principle of the New Onion Culture, he aims at planting out as late as possible to save weeding. He takes his plants at the usual time in spring, and trenches them till June 1st, laying them against the earth side of a furrow about 24 to a foot. One man can trench 10,000 per day. All this time he cultivates the plot for which they are intended, getting it into as excellent a condition as possible, setting the plants about the beginning of June. The plants so treated are better than potted plants, and will grow right along. He uses a sort of adze in planting, with two motions for each plant set, and in this way one man can set about 2,000 plants per day.

JAPAN PLUMS were not spoken very well of by Mr. Nelson Smith. His experience had not been satisfactory, and he would advise that fruit growers be cautious in planting them. They came in when the market was not yet ready for plums, and no one was ready for canning them. The Abundance he counted unprofitable in an open market. He had shipped several hundred baskets, and his returns were unsatisfactory. The Burbank was better than Abundance.

Mr. Hale believed there was a future for Japanese plums, for they were vigorous, hardy and healthy. They would prolong the season by beginning the plum harvest earlier.

The cost of growing a pound of grapes was discussed by Mr. Spencer. According to the Garden, he said:—"The cost of the various processes of cultivation, such as cutting the curls, stripping brush from the wires, stretching wires, tying, tillage, etc., from spring up till the time of harvest, is about $9 an acre. How much a nine-pound basket costs depends on the man and his soil. In vineyards where there are no missing vines, and all are thrifty and even, an acre will yield a thousand baskets, and often twelve hundred, but the average grape grower of the region does well if he gets five hundred baskets, and the careless vine dresser gets all he deserves if he gets two hundred and fifty, With five hundred baskets to the acre each one will cost one and eight-tenths cents. But this nine dollars which has been expended since early spring does not take the grapes to the freight car, and, indeed, it pays for only one-quarter of the journey. The cost of baskets, handling, picking, packing, attendanee in various ways and hauling is yet to be met, so that harvesting the grapes cost $27 more an acre, making a total of $36, In 1894 grapes were 11¾ cents a basket at the car door, or $58.75 an acre, which left $22.75 of profit. Out of this must be taken the taxes, wear of implements, posts, crates, and sometimes fertilizers, which, of course, vary in individual instances. Fruit-growing is every year becoming more and more a profession, which combines skill and science, and the man who is best paid is he who raises the most difficult products. Fifty men are competent to produce crops where there is one competent to raise mushrooms, but mushrooms bring fifty times as much a pound as grapes. The exceptionally skilled horticulturist can find a better business than growing grapes."

THE USE OF MORE FRUIT IN OUR DIET.*

THIS subject has pressed itself for some time upon my attention, from the fact that few realize from practical experience the benefits to be derived from eating less meat and a larger use of fruit in our diet. Anyone who will make a canvass through the country, will find that more than half of our farmers raise no small fruit, and many who have orchards sell their crop of apples and leave their families, in too many instances, destitute of the very food conducive to their healthfulness.

Now in support of the attitude taken in the premises, it is important, you will say, that the highest testimony should be adduced, and we will call in the medical profession.

At the convention of the "Australian Federated Fruit Growers' Association," in April last, Dr. Benjafield delivered a lecture on "Fruit as a Food and Medicine," which appeared in Appleton's Popular Science Monthly for September, and was reproduced in medical and other journals in the United States.

The introductory remarks in this very able lecture would be of value for us to consider here. The Doctor says: "From Solomon, all down through the succeeding ages, poets have sung the praises of the luscious grape and peach, and painters have sought to outvie each other in depicting the attractions of the apple and plum; and away deep down below all this, we see through the whole animal creation a developed instinct which teaches all to long after these beautiful fruits. Is this instinct wrong? Is nature a fool thus to make her creatures voice their needs? When you see the whole insect family swarming over and devouring our choicest fruits, shall we say that they do not know what is good for them? When we see pigs, horses, cows and sheep breaking down our fences, need we ask how they learned to love fruit? Aye, more, note the baby in the arms who screams for the rosy apple, and bites away at it even with toothless gums, and, as the baby grows into the boy, how he will defy canes, and even police, so that he can get what he loves and longs for.

"The Creator is so anxious that this very necessary food shall be eaten by His creatures, that He makes it beautiful to look upon, sweet and attractive in smell, and gives to it such varieties of flavor, that the most fastidious can be satisfied. And yet, in spite of all this, the great mass of the people look upon fruit as a luxury upon which they can only spend odd pennies for the amusement of their children. Many parents will more readily spend money on injurious or even poisoned sweets, than they will on good healthy fruit; and fashionable society will spend pounds on cakes, wines and brandies, while they spend as many shillings on the very thing they need to keep them healthy—fruit.

* From a paper read before the Pomological and Fruit Growing Society of the Province of Quebec, at their winter meeting in the Theatre Royal, St. Johns, Que.

And as for the amount of drugs swallowed, which should be replaced in a great measure by fruit, it is beyond my power to calculate. Millions upon millions of pounds are spent annually upon mercurial and other purgatives, most of which would be quite unnecessary if the people would but look upon fruit as a necessary article of diet. The fruit grower of the future must try to so educate the public mind, that this state of things will be altered."

Another physician, Dr. Caldwell, writes, in the Memphis Medical Journal, of fruit as an agency in preserving health and putting off old age and physical decay: "In man there is a tendency, from the cradle to the grave, of a gradual process of ossification from earthy deposits, consisting primarily of phosphates and carbonates of lime combined with other calcareous salts. After middle age the tendency becomes more marked and ends in senile decrepitude. The majority of all who pass sixty-five years suffer from these deposits, the structure of each organ is altered, and elasticity gives way to senile rigidity, and, sooner or later, a vital part becomes involved. In considering the possibility of suspending the advent of old age, it is consequently a matter of the highest moment to ascertain what foods contain the smallest comparative quantity of those salts which tend to accumulate in the system and obstruct the vital processes." The cereals, he contends, are found to be the richest in them and should be used in moderation. "Hence a diet composed principally of fruit, is best adapted for preventing or suspending ossification."

Dr. Benjafield tells us that "Garrod, the great London authority on gout and rheumatism, advised his patients to take oranges, lemons, grapes, apples and pears. Tardieu, the great French authority, maintains that the salts of potash found so plentifully in fruit, are the chief agents in purifying the blood from rheumatism and gouty poisons."

That at this period fruit forms a larger part of our food than earlier in the century, we owe to the more general knowledge of the laws which govern man's organism and the necessity of obedience to them to avoid sickness, which is, sooner or later, the punishment nature imposes for their disregard. Perhaps, some present may remember when, over the medical world, Calomel was klng and the Lancet his prime minister, fruit was regarded more as a supplement to a dinner, or to serve as an embellishment to our tables in the relation which flowers occupy at present, very few knew its tonic properties when eaten before breakfast or other meals. The most eminent physicians of our day now scoff at many of the remedial agencies of the past and claim, as we have seen, that in fruit we have a substitute more beneficial in its results, if regularly and judiciously used. As the popular knowledge of natural laws extended, fruit began to assert its proper place, hence the demand for it called for a larger supply. In furtherance of the fruit growing industry, organizations, like the present, unknown early in the century, rapidly came into existence throughout the civilized world. Yet, what a work is still to be done! When we see the great multitude

of nostrums advertised for human ailments and sold, and the large fortunes accumulated thereby, we must admit that there is still a cloud of ignorance to be dissipated, and the work of Fruit Growers' Associations in this direction can be made in the highest sense philanthropic.

