

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.

- 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.

Additional comments /
Commentaires supplémentaires:

Continuous pagination.

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 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.

The Canadian Horticulturist.

VOL. I.]

JUNE, 1878.

[No. 6.

THREE POPULAR PLUMS.

The three varieties of plum that stand out conspicuously as favorites in the United States and Canada are the Imperial Gage, Jefferson and Lombard. The first and last named are recommended for general cultivation in twenty-two States and Provinces, and the other in twenty-one. The double star of superiority is given to the Imperial Gage in four widely separated States, to the Jefferson and the Lombard each in five.

The Imperial Gage is of American origin, having been raised from seed of the Green Gage, in Prince's nursery, at Flushing, on Long Island, in the State of New York. The fruit is of full medium size, oval in form, and when fully ripe is peculiarly marbled with green stripes on a yellowish-green ground and covered with a thick white bloom. The flesh has a greenish color, is very juicy and rich, ranking in quality as "best." It ripens during the first half of September. This plum is mentioned in the Reports of the Association as being cultivated in the counties of Brant, Carleton, Durham, Elgin, Frontenac, Grey, Glengarry, Halton, Huron, Lambton, Lincoln, Middlesex, Norfolk, Peel, Perth, Peterborough, Victoria, Waterloo, Welland, Wellington, Wentworth and York. In the the county of Victoria it is spoken of as being most productive and profitable for market.

The Jefferson plum was raised by the late Judge Buel, of Albany, in the State of New York. The tree is a moderate grower, but bears well and regularly. The fruit is large and showy, of a golden yellow color, with cheek of purplish-red, and thinly covered with white bloom. The flesh is of a rich orange, juicy, luscious, and very high flavored, quality "best." It ripens in the end of August or beginning of September. It is reported as being cultivated in the counties of Brant, Carleton, Durham, Elgin, Grey, Glengarry, Halton, Huron, Lincoln, Perth, Peterborough, Wellington and Wentworth.

The Lombard plum received this name from the Massachusetts Horticultural Society as a token of respect to Mr. Lombard, of Springfield, who brought it into notice in that State. It is generally believed to have been raised from seed by Judge Platt, of Whitesborough, New York. It is a very vigorous and healthy tree, adapting itself to almost every soil, and is immensely productive. The fruit is of medium size, of a delicate violet-red color, thinly overspread with bloom. The flesh is deep yellow, juicy, pleasant, but not high flavored. In quality it ranks only as "good." It ripens with us in the latter part of August. This variety has been widely disseminated throughout the Province, and is cultivated in nearly if not quite every county. In the counties of Brant, Bruce and Oxford it is reported as being the most productive of all the varieties cultivated, and the most esteemed for market purposes. In Carleton, Durham, Elgin, Grey, Halton, Huron, Lincoln, Middlesex, Northumberland, Ontario, Perth, Simcoe, Victoria, Waterloo, Welland, Wellington and Wentworth, it is mentioned as being among the most productive of the varieties grown. This plum is probably more generally planted than any other variety on account of the healthy character of the tree and its immense productiveness, by reason of which some fruit usually comes to maturity despite the ravages of the Curculio.

ADVICE ON FRUIT GROWING TO THE FARMERS.

The transactions of the Wisconsin State Horticultural Society for 1877-8, through the politeness of the secretary, F. W. Case, have just been received. The volume contains many very valuable papers, several of them written by ladies, among them is one with the above heading, so eminently practical and so appropriate to our own circumstances, that we give the substance of it to our readers. The writer, A. J. Philips, is evidently familiar with the subject, and gives his advice from the depths of his own experience. He says,

I advise every farmer, be he farming on a large or small scale, to make an effort to raise some fruit as a source of pleasure, and profit, and comfort to himself and family.

I advise the farmers to inform themselves on the varieties that are succeeding best in the sections in which they live, then on

the best mode of culture, and after this to buy their trees, and use their utmost endeavors to care for and protect them.

