

SB

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GLEANINGS  
ON  
HORTICULTURE

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HORTICULTURE.









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BY

OSWALD MOSLEY.



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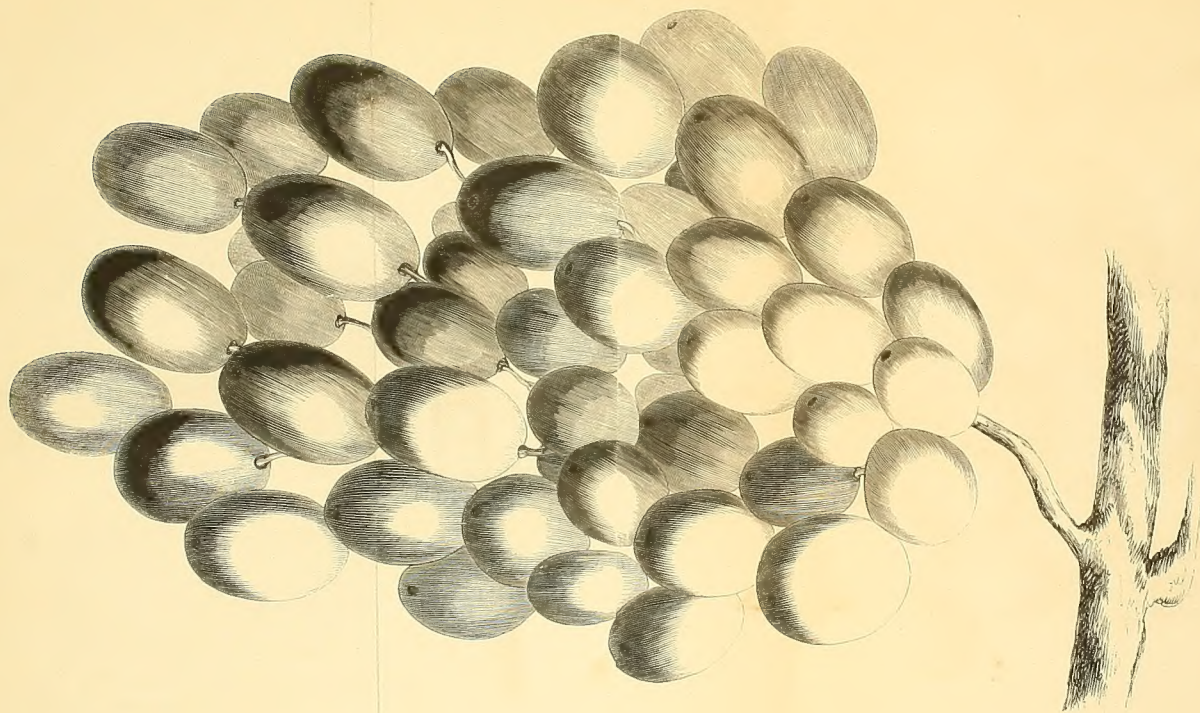
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1851.

A BUNCH OF CANON HALL MUSCAT GRAPES.

Vide page 16.





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DEDICATION.

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TO

JAMES B. WILDMAN, ESQ.

CHILHAM CASTLE, NEAR CANTERBURY.

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MY DEAR CHRISTIAN FRIEND,

HAVING been requested to publish the following Notes, for the benefit of yourself and other lovers of Horticulture, you must permit me to make a few preliminary remarks. I am indebted to C. McIntosh's useful publication, to Mr. G. Flemming's, Mr. R. Errington's, and Mr. Beaton's Notes in several scientific works, such as *The Cottage Gardener*, *The Gardener's Chronicle*, &c., for the chief information that I have gleaned; and may the perusal direct our thoughts to the great Giver of every good and perfect gift.