Now, the question presents itself: What fruits successfully raised in our Province are of the greatest utility for food? The apple, undoubtedly, claims the first place; with varieties of good keeping qualities, it can be made to supply our wants the entire year. The pear and plum come in to supply a change over a limited period. The grape can be made available half the year, by precautions in storing it for winter use, and stands second to no fruit for its delicious qualities and healthfulness. Fortunately, it is not, as formerly, an expensive luxury, but within the means of all our population, if they do not choose to raise it.

What higher testimony can be adduced that fruit was intended by the Creator to be used to a large extent in sustaining life, than the regularity in which it comes in season? When we are satisfied with one variety, another comes in with its tempting special properties to gratify our desires. Thus, in order, the strawberry is looked forward to with delight, so that when the season arrives, we deplore its brevity. The raspberry, blackberry, currant and gooseberry supplying variety, and each its special flavor to satisfy the animal craving for fruit. The procession moves with regularity and freighted with abundance, and, as you have seen, science tells us why. Besides, wherever man's lot is cast, he finds nature has placed by his side the food intended to supply his wants. We see, at the equator, fruit flourishes in the greatest abundance and luxuriance, which signifies that this was intended for his main food. The supply seems to be wisely graduated till we reach the Arctic circle, where warmth-giving food is demanded to sustain life. I think it should appear to us all, that our lot has been happily cast in a climate where nature's supply at hand seems to indicate that, to sustain our bodies in the highest degree of health, our diet should be proportioned in this order: fruit, vegetables, and, lastly, meat. Nature gives us fruit in tempting forms, and in greater variety, in the summer, when meat is less called for, and its grateful juices the most beneficial.

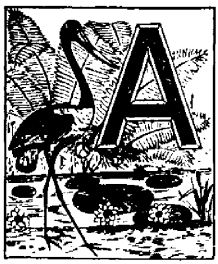
We will now consider the order in which fruit should be eaten at our meals, and, perhaps, the innovation suggested may meet with criticism. Nevertheless, I propose to reverse the present order of things, and place fruit at the beginning of each and every meal! Why has it been so general to begin breakfast with an apple, an orange, or a pear? Because those who practise it find it beneficial. Then what is good for one meal is equally applicable to all.

To again allude to the apple, which holds the pre-eminence as a health-giving article of food, I believe we should use more and export less. Could the laboring and poorer classes, who now consume comparatively few, be encour-

aged to look upon it as a cheap and necessary food, rather than as a luxury, their condition would improve in many respects. It now rests with our fruit growers to so educate the public mind, that the present state of things will be altered.

Clarenceville, Que. WM. MEAD PATTISON.

ABOUT GARDEN PEAS.



FTER numerous trials with various sorts of the extra-early peas, I have discarded the whole lot, with one exception, and that is Vick's Extra early, and as this needs sticks or supports I do not plant it every year, as the Wonder usually gets round by the last days of June. After trying a score or more of varieties, within the last dozen years, I have settled down upon the following sorts:

I will let Vick's Early head the list because it is one of the finest of the extra early sorts—generally the small early peas are of rather poor quality, but the Vick's is very good quality, and quite prolific, with long pods always well filled.

The American Wonder is yet the stand-by, although it has a strong rival in Nott's Excelsior, which is one of the best peas of recent introduction. The claim that it is earlier than the Wonder does not prove true with me, but it comes along about the same time; it is a strong grower and fully prolific as the one it rivals. In quality it ranks with the best.

From a single season's experience I am inclined to name the Heroine as the next medium early pea. It is a strong grower and fairly prolific, but what it lacks in number of pods it surely makes up in size, the pods often being over four inches long, bearing 10 to 12 peas. This is a green wrinkled pea, grows about 2½ft. high and is of a rich marrow-like flavor.

Bliss's Abundance comes next in my plans this year, although some might prefer to omit this for the Champion of England, an old and good sort when the vines do not mildew.

The three last-named varieties of peas may best occupy the ground exclusively, but with the Dwarf Wonder and Excelsior I have found it convenient to alternate the rows with strawberry plants, making the strawberry rows 2½ feet apart with two rows of peas intervening. By the middle of July the pea haulm is raked off the ground and the strawberry plants will begin to put out runners. Thus there is no great loss of ground in waiting for the first year's development of the strawberry plants.—American Agriculturist.

NOTES ON A LECTURE TOUR.—I.

IT is not an uncommon thing to hear a complaint that the HORTICULTURIST does not give enough space or attention to the cultivation of the æsthetic or ornamental side of home life. In other words, while it devotes its pages to the interests of those of its readers who are engaged in practical fruit growing, it does scant justice to those whose only interest is in the cultivation of the fruit and flower garden and the ornamentation of the home. While it must be remembered that the very large majority of the readers of the HORTICULTURIST are interested in it because they are fruit growers, and value it only for its practical information in that department, it cannot be forgotten that the Ontario Fruit Growers' Association has made special efforts in recent years to widen its influence among other classes, by the formation of affiliated societies in the towns and cities throughout the Province, and increase the circulation of its publication through these organizations. To this end our director, Mr. Beal, of Lindsay, has within the past two years visited many towns, and has been very successful in his efforts. And it is a matter which may be reasonably questioned whether Mr. Beal's successful efforts in this direction have been followed by a corresponding effort on the part of the HORTICULTURIST to meet there quirements and gratify the tastes of those urban readers and affiliated members of our Association. At all events it is from those classes that the complaints have come of which I speak above.

Having just returned from a lecture tour to a number of those local Horticultural Societies, I may be permitted to claim that I speak with authority on this point. I may indeed say, that I promised, on behalf of those making the complaints, that I would draw the attention of the board of directors to the defect, and have it remedied as far as possible by giving larger space and more attention in future to floriculture and home ornamentation.

It is a mistake to suppose, as many have done, that the functions of the Ontario Fruit Growers' Association are limited to fruit growing, and that it has no other aim or purpose than to advance the interests of that industry. Though it is true that the large majority of its members are only interested in fruit growing, the Association has always given considerable of its attention to floriculture, to the beautifying of the home and to the cultivation of the beautiful in nature. That it has not given more attention to this department in the HORTICULTURIST is owing more to the lack of space than to a lack of interest or proper appreciation of its functions and obligations. But now that it has affiliated with it so many largely urban societies, aiding it, as they must, in the cultivation of the finer or picturesque side of nature, it will, until it can afford to enlarge its pages, have to ask the indulgence of the majority of its members while it devotes a little more space and attention to the "minority interests."