I advise you to be careful of whom you buy, for if you depend on the judgment of others to make your selections you will find that the men who can be fully relied on are scarce. Nurserymen are anxious to sell, and some will recommend a new variety for the sake of selling it without knowing whether it is suitable; the tree agents are wholly irresponsible, and are seeking only to make as many and large sales as possible. Last fall I met a man selling fruit trees, and notwithstanding the fact that the well informed fruit growers and the State Horticultural Society have repeatedly recommended for general cultivation nothing but the Duchess of Oldenburg and Wealthy in standard apples, and a few of the best crabs, still that man had orders for trees that he knew would not be successful in that rigorous climate. I solemnly looked him in the face and said, "You have a fearful amount of cheek to sell these trees to farmers?" "Well," he said, "I have the trees, and the only way to get out is to sell them."

I advise you whether you plant many or few trees, whether your soil and location be favorable or unfavorable, whether you bought the trees because you wanted them or to get rid of the agent, whenever you plant trees don't forget to mulch them the first season, and every season thereafter. They will be more certain to live and grow and to bear fruit, and you will be the better satisfied with the result.

I advise you, after taking all this pains, to see to it that cattle and horses and sheep are not turned in to destroy them. This is practised too much, and then the failure charged to climate and other causes.

I advise you to set young trees, for they will root more readily, grow more thriftily and bear earlier than older trees. Much has been lost, and many have become discouraged by planting five and six year old trees, for they never recovered from the shock received by transplanting. I have abundant evidence of this in my own orchard, and know whereof I write.

I advise you to avoid cheap trees for several reasons; first, they are likely to be poor stock, and second, if you get them for a small price you will not take as good care of them. High-priced horses, cattle and hogs always get the best care. A farmer last fall asked me what I thought of a trade he had made, he had traded an old fanning-mill that he had not been able to give away, for fifty apple trees, after

letting them stand out-doors one sharp frosty night, he had buried them for spring planting, I answered him, "you have made a trade that will be a damage to you, for with the careless treatment they have already received, no doubt many of them are dead now, and as they cost you nothing, you will not take care of them, and they will die of neglect." He replied, "I guess you are right."

I advise you to buy of a man who has some practical knowledge of varieties, soils and location. And buy of a man who has established a reputation for fair dealing. That course would decrease the quantity and improve the quality of this class of middlemen.

I advise you to subscribe for a good paper that devotes part of its columns to imparting horticultural knowledge; read it carefully, and when in your own experience you find anything that may be of interest for others, write it and send it to the paper for their benefit. Also pay one dollar every year to be a member of the State Horticultural Society—Fruit Growers' Association of Ontario—this will help the Society to disseminate suitable information to the public; you will then be entitled each year to a copy of the transactions, which contain valuable reading, well worth the dollar to yourselves and families.

WOMAN'S WORK IN HORTICULTURE.

BY MRS. H. M. LEWIS, MADISON, WISCONSIN.

From the transactions of the Wisconsin State Horticultural Society.

I wish to have it clearly understood that I am not an advocate of woman's rights in the full sense of the word, and I have no admiration for a manly woman, but I do advocate that woman has the right to do any and all things for herself and family that she can do with dignity, and without losing any of her womanly delicacy. I am sure that the great majority of women would not enter public life were its doors fully open to them; but I believe that the unmarried woman who pays taxes and has no protector, has the same right to the ballot box if she desires it, that the man has who uses her money for public benefit.

**"The woman's cause is man's; they rise or sink
Together, dwarfed or God-like, bond or free."**

Half the human race are women, and the true woman, upon whom nature has set her seal of royalty, is now acknowledged to be the finest specimen of woman kind upon earth, and she is now fully awakening to her true interests, and great results must follow. Perhaps education and prejudice may retard her work, but the time is not distant when men will "fling around her conquering footsteps more lavish praises and perfumed flowers than ever wooed with intoxicating fragrance the fairest butterfly of the ball-room or opera."