How bountiful are the blessings with which our Heavenly Father crowns Horticultural knowledge: I love to trace His hand in everything, particularly in beautiful Flowers and Fruit; and to place implicit confidence in Him who removes all anxious care from every heart that loves Him supremely. The climate of our dear native country requires us to exercise ingenuity in contriving plans to counteract the prejudicial effects

which changeable seasons have on plants imported from warmer climes; and since glass has become so cheap, we are left without excuse, if we do not avail ourselves of this great boon. Every reasonable want, of either flowers or fruit, may now be supplied by the erection of hothouses, greenhouses, or (as Mr. Rivers has called them) 'orchard houses;' and all anxiety about anticipated ills may be removed at a small expense. One of the latter I have recently built, and introduced Warner's Conservatory Boiler and four-inch pipes into it, that it may serve the purpose of propagating plants, and forcing strawberries, French beans, &c., at an early period of the year. By this means, an excellent and certain supply of apricots, pears, cherries, &c., is produced one month earlier than the usual period. Such success have I experienced, that I feel justified in considering God's past goodness to me as a pledge of His help for the future. It is with pleasure that I shall comply with your wishes and those of my horticultural friends, who are interested in this short publication; and begging you to pardon the numerous errors which you will doubtless discover, believe me, in those bonds of Christian love which can never be severed,

My dear Sir,

Yours ever faithfully,

OSWALD MOSLEY.

*Chancellor House,  
Tunbridge Wells, Kent.*

## GLEANINGS ON HORTICULTURE.

ON THE

### TREATMENT OF VINES IN HOTHOUSES.

GRIZZLY Frontignac Vines should be enclosed on all sides in solid brickwork, keeping the roots always moist, but never wet. A good brick drain, with a fall of six inches, to take away the water immediately, is indispensable; and apertures should be left towards the border, filled with broken bricks and whole bones; or it should be drained every four feet apart with two-inch pipes, in order that there may be no impediment to the exit of the water. It is requisite to test these drains and pipes every autumn; by cutting a hole of some depth in the border, and by leaving it open a few days, it will be ascertained if any stoppage has taken place. The area in which the Grizzly Frontignac Vines will flourish, should be three feet below the level of the surface, the bottom being brickwork, well-jointed with cement or mortar, prepared with river sand, or paved with Yorkshire flag-stones.

The side walls should be four inches and a half in thickness, and built a brick higher than the surrounding soil. Divide the area into as many portions, or breadths, as shall be equal to the number of vines intended to be planted: say, four feet apart, and six feet long; by which means the roots of each vine are kept separate.

When planting young vines, a piece of cloth, or flannel soaked in soapsuds, should be bound round the ball with packthread; the roots will quickly penetrate through it in all directions. The proper situation is under the centre of a light; the main stem and all the branches will then enjoy the full power of the sun. The roots should be laid in six inches below the surface,

and be well mulched with rotten dung; they will *then* strike *upwards*, and produce fine well-ripened grapes in three years, and a good supply of vigorous rods as future wood in the current year. A vine stem should measure three inches in girth before it is suffered to ripen any fruit; for *every* pound-weight of grapes cut from a vine before the stem is grown to this thickness, will deprive you of ten pounds in future years.\*

My borders are composed of old mortar, smashed and whole bones, charcoal, bricks broken about the size of a walnut, chopped turf, rotten dung, and leaf mould, in equal portions. No flowers or vegetables should be grown on the borders; and during the heat of summer, they should be forked over, and liquid manure copiously applied every fortnight, as beneficial to the roots, causing *pipers* (or small fibres), which produce the fruit; and preventing the berries from shanking.

Slowness of growth is the first step towards the production of good bearing wood, and this point should be aimed at by exposing the shoots during their growth to the greatest possible amount of light and heat. These all-powerful agents will check the too rapid growth of the shoots, and thereby produce short-jointed wood; and the buds will be large and prominent, distant from each other about three inches, on an average; but a *daily* supply of soapsuds and liquid nutriment in a highly concentrated form is needful to effect this. Unless artificial means be used to make the roots move before the natural time, (the vernal equinox,) an early forced vine will present the very singular anomaly of having produced a mass of foliage, and a matured crop of grapes, before the roots can have contributed anything towards their support. The fruit is *then* shrivelled and shanked, in consequence of the sap, contained in the trunk and branches, being exhausted.