In a future number I will give you a few notes on my visit to the towns of Port Hope, Trenton, Belleville, Napanee and Lindsay, and my meeting with the Horticultural Societies of those different points. In the meantime, as I promised many of those I met, I will name a list of roses suitable for our own climate for outdoor planting. For one dozen hybrid perpetuals, take two Gen. Jacqueminot, one Fischer Holmes, one Charles Lefebvre, all dark; for pink or rose, take two Magna Charta, one Glory of Mosses, and one Gracilis Moss; for light, one Madam Plantier, two Merville de Lyon, and one Perpetual White Moss, the latter only for its buds. These must be all cut back every spring to twelve or eighteen inches according to the strength of the shoots. For monthly bloomers to plant out in the open ground as early in the spring as possible, take Pierie Guillot, Catharine Mermet, Camdens, Etoile de Lyon, Maria Guillot, Sappho, Princess Logan, and Grace Darling.

Mitchell. T. H RACE.

THE BUD MOTH.—(Tmetocera ocellana.)

THIS insect is becoming a very serious pest in our Canadian orchards, and are difficult to overcome. About the first of May the caterpillars begin eating into the buds. It also continues to eat the leaves and flowers as they open, tying them together with silken threads. At first the little caterpillar is only about the one-sixth part of an inch in length, with black head and thorax; but about a month later they are about half an inch in length, and look brown in color. Fig. 952 shows one of these moths magnified three diameters, after Slingerland, who also describes and figures the moth itself as follows:—It is about three-fifths of an inch across its expanded wings. It is of a general dark ash-grey color, with a broad cream white band across the front wings. The moth is a near relation of the Codlin Moth. It received its name, Ocellana, in Austria, in 1776, from somewhat eye like marks on each front wing; hence its common name, Eye-spotted Bud Moth.

FIG. 951.

FIG. 952.

The asparagus is a native of Europe, growing in rich, sandy soil, in meadows, and along the banks of rivers. It has been much improved by cultivation, and in its wild state grows only about a foot high, and as thick as a goose quill. In its cultivated state it attains a height of three to four feet. The plant when only a few days old is cut as it sprouts from the ground, tied in bunches and brought to the market. It was a favorite vegetable of the ancient Romans. The seeds have been used for coffee, and are recommended for that purpose in Europe at the present day. A kind of fermented spirit is made from the berries. —Greengrocer.

CULTIVATION OF THE BLACKBERRY.

NO fruit profits more from careful tillage than the blackberry. This is largely because the fruit requires so much water, if it reaches its full capabilities, and the crop matures in the driest part of the season. The moisture of the soil can be well conserved only when tillage is begun very early in the spring. We generally plow our patches in the spring, and thereafter keep the land in fine shape by running over it every week with a cultivator. We generally prefer a spring-tooth cultivator. It is especially important to cultivate as soon after a rain as the soil is in condition, before it bakes. This tillage is continued until within a day or two of picking time. After the crop is harvested, one good cultivation is given to loosen up the ground which has been tramped down by the pickers and to fit it for winter. With us, this last cultivation occurs about the middle or last of August. In the drier summers west of New York, blackberry growers often mulch with freshly cut clover or manure close about the plants, leaving the center of the rows open for cultivation; but this is rarely, if ever, necessary in this State.

These frequent light cultivations are really cheaper than one or two, because the weeds never get a chance to grow and little hoeing is necessary. If a patch becomes foul with thistles and other weeds, the best procedure is to mow it off, plow it up thoroughly and crop it with corn for a season. Suckers will come up in the corn along the old rows, and the following year the plantation will be completely renewed.

Stable manure is the most popular fertilizer for blackberries. In general, it may be said that if the tillage is good, nitrogen will rarely be needed on good lands. Potash and phosphoric acid as advised for orchards may, no doubt, be applied to advantage.—Cornell B. 99.

San Jose Scale.—The wide distribution of the San Josè scale, by nurseries since 1887, has called attention to the fact that much harm has unwittingly been done for many years past, by nurseries, in causing the spread of other insect pests as well. As a result, however, of the appearance of this destructive scale, nurserymen will be more careful in the future, but yet fruit growers will not be able absolutely to rely on the clean condition of any stock which they buy, and it has been suggested that the purchaser should demand a guarantee that stock has not been infested with injurious insects, and further, that if it is found to be infested after purchase, that it should be replaced: though even then the purchaser would have no redress for the introduction of injurious insects and their spread to older trees, and it is here that we must look for legislative aid.—Rept. Mass. Hort. Soc.

THE EGG-PLANT AND ITS CULTIVATION.

THE chief difficulty in growing the Egg-plant in the north is the shortness of the seasons. It is only by starting plants early and maintaining a vigorous growth that we can succeed in fruiting the large sorts satisfactorily. The plants should be started under glass from the middle of March to the middle of April in a warm house. In the cold and small house used in our early tests the plants grew slowly, and when set out-of-doors they were not of sufficient size and vigor to begin bearing at once. We sow in "flats" or boxes and when the first true leaves are about a half inch in diameter—which is about a month after the seed is sown—the plants are pricked off into two-inch pots. As soon as the pots are filled with roots the plants are shifted into four-inch pots. We have had indifferent success in transplanting into other flats, as the plant is more severely checked when placed in the field from the greater injury to the roots. It is imperative that the plants should not become "drawn." The plants are transferred from the four-inch pots to the garden from the first to the middle of June. The early sorts, as Early Dwarf Purple, are not so seriously injured by a check in growth as the large and late sorts, and they can therefore be handled with less care. These sorts can be started two weeks later than the others and receive but one transplanting. The effects of early and late setting are shown in the following experiment:

Seeds of several varieties were sown March 27th and May 15th. On the 7th of September they presented the following differences: Long Purple, Giant Round Purple and Long White from early sowing were productive, but few or no fruits had formed on the plants from late sowing. Early Long Purple and Round White from the late sowing were fully as productive as those from the early sowing. Early Dwarf Purple gave best results from plants started April 15th. This shows that there is little or no gain in productiveness in the small early sorts from very early sowing, while the large sorts profit by it. The Black Pekin, which is one of the large varieties, proved an apparent exception, however. Plants started May 1st gave better results than those started earlier, but neither lot was satisfactory. The unsatisfactory results from the early sowing may have been due to the loss of the first flowers because of the transplanting. Transplanting usually has the effect of keeping plants growing to the detriment of the flowers; and egg-plants which are in bloom when removed to the field are apt to drop the flowers. It is important in the large sorts to induce the first flowers to set.