No healthy woman, from Queen Victoria down to the beggar at the door, has a right to live with nothing to do. God never put a human being on earth to waste a life, or indeed a single hour.

"A creature out of work is beggary ;
To Thee I come,
O King of Kings, find room and use for me
In Thy great home."

Time spent in healthful rest and recreation is a necessity, and of incalculable benefit to all workers, and they are the only ones who know how to enjoy it. I would that all women were pleasantly situated in homes of their own, but such is not the fact, for one-fifth of womankind must be self-supporting; and a question of great importance before us at present is, how shall we make our dependent, respectable women more healthy, respectable and self-sustaining? Many women, particularly widows with children, are feeling the necessity of having a more agreeable work, and their thoughts are taking a new turn. They are reaching out to new fields to claim, and conquer, and may God help them, is our prayer.

Medical statistics show us that the average healthy life of a woman running a sewing machine is but four years. To be sure, she lives beyond that time, but in most instances her life is but a dull blank, for she can do little but suffer. Many noble women are sitting down in sorrow and objectless grief, leading dull, indolent lives, nursing every ache and pain, who are dependent upon relatives for their support, upon whom they have no claim, because they feel that they can do nothing for themselves. To such and all others who feel in their hearts that they ought to have some work to do, we would say, take up the work of horticulture, if you have a natural love for it; if not, do not attempt it, for you will most likely fail. But if you love it so well that you can identify your life with it, you cannot fail

of success. Some women have a natural talent for fruit growing and market gardening. Both fields are open to women, and some of the very best conducted farms in the west are managed by them. One lady in the south, who was formerly worth a million dollars, is now supporting herself finely by the cultivation of the castor oil bean; others are supporting themselves by cultivating nuts and various kinds of herbs. A fair degree of health is warranted to most women in the horticultural work, for many physicians prescribe digging in the earth and out-door exercise for the cure of consumption, dyspepsia, and all nervous diseases.

The majority of women have a natural love for flowers, and find but little trouble in cultivating them successfully for their own pleasure, and I see no reason why they should not succeed as professional florists, as the art has now become so simplified that they will be enabled, after becoming fairly established and giving to it a few months careful study and experience, to succeed, if they have a natural bent in that direction. If a woman succeeds as a florist, she can do what she cannot in many other fields; she can command the same price for her produce that a man can, and that is most encouraging. If a woman wishes to engage in this business, perhaps it would be the better way to begin carefully, learning by experience, step by step; doing a small business at first, saying in the meantime to her friends that she expects them to patronize her liberally, and she will surely get the patronage if she works in the right way, as the demand for flowers and vines is largely on the increase; so much so, that no home is considered furnished without them.

But few women have as yet taken up floriculture as a business in the west, but in the east many are engaged in it, and not a few have secured fortunes from its profits. One of the most refined ladies we ever knew was a florist. She managed, with the assistance of a young German lad, three good sized green houses. The man did the coarse, heavy work, lifting heavy burdens, making fires, marketing the plants, etc., while she used the brain force to keep everything in fine running order, taking upon herself the personal supervision of each house. One house was kept for the hardy plants, just above the freezing point. In this was found varieties of roses, pansies, daisies, sweet alyssum and many others for daily cutting. The second house was kept at about 60°. The third at tropical heat. She bore the responsibility of buying,