Never expose any vines during the winter for the purpose (as some foolishly imagine) of hardening them. All young vines should be raised from *eyes* and not from layers, as the former will come into bearing *one* year earlier than the latter. I object much to the *spur system*, on account of the obstruction which

\* Scale of the number of bunches of grapes which any vine can mature in proportion to the circumference of its stem:—

Cir.

3 in.	30 bunches, having 3 long rods, and 2 as future bearing wood.
3½ in.	60 ditto                      4 ditto                      and 4 as ditto.
4 in.	80 ditto, with 5 rods, and 4 rods as future bearing wood.
5 in.	100 ditto                      ditto                      ditto.

The stem should be measured just above the ground.

O. M.



the sap meets with from the old knots, and can only liken them to the spavined hock of an aged or worn-out horse. Close pruning the vines is far preferable; leaving growing eyes where wood is wanted for next year's bearing.

Take care to cut the wood of last year back in October, and so place the wood of the late summer's growth, that it may have the benefit of the sun to ripen it: this makes the wood bear well during the following season. Invariably remove *all* old wood as soon as there is strong well-grown young wood to take its place.

Admit air freely when the grapes are coloured, and that will prevent the steam from condensing upon the stem of the bunches, which would otherwise stop the circulation of the sap, and deprive the berries of nourishment.

When beginning to force, take care that the *roots* and stems of the vines outside the house are kept in the same temperature as the branches in the interior. This can be carried into effect on old borders, being supplied liberally with hot stable manure, covered with oilcloth.

At my request, my kind father has recently constructed a hot-house at Rolleston Hall, on a novel principle, explained to me by Mr. Evan Baillie, of Dochfour, near Inverness, who has adopted it with great success.\* The vine border is heated by a warm air-chamber underneath, encircled with a brick flue; thus the temperature is easily regulated by an hygrometer and thermometer; Yorkshire flagstones support the earth wherein the vines are planted, and at each end of the warm air-chamber there is a ventilator, and free circulation of air from thence to the interior of the hothouse, which is built on arches.

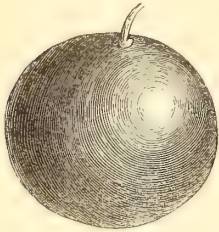
Cut out, from the bearing shoots that are retained, all the lateral shoots, close to the bases of the buds, and also the remaining portions of the tendrils and footstalks of the bunches of fruit (if any) as well as all excrescences, and every portion of old wood that remains in the vine. Prune them all smoothly, close to their parent branches, leaving behind no unsightly ragged edges or extremities to disfigure the vine.

The annual removal of the bark, which comes off easily from the stem, is very desirable before the vine is dressed with the black sulphur receipt for destroying the red spider; this may be regarded as absolutely necessary, for it tends very greatly to promote the prosperous vegetation of a vine. Copious sprinklings

\* *Vide* Plans at the end.

on the floors of the houses may be very advantageously given to *vines* from the time of the setting of the fruit until the berries are about to swell off, by creating a moist atmosphere at night. They stand in need of this additional nourishment, after having been kept perfectly free from moisture during the period of flowering, and *all* humidity must cease as soon as the berries begin to colour. To facilitate this grand object, the stem and branches should at all times enjoy the full power of the sun; the

berries\* will then be twice the size of those grown from rods trained under the rafters, and of many grapes grown on the spur system.