The best soil for Egg-plants is a rich sandy loam—not too light—which

contains an abundance of humus and retains moisture. Manure heavily. Large kinds should be set three feet apart each way. The ground should be thoroughly cultivated throughout the season. We run lightly through the land with the cultivator twice a week. The worst enemy of the egg-plant is the Potato beetle, which preferd egg-plants to potatoes. The egg-plant grows slowly, and any injury to the young plant is with difficulty overcome. If the plants are seriously injured when first set there will be little use in attempting to fruit the large kinds. Paris green, at the rate of one pound to one hundred gallons of water, is destructive to the beetle. Very rarely do plants in a large plantation of the late varieties all mature fruit, and such kinds as Black Pekin, New York and Giant Round Purple rarely mature more than two large fruits to the plant in this latitude, and often only one. Some of the early and medium varieties mature from four to eight fruits. The value of any late variety depends largely on the uniformity with which all the plants set and mature fruit. The New York Improved possess this advantage over the old New York Purple. The value of long and careful selection to this end was illustrated in our large planatation of crosses last year. A large percentage of the plants were entirely unfruitful, showing that a promiscuous lot of seedlings is likely to be unproductive, and in this case these seedlings were crosses between productive parents. Breeding plants of uniform productiveness is the most important field in experiments with the egg-plant now.

The varieties are not numerous, and vary widely in habit, pubescence, spininess, color of plant and fruit, size, shape and season of fruit. The larger varieties are most popular in market, but some of the earlier and smaller kinds are better. The white varieties find little demand in the market, and there is an impression that they are unwholesome, but they possess no other fault than a hardness of flesh and rind in the case of the smaller varieties. The White Chinese is as good as any for table use.

Besides a record of experiments in crossing different varieties, the Bulletin contains an interesting study of the botany of the plant, by Professor Bailey. A summary of the Bulletin is given as follows :

1. Egg-plants are adapted to cultivation in the north. The requisites of success in growing them are these : early starting ; warm quarters ; vigorous plants ; rather late transplanting to the field ; warm, rich and rather moist soil ; constant attention to Potato-beetles ; frequent cultivation.

2. The best varieties for private use are Early Dwarf Purple, Early Long Purple, White Chinese, with perhaps Black Pekin for late.

3. The best market varieties are New York Improved and Black Pekin, with perhaps Early Long Purple for the first demands.

4. In crossing different races of egg-plants, the purple-fruited types appear to be stronger in their power to transmit color to offspring than do the white-fruited types ; and this appears to hold whether the purple type is used as the staminate or the pistillate parent.

5. The white-fruited types appear stronger in the power to transmit form and productiveness.

6. Fewer seeds are produced by flowers artificially pollinated than by those left to mature, even though an excess of pollen is used.

7. It is possible that the egg-plant may be included among those plants which are capable of producing fruit without the aid of pollen.—Bulletin 10, Cornell Expt. Station.

SQUASHES.

QUASHES may be grown on any soil suitable for a garden, if it receives proper cultivation. The ground needs a good dressing of decomposed stable manure spread on every spring, about an inch thick, and turned under with a spade or plow to a depth of five or six inches. This is sufficient depth after the garden has been tilled ten or twelve inches deep, and the stones gathered out. If the ground is spaded more than five or six inches, more manure must be applied. The Warted Crookneck and the Scalloped squash are best summer varieties, and the former is the better of the two. They are not great runners, and may be planted in any plot of the garden, in hills at a distance of six feet from each other. Twelve to fifteen seeds to the hill are sufficient, and when six inches high thin them down to four plants to the hill.

Winter squashes are tremendous runners and must be planted on one side or another of the garden, arranged with design to make the garden beautiful. Winter squashes should be planted ten feet from the edge or border of the garden, and in hills ten feet from each other, with ten seeds to the hill, and then thin down to four plants when ix inches high.

There are seven varieties of winter squash that are grown for market or home use: Hubbard, Butman, Marrow, Boston Marrow, Turban, Crookneck, and Canada Crookneck. The Hubbard is the richest and best keeper of all the squashes. The Butman is the next best, and is a hybrid of the Hubbard and the Boston Marrow. The Boston Marrow is the pure Marrow squash, and in richness of flavor may be rated next to the Hubbard and Butman. The Marrow is a hybrid of the Boston Marrow and the pumpkin, and will produce the greatest yield of the squashes; the flavor is not so rich as those previously named and the grain is not so fine. The Turban is not a favorite squash. The grain is fine, flavor is fair, but it does not cook dry; the yield is smaller than any of the above named. The Crooknecks have but little to recommend them but their antique character.

Tiverton. A. H. CAMERON.

THE PLUM SCALE.—(Lecanium.)

This insect, which was first noticed in 1894, and has been attacking the plum orchards of the Niagara district, must not be neglected. Its size, nearly a quarter of an inch in length, renders it easily discernable, and therefore we have no excuse for allowing it to increase in our orchards. Forturately severe winters destroy large numbers of them at the North, and it may be that in Canada they will never become the serious enemy they are farther South. In

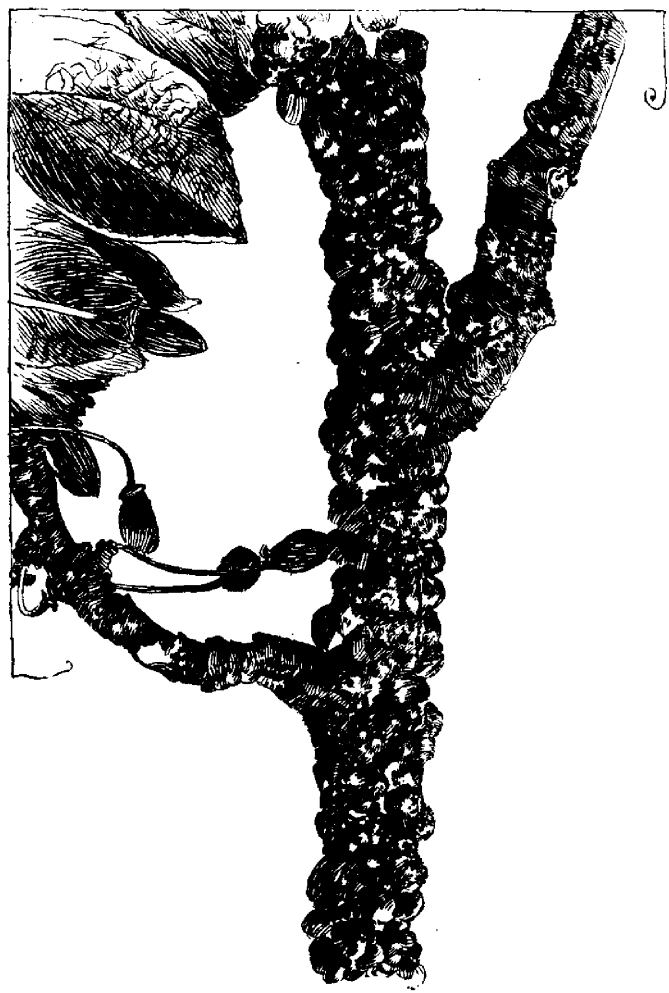


FIG. 953.

order that our readers may be able to recognize them we insert again a cut rom Garden and Forest, showing a branch of Bradshaw seriously infested. Underneath these scales are masses of eggs from which the young lice issue early in May; they crawl about till they find a suitable location, usually on the under side of a limb, where they attach themselves to the bark. Infested trees should be sprayed with kerosene emulsion, diluted four times; apply once in fall and twice in spring, before leaves open.