selling, shipping, slipping, repotting and preparing plants and bouquets for market. She often re-potted three hundred plants in a day with her own hands, and when evening came, was the life of a charmed circle, who admired her for the beauty of her cultivated mind, fine musical talents, and kind, loving heart. She entered upon her work with the greatest love and enthusiasm for it. Often when she was admiring nature's wealth and varieties of colors, and breathing the very odors of Heaven, she would exclaim, "You little know what beautiful thoughts come to me out of the ground, as I study the fathomless mysteries of plant life." Her work was not all toil; it was truly an inspiration. Women so happily and healthfully employed are seldom sick. One such woman worker is doing more for the woman's cause than a score of Susan Anthonys. We are proud of such women, and we have thousands of them all around us. Mrs. Little, of the blind asylum, Mrs. Harvey of hospital fame, and Mrs. Lynde, who has done so much to relieve suffering in our poor-houses and jails, are representatives of this type of women in our own State, and our good President Hayes' wife, of national fame, whose bright light shines over the whole world, is proving that the "present epoch is initiating an empire of the higher reason of arts, affections, aspirations, and for that epoch the genius of woman has been reserved," proving the old Oriental proverb, "that every book of knowledge is implanted by nature in the heart of woman," to be true; scattering to the winds the pernicious and absurd saying of Voltaire, that "ideas were like beards; women and young men have none."

Woman is emerging from the gloom of the dark ages into glorious light. She is like the famished plant in the gardener's hand. It seemingly droops and withers without hope, but when he gives it the elements of growth, rich soil, dew, rain and God's sunshine, it expands into a plant that sends out its beautiful foliage and rich blossoms, that will fill the air with fragrance and beauty, and the "world's autumn" with rich fruit.

Horticulture promotes health, furnishes appetizing and invigorating food, is a most delightful means of recreation, cultivates a refined taste, induces a spirit of cheerfulness, and awakens a sympathy with nature and a love for all the Creator's works.

SOME RELATIONS BETWEEN PLANTS AND INSECTS.

BY JOHN ELKINGTON, M.D., OMPAH, ONT.

Sir Jno. Lubbock, F.R.S., lately delivered a most interesting lecture on the above subject, in Leeds, England, some portions of which have a special interest to the hybridist; and though it is not possible in these pages to reproduce the whole discourse, I have thought a selection from the report in the English *Agricultural Gazette* might give profitable food for thought to readers of the CANADIAN HORTICULTURIST.

The lecturer alluded to the difference existing in plants, not only differences in form, size and color, but also in other respects, some being hairy, glutinous, sticky, &c. These may be accounted for in a great measure by the relations borne by plants to insects, the visits of which are generally necessary to ensure the fertilization of one flower by the pollen of the other. In some cases, however, such as that of *Drosera*, the object of the flower is to attract insects for the purpose of devouring them, and therefore the leaves are covered with sticky hairs, which bend gradually forward when an insect alights on the leaf, and squeezes it slowly to death, its juices going to the nourishment of its alluring and deceitful foe.

It is easy to see the advantage which flowers gain from secreting honey, inasmuch as they are dependent for fertilization on the visits of bees and other insects, which while feeding necessarily dust themselves with pollen, and thus carry it from flower to flower. But it is less easy to understand why honey should be secreted on those parts of flowers where no pollen exists, at the base of the leaf-stalks, for instance. For the explanation of this we are indebted to Mr. Bell, and Mr. Delphine, who observed that in some cases upon the stems, and living upon the honey, exist colonies of small ants, constituting a most efficient body-guard against the attacks of leaf-cutting ants. They also protect plants from the attacks of many other enemies, and are in their turn made use of by various small species of Aphides who, by secreting a sweet fluid, of which they allow the ants to avail themselves, convert them from enemies into friends and thereby secure a cordial, instead of an angry reception.