Why should not all gentlemen prune their own vines during wet days? They would soon ascertain that the long rod system was far superior to the spur pruning, and that they might grow

branches to vie with the grapes of Eschol. How can any one imagine that a single stem carried up *beneath* a rafter can produce grapes equal to those grown on rods of last year's growth, which have been always exposed to the sun, and whose fine buds proceed from young wood, instead of from shortened side shoots? Through the latter (spur) system, it is quite impossible for the sap to flow as freely as through the former. The earlier a vine is pruned in the fall of the year, the earlier will its buds unfold in the ensuing spring. The sap will then accumulate in the buds, and increase them to their utmost possible size *without* bursting them. This period cannot with safety be considered as having arrived before the month of October. Do not forget to apply white paint to the extremities of the rods, where they have been amputated, for this will prevent the vines from bleeding when the sap ascends. When pruning, take as many eyes from the one-year-old wood (if well ripened) as may supply yourself and friends with young vines. Having split the wood in half, place it in a seed-pan with the eye upwards. Each pan will contain about eleven eyes: plant them in light, rich, mould, and keep it well drained. For the first two months, the



\* The exact size of a black Hamburgh grape. N.B. Eighty bunches from one vine, averaging from one pound to two pounds each, and measuring six inches in girth, on four rods, and having four more as future bearing wood.

pan had better be kept in the shade, and after the eyes have struck their small fibres, some bottom-heat will be required. When well rooted, pot the eyes off, and place them in the hot-house, taking care to protect the leading shoots by means of strong sticks. The autumn being the proper time to manure the vine border, let it now be lightly forked up, and a good coating of smashed or whole bones, *not having been boiled*, and old mortar rubbish, be laid on, and (as I have already stated) this will make the roots come to the surface, if the border be not disturbed by cropping or digging; it is necessary therefore to put them comfortably to bed for the winter, giving them no cordial in the shape of liquid manure until the vernal equinox. For this purpose, long stable manure, about half made, will keep the roots warm; and to resist the frost, heavy rains, and other atmospheric changes, the whole border should be covered with tarpaulins, which may be procured at any of the railway stations, where the goods or luggage trains are covered with them. When nailed on a strong wooden skeleton frame, this useful protection will last for years, particularly if taken off the frame in the spring, and kept in a dry situation.

The *Vine* is a coarse feeder, and can hardly be grown in ground too rich in animal and vegetable manure; if the border be not deeper than three feet and a half, and well drained, the compost being of a light consistency, *it* is sure to prosper, and the berries will not become shrivelled or shanked before they come to maturity. I like to select full *plump* eyes from well-ripened one-year-old wood, and if potted off in No. 48 sized pots, when taken out of the seed-pans, with plenty of crocks for drainage, they may at the end of June be removed for the season, and the pots be sunk close together under a south wall, the vines being tacked loosely up to the wall. They must be watched, and watered when they require it, and all the time the side shoots must be stopped at the first joints. Plants grown from cuttings or layers are not equal to those raised from eyes, and will not (like the latter) be fit for fruiting in pots, or for being planted in a border, for the purpose of being carried through into the house to grow under glass, *in one season*.

With tolerable growth, the cane will go the length of the rafters; but if allowed to bear fruit, it will throw back the vine two seasons. Three canes to a rafter are enough in the general way, and each year they are fruiting, there must be fresh canes growing, according to the scale introduced above. As soon as

grapes are large enough to get hold of with thin pointed scissors, they should be considerably thinned, taking care to preserve those on the shoulders and at the points of the branches, and be sure not to destroy the bloom, nor to bruise the footstalks. These thinnings must take place five times during the season, as it is desirable not to do too much at one time; for one grape lost that ought to be retained, will spoil a bunch. As soon as the vine begins to swell its buds, it wants moisture—*i. e.*, liquid manure outside, after the tarpaulin has been removed (but the stable dung must remain until July), and syringing inside the house, which must be supplied from the different *tanks*. (Soapsuds, &c., in outside ones.)

When commencing to force about the end of March, shut the houses up, keeping the temperature during the first week from forty to fifty degrees, until they are in bloom, and then eighty-five degrees should be the maximum; and *no air* should be given during this particular period, unless the sun happens to be very hot, and to raise the temperature too much. My late gardener would sometimes at this critical juncture, contrary to my wishes, heat the houses to one hundred degrees; and the consequence was, that the grapes were as small again as they should have been.