The Garden and Lawn.

FLORAL NOTES.

THE Asclepias is a very showy flower. Patches which are found growing along the railroads and elsewhere, are quite brilliant and noticeable. It is equally fine when cultivated.

Cardinal Flower, which is difficult to find in the wild state, has a splendid shade of scarlet which is rivalled by very few flowers. Plants make but little growth the first year, but the second summer the flower stems will grow four feet high.

The Candytuft is a popular flower, the pure white being in much demand for boquets. Several new sorts have been lately introduced. The Dwarf Hybrid, first sent out from France, has seldom been over praised. The plants are of excellent habit and flower profusely. From this strain we get some new shades of color. From England we have got Carter's New Carmine and White Tom Thumb, the first being a fine pink color, but we have the same shade in Dwarf Hybrid, which is superior in habit and vigor. The weak constitution of Carter's is proved by the scarcity and high price of its seeds. The White Tom Thumb is very distinct. Well-grown plants will cover a foot in diameter and not be more than a foot high. They are a mat of white flowers.

For a budding geranium in a sunny position nothing can surpass the Queen of the West Some of the best roots under glass, such as Jealousy, Wonderful, and Harry King, are quite worthless when planted outside. New Life is novel and distinct and very popular as a window flower.

The late perennial phloxes present an endless assortment of colors, and a bed of old roots will produce so many spikes that one can pick without any feeling of regret. The improvement of late has been so great that many new colors have been produced with flowers and spikes double the size of the old ones.

The Wall flower leaved stocks are of the greatest value on account of their flowering so early and surely. The colors are not as numerous as in some other

classes, but the foliage is a bright fresh green and the plants are of excellent habit.

Single Japan pinks are not as highly prized by most persons as the double, but the improvement in them has kept pace with the double varieties. In the Heddenigii, the plants are rather dwarf, and the flowers are large, smooth and circular, and very rich in color. In the Laciniatus the flowers are tall and they are the most showy of all. The flowers are very deeply fringed and present an elegant appearance. The single sorts that always come with the double seeds, are not to be compared with those from pure strains.

Tiverton. A. H. CAMERON.

PRUNING HOUSE PLANTS.

The average plant grower does not seem to understand the advantage that comes from the free pinching back of thrifty plants, to induce them to break into a greater number of shoots and to keep them compact in form. For a little convincing experiment in this line, I know of no better subject to begin on at this season than the German ivy, a plant found in almost every collection. One calculates on the use of these plants in the vases or window boxes to be started several months later, and for that purpose it is much more satisfactory to have a plant in the style of Fig. 955, than a sprawler supported by trellis and twine, as at Fig. 954. The latter form is the one most usually met. To produce the more desirable shape, it is only necessary to cut the plant back to within three inches of the ground setting aside the trellis also. One branch, however, had better be left for ten days longer in order that the check to growth be not over severe at one time. As new shoots appear, cut these back one-third when they have reached a length of eight or ten inches.—American Gardening.

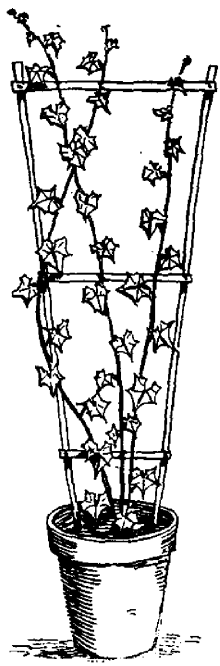


FIG. 954.

FIG. 955.

THE GLADIOLUS: DEGENERATION AND REVERSION.

IN all the articles on these questions, the term gladiolus only is used. This was sufficiently comprehensive five years ago, but to-day there are several sections, and in giving experience, the amateur would be better enlightened, if sections to which such remarks apply were stated. Assuming that the old Gandavensis section is referred to, I claim that degeneration is due to the exhaustion of the vital forces necessary from reproduction, this exhaustion showing after blooming, and more particularly after seed raising, and also that this weakness is caused by excessive incrossing, thereby minimizing the power of resistance against the weakening effect of even attempted reproduction.

Reversion is quite another thing; all hybrids are liable to this result, until they are "fixed," that is, their individuality established by the proper balancing of the vital forces in their composition. Change of soil or climate may effect this unbalancing, with a consequent reversion to the most potent species from which they originally descended.

Now, as to the advice given in American Gardening of 21st March, "that where such failure does occur, growing gladiolus should be abandoned." This means practically that growing the gladiolus in America should cease, and for that matter, everywhere else, for from Europe comes the same cry, and from the Atlantic to the Pacific in America, but all in the Gandavensis section. Do not understand that I am condeming this section as a whole; by no means, but here the general failure is found.

In support of my contention in this respect, let me say that many varieties of Gandavensis which bloomed with me several years ago, have not done so since, or, if so, they have degenerated, or reverted, beyond recognition. The block devoted to them is an eyesore in my trial grounds, so many failing to bloom, or even to grow at all.

As a decided contrast to this, stands a block of new hybrids, practically all growing with the greatest vigor, and blooming year after year, from old corms, to a degree satisfying beyond expression.

My advice to the lover of the gladiolus is, do not discontinue its cultivation, but test the various sections, and make choice suited to your taste and locality. Grow yearly from seed representing the greatest advance, as this places you far ahead in quality of bulbs available at low prices. If you will pay the price by all means get the bulbs, but raise your seed as well.

Simcoe, Ont. H. H. GROFF.

Cannas should be started in boxes in the house and then planted out when all danger of frost is over. Good results are not likely to begot by starting them in the open ground.

OUT-DOOR ROSES.

THERE are two distinct classes of roses for out-door use, namely, hybrid remontants, or hardy roses, such as Gen. Jacqueminot and Baroness Rothschild, and secondly the more tender, or monthly roses, as they are generally termed. The monthlies are not nearly as large or attractive in general appearance as the remontants, but they produce flowers much more freely, in fact some of the varieties are never out of flower from early June until late fall, and to the beginner they are likely to give the best satisfaction. In either case the preparation of the ground would be the same.

Select an open spot, free from the shade of trees, and at least thirty to forty feet from any large tree either way. If the soil is poor or has been used for roses before remove it entirely to the depth of eighteen inches, replacing it with a compost of good fresh loamy soil three parts and one of manure, well mixed up. Where the fresh soil is good enough add manure to it liberally and dig it over eighteen inches deep. If sod ground is used turn the grass down to the bottom, and thoroughly incorporate the manure with the soil as the work goes on.