Harmless, however, and even useful as are ants which confining themselves only to the stalks of flowering plants, they would generally

be positively injurious to the flowers themselves, as these would merely rob them of their honey without repaying the debt by carrying the pollen to others. Flowers therefore have been driven to protect themselves by various devices, such as slippery surface, sticky glands or hedges of hairs, which entirely prevent the ants from obtaining access to the nectary. For the visits of ants to flowers would not only deprive them of their honey, but would prevent the visits of those insects which are so necessary to cross-fertilization. The instance of the mode in which the common Fox-glove excludes the entrance of ants was given; the flower is a close box, which contains the anthers, pistil and honey. It has the specialties of a flower which is adapted for cross-fertilization by insects, color, honey, and the arrangement of stamens and pistils, but it is closed. The flower is adapted to cross-fertilization by humble-bees, and they alone can force open the box; to other insects it is closed. Again, the beautiful rosy flowers of the *Polygonum Amphibium* are rich in nectar, and quite unprotected from the visits of creeping insects so long as the plant is grown in water; the arrangement of the stamens and pistils is such that it cannot fail of cross-fertilization on the visit of any flying insect. When, however, this plant is grown on land, and consequently liable to the visits of creeping things, certain hairs terminating in sticky glands are thrown out, effectively barring the entrance of these worse than useless guests. The so called "sleep" of plants is another means of self-defence adopted by those flowers whose fertilization is dependent upon the visits of day insects; while on the other hand there are other species of flowers adapted for moths and nocturnal insects, which expand towards night, and scent the evening air with delicious perfume. The curious life history of *Silene Nutans* was then referred to, and the advantages of early rising shown in those flowers which expand early in the morning to receive bees, but close again before the later rising ants are astir.

Sir John proceeded to discuss the means by which insects provide themselves with means of concealment, by imitating the appearance of plants; the "walking stick" insect, and many larvæ are cases in point. Some caterpillars, living on the under side of leaves, not only adapted their color to those leaves, but actually, as their growth increased, altered their markings so as to coincide with the fibres of the leaves. Curiously enough, sometimes bright and striking colors were used as a

mode of protection. In these cases, however, they are accompanied by an unpleasant smell and taste, so that the gorgeous dress which would seem so dangerous is in fact a most effectual shield.

The lecturer pointed out that there were five principal types of coloring among caterpillars. Those which live inside wood or leaves or underground are generally of a pale uniform hue; the small leaf-eating caterpillars are green, like the leaves on which they feed. The other three types may "*si parva licet componere magnis*" be compared with the three types of coloring among cats; there are the ground cats, as the lion and puma, which are brownish or sand color, like the open places they frequent; so also, caterpillars which conceal themselves by day at the roots of their plant food, even if originally green, tend to assume the color of earth. The spotted or eyed cats, such as the leopard, live among trees, and their peculiar color renders them inconspicuous, by mimicking the spots of light and shade among the foliage. Lastly, there are the striped cats, as the tiger, which inhabit the jungle, whose markings render them difficult to see among the brown grass they frequent. The stripes of the tiger are transverse because he walks horizontally on the ground; while the stripes on the caterpillar are either longitudinal or oblique, the direction of the lines follows those of the foliage; those caterpillars which cling to the grass in a vertical position have longitudinal lines, while those which live on mere leaves have oblique lines, corresponding with the oblique midribes of the leaves.

THE BLACKBERRY.

This fruit has received the least attention at the hands of fruit growers of any of our small fruits. Plants are seldom inquired for, and only a few hundreds are planted, where thousands of currants, raspberries, and gooseberries, and millions of strawberries are set out. Mr. Parry, of New Jersey, is an extensive cultivator of small fruits, and for many years boasted a large number of acres of blackberries under cultivation, and may therefore be considered good authority on the cultivation of this fruit. In a paper read before the Pennsylvania Fruit Growers' Society, at its meeting in January, 1877, he states that this fruit has sold readily in his markets at from twelve and a half to fifteen cents per quart. The average received by him during the past

fourteen years is fourteen cents per quart, and the yield two thousand two hundred quarts per acre.

The varieties to which he gives the preference are Wilson's Early, Dorchester, Kittatinny, and New Rochelle. The Hoosac Thornless he finds to have no other merit than its freedom from thorns; and the Crystal White, Col. Wilder, and Dr. Warder, with all white, red, and purple blackberries, prove to be unprofitable. Sable Queen, Sinclair, Holcomb, Cumberland, and many other varieties have been tested and found not to be as valuable as the four sorts above named. He has found the Snyder to be remarkably hardy and very productive, qualities which make it very valuable in many localities, because it can be relied upon to produce a full crop, but the fruit is smaller. Clarkson's Early promises to compete successfully with Wilson's Early, ripening as soon, and very productive, with fruit of fair size. The Delaware is a very large and excellent blackberry, ripening at the same time with the Kittatinny, and the bush a very vigorous grower, and seemingly perfectly hardy.

The blackberry should not be planted on very rich soil, lest the result prove to be a large growth of canes and very little fruit. After experimenting with many soils, from a firm clay to a light blowing sand, Mr. Parry gives the preference to a light moist sandy loam, and if water would otherwise stand near the surface that which has been thoroughly underdrained. He states that a fruit grower who had forty acres devoted to the growing of blackberries bought a tract of light sandy land at thirteen dollars per acre, and planted it with them; but in order to have a model patch he purchased a few acres of the best and richest land in the vicinity, at three hundred dollars per acre, and planted it with the same kind of blackberries, gave it the best of care, obtained an immense growth of canes; but never as much fruit as from the cheaper land.

He highly recommends the practice of heading back the canes, during the summer, to a height of from three to five feet, which will cause the side branches to grow vigorously, and interlocking with each other, enable the bushes to support themselves without stakes or wires. These side branches should be shortened during the following spring, so as to give the bushes a pyramidal form. The result of this pruning has been a greater yield of fruit, and of better quality than when he had allowed the bushes to go unpruned. The unpruned bushes would

set a greater number of berries, but could not ripen them. The best and earliest fruit was upon the well pruned bushes.

A plantation set with plants propagated from cuttings of healthy young roots will continue to yield good crops from twelve to fifteen years. Mr. Parry says that he planted ten acres on this sandy land which bore good crops of berries for thirteen years, yielding several seasons six hundred and fifty bushels and once eight hundred bushels of fruit.

THE GRAPE VINE FLEA BEETLE, *Haltica Chalybea*.

BY W. SAUNDERS, LONDON.

In No. 4, page 62, of the *Horticulturist*, a correspondent complains of the ravages of the Grape Vine Flea Beetle. This insect has been unusually abundant in many localities this season, and where abundant is always very destructive to the grape vines. Its common name suggests activity, and it is as active in mischief as in movement, hopping during the heat of the day from leaf to leaf and from branch to branch with a speed almost equal to that of its smaller namesake.



FIG. 9.

The Beetle, Fig 9, survives the winter in the perfect state, lying dormant and torpid under leaves, pieces of bark, or other suitable shelter until called into activity by the reviving warmth of spring. It is a pretty little beetle of a polished steel-blue or green color, sometimes shading into purplish, with a transverse depression across the hinder part of the thorax. The under side is dark green, the antennæ and feet brownish black. Its length is about three-twentieths of an inch, and it has stout robust thighs, by means of which it is able to jump about very briskly. It is more destructive in spring than at any other time, for then before the buds have burst it is astir, with appetite the keener for its long winter fast; and while the tender growth is swelling, this little mischief-maker pounces on it and eats it out to its centre, thus consuming in a short time two or three embryo bunches of grapes.

The beetles appear on the vines in the latter part of April and continue to be destructive until late in May, after which they gradually disappear. Before leaving, however, they deposit clusters of orange colored eggs on the under side of the young vine-leaves which hatch

in a few days into small dark-brown worms, which feed on the upper side of the leaves, eating numberless holes in the softer parts, in the manner shown in Fig. 10.