Monthly varieties can be planted somewhat closer than hardy varieties. A circular bed six feet in diameter will take about seventeen or eighteen strong plants, that is ten in a circle, ten inches in from the margin, six in the next and one in the centre, or you may plant them in some part of the garden where a differently shaped bed is more desirable. In many places the entrance to the vegetable garden can be improved in appearance by planting a few flowers near it, particularly where blossoms are wanted for decorating the house; and such a place is a desirable one for monthly roses and leaves the beds on the lawn unmolested. As roses are generally cut pretty freely for table decoration it may be advisable not to place them in a conspicuous spot, and in that case a square bed or border would be better than a prominent flower bed. I would advise planting the roses in rows two feet apart and fifteen to eighteen inches asunder. Planted in this way anyone can readily estimate how many plants it will take to fill the space at disposal. In planting with a garden trowel dig out a hole deep enough to place the roots in, so that the ball of earth adhering to them is buried about half an inch below the surface. Press the soil firmly around the ball, leaving a shallow dish around each plant to hold water, which should now be given. Should it be very dry weather at the time, the plants should not only be well watered at the time of planting, but should have two or three good soakings of water within the next week or ten days; at the end of that time they will have started new roots and begin to show new leaves also. As soon as this occurs rake the surface of the soil level and cover the surface of the beds with any loose litter at hand. In case there should not be anything else available excelsior

packing makes one of the very best mulchings I know of, it is clean and neat in appearance, and fifty to one hundred pounds put on one and a half inches thick will cover a large bed. This keeps the soil in a moist condition, thereby inducing free root action, with rapid growth, which means an abundance of roses. Should very dry weather continue the bed should have a good watering at least every ten days. There is another important thing in favor of the excelsior mulching, having no weed seeds in it they will grow if the soil is kept covered with it. Cut off all decaying blooms as fast as they show signs of going past their prime.

Good sized plants such as would be in 4-inch pots at the time of planting should always be used. Very small plants are hardly ever satisfactory, as the season is nearly over before they produce anything like a crop of flowers. The best time to plant such a bed is about the first week in May.—Ex.

Roses in Window Gardens.—To have healthy roses in the house the plants should be washed and syringed frequently, and they must have plenty of light and sun. They have to be watered whenever the soil becomes dry. Then they should have enough water to saturate the entire ball of soil, but not so much that the water stands around their roots in the saucers beneath them, which is a rule to be observed with all house plants except aquatics. Fading flowers have to be removed at once. Straggling branches should be cut off Few plants bear pruning better than the rose. Keep a constant look-out for insects.

All Fruits have a medicinal value, and the cranberry ranks as an antiscorbutic. It is a blood cleanser; bruised and heated, not cooked, it has a healing effect on humors. One cut in half and bound on a corn will cure it in one of more applications. It will be equally efficacious in the case of pimples. As an article of food the cranberry is too little known. Many families know it only in the form of sauce, but it may be served in many other ways. A cool, refreshing drink may be made by boiling the berries in water double the measure of berries. Boil until the juice has been thoroughly extracted, sweeten with one half-pound of sugar to the pint of juice, and bottle hot. Greengrocer.

The Canadian Horticulturist

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 are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE FRUIT PROSPECTS in Ontario are unusually bright at present; apples, pears and cherries are full of fruit buds, and even the peach tree in the Grimsby district shows an abundance of live buds. But

"There's many a slip
'Tween the cup and the lip."

and who knows what killing frosts may succeed the abnormal heat of April?

HORTICULTURE AS AN OCCUPATION is the subject of an excellent article by Prof. Hutt, in the February number of the O. A C. Review, in which the author believes that the prospects of fruit growers, notwithstanding the many discouragements, are growing brighter every year. In his opinion the increased shipping facilities, the improved varieties in fruit, the discovery of successful methods of overcoming fungi and insects, all combine to open out an improved era of successful fruit growing.

UNPRUNED RASPBERRIES, that is those not shortened in summer, were found by Mr. Craig to yield more fruit than those which were pruned. For example, a row of Cuthberts, 330 feet long, pruned, yielded only 35 quarts, while an unpruned row of the same length yielded 70½ quarts.

This agrees with our experience at Maplehurst, where we have noticed that summer pruning of both blackberries and red raspberries seems to lessen the crop. The blackberries however, seem to do better if pinched back in the growing season.

THE REPORT OF THE DOMINION EXPERIMENTAL FARMS is very extended, and shows what enormous amount of work is in hand. The work of the Fruit Experimental Stations of Ontario will supplement and extend the good work undertaken by the Dominion Horticulturist, by testing the adaption of various good varieties of fruits to different localities of the province.

THE GENEVA GRAPE is a new variety of white grape, of good size, and fine quality ; a good keeper. The vine is said to be hardy. We have sent out this grape to a large number of our subscribers this season, and we hope it will prove valuable.

The supply of this grape is now exhausted, and those still desiring the grape will receive the Colerain another new white grape, a seedling of Concord. It is also an early grape of good quality, and a very vigorous and healthy grower.

CHESTNUT GROWING promises to become an important industry in certain sections. The European varieties, such as Paragon and Ridgeley are the most profitable so far tested. One grower in Pennsylvania has 40 acres of wild chestnut sprouts grafted to Paragons. The tree bears yearly and the nuts are large.

The Japan chestnuts are not quite so good in quality, but are very precocious in bearing and very productive. The Alpha is supposed to be the earliest variety in existence ; nuts large, two to three in a burr. The Giant and the Superb are two other Japan varieties of promise. The trees are from $2 to $5 each, but will soon be cheaper. In the meantime the Ontario Fruit Experiment Stations are setting these varieties at St. Catharines, Grimsby, Burlington, and Whitby, in order to ascertain whether they will endure our climate.

THE GRIMSBY HORTICULTURAL SOCIETY held their spring meeting in the Town Hall on Friday evening, the 17th of April. The managing committee had secured a large number of beautiful house and greenhouse flowers from the members, and filled a long table with them reaching down the centre of the hall. There were palms, hydrangeas, begonias, double fringed petunias, callas, oxalis, fuchias, geraniums, pelargoniums, coleus, Nile grasses, etc. The first hour was given to social greetings and viewing the flowers. Then the president called all to order and proceeded with the programme. Papers were read on the improvement of the lawn and on the cultivation of sweet peas, chrysanthemums, and begonias, besides some delightful instrumental and vocal music, and a recitation by Miss Pettit, the daughter of the President of our Association. At the close, the secretary gave to each member an ounce of sweet peas, two cannas, two chrysanthemums, two begonias and a special named variety of gladiolus. The membership now is 67.

Question Drawer.

Peach Yellows.