In about three or four weeks they become full grown, when they present the appearance shown at *b*, in the Fig.; but here is a magnified view; the hair-line at the side shows the correct size. They are then about three-tenths of an inch long, usually of a light brown color above, sometimes yellowish, at other times of a darker shade, paler on the under surface. The head is black, and there are six or eight shining black dots on each of the other segments

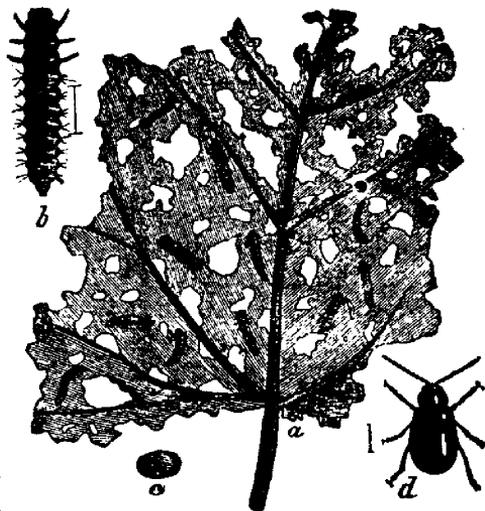


Fig. 10.

of the body, each emitting a single brownish hair. The feet, six in number, are black, and there is a fleshy orange colored proleg on the terminal segment. When progressing, the larvæ does not move its body regularly, but raises it suddenly behind.

In the early part of June they leave the vines and descend to the ground, where they burrow in the earth, and forming a little smooth oval cell, change to dark yellowish chrysalids, as shown at *c*, Fig. 10. After remaining about two or three weeks in this state, the perfect beetles issue from them, and the work of destruction still goes on; but as they live altogether on leaves during the fall, of which there is usually an abundance, the injury they do at that season is scarcely noticed.

To destroy the beetle it is recommended to strew in the fall, air-slacked lime, or a good quantity of unleached ashes around the vines infested. The larvæ may be destroyed by the use of hellebore and water, or where it can be safely used, a mixture of paris-green and water, in the proportion of one or two teaspoonfuls to a pail of water. This latter mixture would also doubtless kill the beetles if the vines were well syringed with it in spring. During the chilly mornings of early spring the beetles are comparatively sluggish and inactive, and some

chance is then afforded of hand-picking and destroying them. Fowls allowed at this time the run of the vineyard are also said to devour large numbers of them.

HOW TO PROPAGATE FLOWERING SHRUBS.

An esteemed member of the Association requests that information may be given on this subject, being desirous of enjoying the pleasure of having flowering shrubs in his grounds, and finding that it is only occasionally that he can succeed in raising those received from the nurseries. In compliance with this request we give the usual methods of propagating some of our most desirable hardy shrubs, in the hope that the information here given may prove both interesting and profitable to many of our readers.

The Japan Quince is one of our shrubs that is very easily propagated by layers, cuttings of the roots, and seeds. The branches should be cut with a tongue, as is usually done in layering, and layered sufficiently deep to be kept moist through the summer, and remain in the ground until the next spring, by which time they will be found to be rooted, when they can be cut loose from the parent shrub and set out as independent plants. The proper time to put down the layers is in spring, as soon as the soil has become somewhat warmed and settled, and before the leaves put forth. It may also be propagated from root cuttings. In order to grow them in this way successfully, it is desirable to prepare a hot-bed sufficiently large to insure a durable, gentle bottom heat. When this has been secured the bed should be covered with about four inches of good, rich, sandy loam, the roots of the shrub cut into pieces about four inches in length, should be thrust into the soil at an oblique angle, so as to be covered about half an inch deep at the upper end, and three inches deep at the lower end, then gently watered with a fine rose, so as to settle the soil well about the cuttings, and the sash kept on day and night until the sprouts have made their appearance above ground, when they should be treated as to heat, air, and moisture in the same way as any tender growth. Care must be taken with the watering before the shoots appear, not to apply so much at any time as to materially reduce the temperature of the soil, or to make it at all sodden. As the young plants increase in strength they should be gradually hardened off, and by mid-summer be enabled to endure the

weather without any covering by night or day. They can be taken out of the frame in the fall, and stored in earth in a box in the cellar, and set out the next spring in the open ground. They can also be raised from seed, although there will be more or less variation in the color of the flowers of the seedling plants from that of the parent. The seed should be sown in the fall, in shallow drills, and covered but slightly. In the spring it will germinate, and the young seedlings will require the same care in weeding and cleaning and stirring the soil as a bed of carrots. In the fall they should be taken up, packed in earth, and stored in the cellar until spring, when they should be set out about six inches apart in rows, and cultivated and cared for until large enough to be set in their permanent place on the lawn.

The Plum-leaved Spirea is somewhat more difficult of propagation, though it will root tolerably well from layers, tongued and put down in the usual manner of layering. But the best way to propagate it is from cuttings of the green wood in summer. The most successful plan is to plant the shrub in a box or tub, place it in the greenhouse in February, and gently force it into growth. When the young shoots have begun to harden, they should be taken out and set in pure sand in the propagating bed, over a gentle but steady bottom heat. Here they will soon strike, and when the roots have been well developed may be potted off into small pots and treated like any young, tender, newly potted plant. They may also be grown in the summer from cuttings taken from the shrub in the open ground, and set in sand over a hot-bed having a gentle bottom heat, covered with sash and shaded so as to exclude the sun. Considerable skill and attention are requisite to success in this method of propagation; there is danger on every hand, danger from too much moisture, and danger from too little moisture, danger from keeping the sash shut too close, and danger from admitting too much air, the bottom heat may be too great, or it may be too little, the cuttings may be taken too green, or they may have become too much hardened.

The Chinese Double-flowering Plum is propagated by grafting or budding on stocks of the common plum. It is possible that it might be made to grow from cuttings in bottom heat, but we have never tried that method, the process of budding it upon the plum stock being much more convenient, expeditious, and economical.

The Purple-leaved Filbert is propagated by layering. We have

found that in dry and hot seasons the layers do not root freely, and that it is often necessary to allow the layers to remain for two years before separating them from the parent plant.

The *Flowering Hawthorns* are best and easiest propagated by budding them upon the common White Hawthorn. The buds take readily, unite firmly, and grow rapidly. We have not tried the experiment of budding or grafting these upon our common Wild Thorn; if any of our readers have made trial of this method of propagating them, it would be very interesting to know the result.

Deutzia Gracilis, a small, slender, graceful shrub, producing pure white, bell-shaped flowers in great profusion, is best propagated also by placing a plant in the greenhouse, and setting green wood cuttings in bottom heat, under a bell-glass; though it is quite possible to succeed when the bell-glass is not used.

Deutzia Crenata flore pleno, comes into bloom towards the end of June. It is the most showy of all the *Deutzias*, bearing its hanging bell-shaped, scalloped blossoms on the shoots of the current season's growth, throughout the entire length of the shoot. The flowers are very double, pure white, splashed with bright rosy pink on the outside, and literally cover the branches so as nearly to conceal the foliage. This we have cultivated only from green wood cuttings taken from the parent plant in summer and set in a gentle bottom heat. We believe however that it might be grown from hard wood cuttings taken off in the fall and kept in moist sand until March, and then set in the propagating bed of a greenhouse with a gentle bottom heat, and also that it might be possible to grow it from layers in the open ground.

The *Syringa*, or Mock Orange, is very readily grown from layers; from suckers that spring up around the parent plant; and by dividing the parent plant itself when it has attained to sufficient size.

Weigela Rosea, a free flowering shrub, with showy, tubular flowers, of a light rose color, blooming in June, is very easily propagated from cuttings, in a gentle bottom heat, or even under a sash without bottom heat, in sand; also by layering.

Perhaps these instances will be sufficient to give our readers an idea of the various methods of propagating shrubs. As a rule most of them can be made to grow from layers, keeping them layered two years if necessary; when this method fails, resort must be had to green wood cuttings and bottom heat.