830. SIR,—I would like some information concerning the peach Yellows, and peach Rosette; also the Brown Scale.

M. G. BRUNER, *Olinda.*

This is one of the most mysterious of the diseases of fruit trees, and one that is also the most destructive. It spreads throughout a whole orchard, and

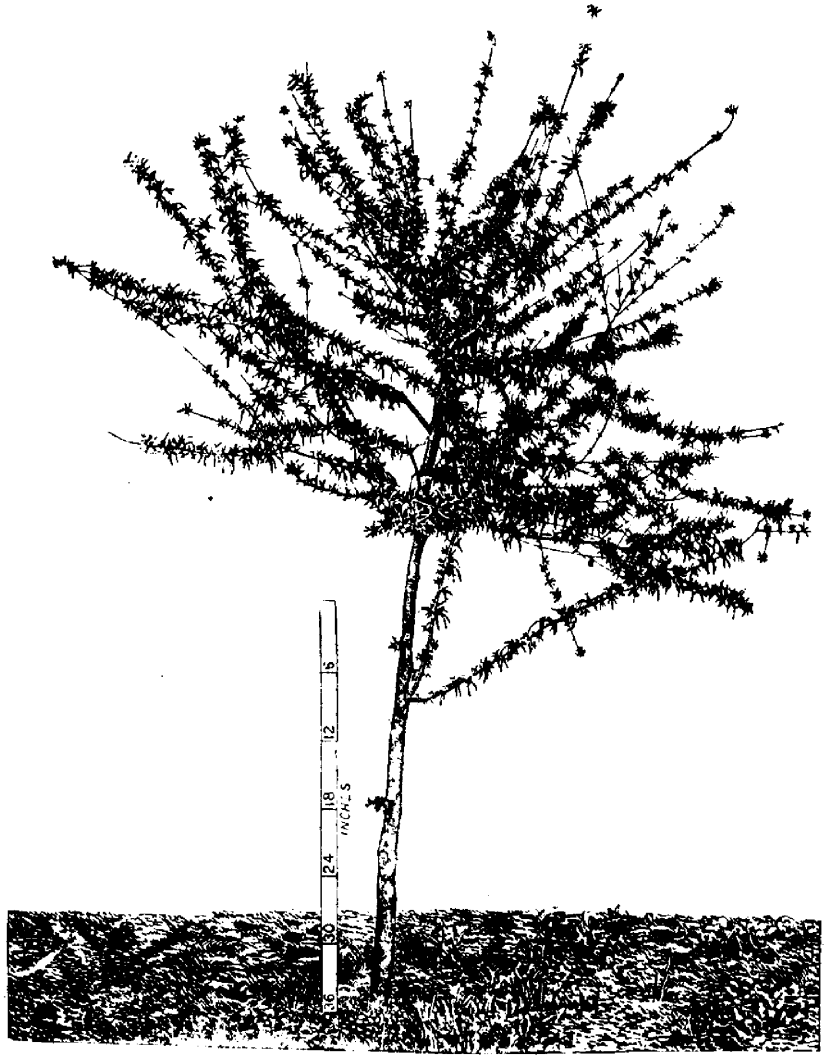


FIG. 956.—PEACH YELLOWS.

thence throughout a whole district, soon ruining all the peach orchards, no matter how young or how vigorous. No large peach growing centre is long safe from the disease. When it first appeared in Ontario, some twenty years ago, we thought the affected trees were some extra early variety, which was worthy of propagation. Imagine our disappointment to see the precious trees die within a year or so after displaying this wonderful earliness of season.

The first symptom of yellows of the peach is in the fruit, which ripens prematurely, and is marked with bright red spot on the skin, and red streaks in the flesh, often running to the pit. Another symptom, usually among the first to be observed is the appearance in the fall, of short yellowish tips, bearing a whorl of small, narrow, yellowish leaves. Abnormal branches also frequently appear on the main portions of the tree, leaving short narrow leaves, and often branching in to several fine branchlets forming a bunchy growth. The peach rosette is a common form of yellows, which is readily distinguished from the natural growth, and at once marks a tree as diseased. The form is shown in the accompanying engraving from Bulletin 9, U. S. Dept. of Agriculture, and is only too familiar to many Canadian peach growers.

The yellows first appeared in Canada about 1876, as near as we can remember, and quite discouraged peach culture in some localities. Of late, however, since we have become familiar with its appearance and its dangerous nature, we have been able to keep it under control by adopting vigorous treatment. Every year during fruit season we go through the orchard with a large knife, and blaze every tree showing the least symptom of yellows, as a mark of doom, and as soon as pressing work of harvesting is over, we destroy these trees root and branch. This is the only way to save one's orchard from total ruin, for in some mysterious manner, either by spores or by bees, the disease spreads rapidly throughout a whole orchard.

Ice House Sawdust.

831. SIR,—Can too much sawdust be put around and over ice in an ice house, and does it heat? A. B. CORMAN, *Iroquois*.

No doubt there would be danger of heating if too much sawdust were used. A foot thick around and over the ice is sufficient, and six inches deep underneath.

Pruning Roses.

832. SIR,—Please tell me how to prune roses? M. D., *Peterboro'*.

We quote in reply from CANADIAN HORTICULTURIST, 1893, p. 119, where Webster Bros. advise as follows :

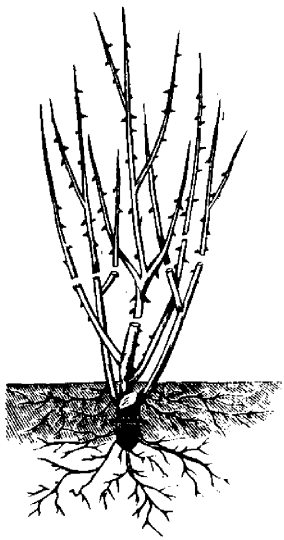


FIG. 957.—Showing depth to plant and how to prune budded Roses.

PRUNING.—Hybrid Perpetual roses should be pruned in the spring, when growth has nicely started, because if pruned too early and vegetation is checked by a cold day or night, the sap will fail to reach the extremities of the canes and it will be necessary to again prune back two or three buds, or leave unsightly dead ends on the canes; by delaying to prune till the weather is settled this trouble is obviated. A good rule to observe, in pruning Hybrid Perpetual roses, is to trim the weakly growing varieties back closely, while those of a stronger growth should not be cut so close.

The accompanying cut will give a good general idea as to planting and pruning. Mosses require only to be slightly shortened and the oldest of the canes removed, also any weakly growth cut away. Hardy climbers require the old wood removed, as it loses vigor, together with a judicious thinning out of young wood, cutting away what cannot be neatly tied into place. The tender or ever-blooming roses require a method of pruning peculiar to themselves. In the spring they should be carefully pruned, all dead or weakly wood being removed, and from time to time during the season, as blooms are cut, the wood should be shortened to a strong eye with a view to induce the growth of strong shoots from near the ground, or even from below the surface. This wood will be found to produce the finest roses.

Gooseberry Training.

833. SIR,—Would you form the crown of your gooseberry bushes above, or below the surface?

Reply by Stanley Spillett, Nantyr.

In planting a bush, I should keep the crown above, but in renewing from year to year, I would give preference to a good strong shoot starting from below the surface.

834. SIR,—If the second form is preferred, would you remove the earth so as to cut the old stem at its junction with the main stem, and, if cut at the surface, would not a great growth of weak sprouts be the result?

Reply by Stanley Spillet, Gooseberry Specialist.

So far I have cut at the surface, and, if too many shoots sprang up, have cut away what I did not need for renewal.

835. SIR,—I have trimmed all my plantation to about six stems each, and shall allow no new wood to grow till I have had three good crops; then I shall cut one stem away and permit a new one to grow in its place. Is this about right, and shall I not have a larger crop of larger fruit, by allowing the bush to use all its sap for the growth of fruit, instead of part of it going to the growth of new wood?

Reply by Stanley Spillett, Nantyr.

In theory this seems about right, but in practice I find that just as large berries, and as many of them, will be produced, if a couple of good strong shoots are allowed to grow at the same time.

The error seems to be in assuming that a tree has so much energy, and we can do no more than direct this to either growing wood or fruit.

Meehan, I think it is, contends that every plant regulates its root growth to its foliage. The more leaves, the more roots. He maintains that the suckers from the roots of apple or plum trees, though unsightly, and therefore ought to be cut away, do not rob the tree of nourishment, as the root growth is proportionally increased.

Coal Ashes.

836. SIR,—Would you kindly inform me if you consider coal ashes good for young trees. Some whom I have been casually talking to state that it is, others claim that it has a tendency to harden the land after the first year. If you would give me your opinion in the matter it would oblige me very much.

W. COWIE, *Port Colborne.*

Coal ashes have little or no value as a fertilizer. They form a good mulch on the surface about a tree to retain moisture, and mixed with the soil it has a useful mechanical effect, in rendering it more porous.

Powdery Mildew in Greenhouse.

837. SIR,—I have a small 8x10 greenhouse, 6 ft. high from front wall, for starting flowers and early tomatoes. I have Black Hamburg grape vine in it, just coming into bearing, but the leaves are turning brown through either some disease or some insect. Could you suggest a remedy? WM. DICKSON, *Parkhill, Ont.*

Reply by Mr. J. Craig, of the Central Experimental Farm, Ottawa.

I cannot gather from the above description what the disease or insect is or might be which would cause the injury described. An effect of this kind is produced by a severe attack of the powdery mildew, one of the *Uncinula* tribe. For this I would spray the vines with Bordeaux mixture early in the season, and follow with sulphur applied in the ordinary way. Such an effect in a general way is also produced when the leaves are badly attacked by the grape vine leaf thrip. The remedy for this insect is kerosene emulsion.

How to Apply Commercial Fertilizers.

838. SIR,—How can I apply commercial fertilizers to the soil in the cultivation of garden stuff, potatoes, corn, strawberries, and fruit trees to get the best result?

Reply by Professor Hutt, Ontario Agricultural College, Guelph.

There are so many kinds of commercial fertilizers, and such a variety of soils that I am inclined to believe that each grower must find out by his own experiments which fertilizers will give the best results on his soil. Barnyard manure is the best general ferlilizer, and should not be discarded for any other until experiments have shown that something else will surpass it. The various kinds of special fertilizers may well be tried along with it, and the results noted. Nitrate of soda, in small quantities, should give good results on early vegetables. Superphosphate gives good results on soils lacking in phosphate. Unleached wood ashes is one of the cheapest and best potash fertilizers, and on light sandy soils give good results with nearly all crops. It is a specific fertilizer for fruit trees, vines and bushes. All of these fertilizers should be sown broadcast and worked into the soil with the cultivator.

Fruits for the Home Garden.

839. SIR,—Kindly name the best varieties of fruits for the home garden,

H. H. A., *Toronto.*

The following are good for the home garden, and would probably succeed at Toronto:—*Raspberries:* Brinckle's Orange, Turner, Cuthbert, Hillborn. *Blackberries:* Agawane, Snyder. *Currants:* Cherry, White Grape, Black Naples. *Cherries:* Early Richmond, Montmorency, Windsor. *Gooseberries:* Pearl, Downing, Whitesmith. *Grapes:* Geneva, Concord, Laidley, Vergennes. *Plums:* Renie, Claude, Bradshaw, Imperial Gage.

Open Letters.

The Gentle Bees.

SIR,—I see you have McArthur's advt. What he states is not true; the North American Convention never admitted his bees were the gentlest; his name or his bees were never even mentioned in the convention.

R. F. HOLTERMAN.

Lovett's Best Blackberry.

SIR,—Some one was inquiring about the success of Lovett's Best Blackberry in Ontario. We have grown it three years, and no fruit. It has been killed to the snow line every winter. The $1,000 Black Cap is too small a berry for us, where we can grow Hillborn and Older to perfection. Success to the CANADIAN HORTICULTURIST,

ALF. BROWN, *Picton, Ont.*

Fertilizing with Corn Cobs.

SIR,—In the Annual Report of the Ontario Fruit Growers' Association for 1891, which I have had the pleasure of receiving, I have read some discussions on the proper fertilizer for apple and other fruit trees. Will you allow me to give, what I was many times told down in *Old Kentucky*, where I lived for several years, was the best means to fertilize such trees? "Dig the whole surface a spade deep around the tree, and some four or five feet out from the trunk, throwing the soil outside; then fill in to the depth of three or four inches with corn cobs, cover up with the soil again, evenly, and leave it. Of course the cobs will not decay immediately, but their general decomposition will feed the tree by the roots and prove of great benefit."

Since writing the above, the thought has struck me that if the soil was roughly broken up, under the trees, and ground or crushed corn cobs scattered thickly on the surface, in the autumn, the moisture of winter rains and snow would help decompose the intended fertilizer and carry the strength or virtues of it down to the roots. This I think would be to obtain the advantage quicker than the other, cruder plan, and a greater number of trees could be so treated from the same quantity of original cobs, annually; and if the application showed a benefit, the number so treated could be increased indefinitely, according to the quantity of cobs saved and collected.

J. P. D., *Amherstburg, Ont.*

REPORT OF OBSERVATIONS OF INJURIOUS INSECTS AND COMMON FARM PESTS, during he year 1895, with methods of Prevention and Remedy. By Miss Eleanor A. Omerod, F. R. Met. Soc., etc. 1896. Published at London, by Simpkin, Marshall Hamilton, Kent & Co. One of the most interesting works on insects available.

Getting Ready.

I CAN almost hear the stirring,
The whispering down below,
Where earth's sweet tender darlings
Are beginning now to grow.

Dear Violet is waking,
And Buttercup mayhap,
And Mother Earth is weaving
Soft silk for each new cap.

She is weaving Daisy's fringes,
And carving Cowslip's cup;
She is calling Honeysuckle,
And bidding her come up.

And the blossoms will not tarry,
For they say to one another,
"Dear sisters, haste, make ready
To obey our faithful mother."

Each of the host of grasses
Will bring his emerald feather,
Alone they are to small to help,
But mighty all together.

—*Mary M. Betts.*