“*Experientia docet,  
Obsta principiis mali.*”

After the grapes are well set, the temperature of the house must not be let down below sixty degrees; but during the sun heat, it will matter but little if it rises to eighty degrees occasionally; these are times to give air, which conduces greatly to their good, but must not be given at the risk of lowering the temperature too much; and the roots of the vines outside must be kept in an equal temperature with those in the inside, if you wish to have fine fruit, free from shanking. Therefore, do not remove the dung until after the grapes are nearly ripe in July, and the berries will be large and globular. *Prior to colouring*, syringe morning, noon, and night, keeping a very moist temperature, and close your houses early in the afternoon.

When the last year's shoot reaches the top of the house, stop it. If you wish the branches to have a strong and turgid footstalk, early thinning is desirable; but the following is an excellent rule to act upon, in order to produce fine fruits: All shoots, of course excepting the leader, and two bearing shoots from the base of the stem, are stopped when they attain eight feet long,

while the *two or three* succeeding base shoots (according to the scale noticed above) are each allowed to perfect only four feet for next year's bearing wood. No other shoot should be allowed to emanate from the parent stem; and so, year by year, young canes are started, and the old ones cut away as near the stem as possible.

Heavy bunches of fruit, which would gain prizes at the London Horticultural Society (of which my father is one of the original members), may be grown all over the house on this system, without weak wood or any confusion of training. This also coincides with the received authority of the present time, Dr. Lindley—"That the system of English grape-growing requires to be changed." The vines should be planted outside the houses, and the stem introduced under the surface of the soil (or be wrapt up in thick matting) into the houses.

Keep heat up during the day, and reduce it on the approach of night; and be sure to regulate the temperature in such a manner that your grapes, until they are ripe, should receive no check. Therefore never remove the manure (as I have before remarked) from your border before July, when the berries will have changed colour—have begun to swell—and (should the roots have been kept in corresponding temperature with the vines inside) will be well grown.

Should you not find the vines break well, bring the leading shoots back, and that will check the sap. Give as little air as possible during the blooming or flowering of the vine, and also during *the stoning*; keeping the thermometer at eighty degrees by day, and seventy degrees at night. Examine the border as soon as this period is over, and give liquid manure (if required) two or three times per week, keeping up a *moist atmosphere*, as upon this proceeding depends the swelling of the fruit, and no shanking will then occur. Now also fork over the border, which should be twenty-four feet wide, and about three feet six inches deep, having a foot in fall from the house to the main drain; and if you can easily procure any whole bones of horses, &c., from a tanner, that have not been boiled, bury them one foot from the surface. Strong short-jointed canes, twelve feet long, should be stopped, to increase the stem; and to produce grapes before the stem attains the thickness of three inches, will be highly detrimental to the vine (I hope that you will excuse *these repetitions*, which are almost unavoidable on such a subject): and before the grapes colour, syringe *morning, noon, and night*.

Give air freely after the grapes are swelled off and coloured, every morning adding fire heat, more or less, according to the dampness of the weather, seldom shutting the houses close up, unless in very intense weather; generally leaving the doors and front sashes open, and invariably shutting up the tops of the houses. By adopting this method, grapes may be kept until the end of February in excellent order. All the leaves must be taken off; and when any of the berries turn mouldy, they should immediately be cut out.

I must not omit to mention, that during July and August, I keep my border exposed to the full rays of the sun and air; by *which means* the roots are brought to the surface, as well as by the top dressing, consisting of ground bones, rotten manure, &c., covered with half-rotten stable manure in September, to prevent evaporation. The rains that fall in October and November will wash the nutriment down among the fibres, and they will make extraordinary progress.

Syringe lightly in March, and shut up your houses early in the afternoon—say two o'clock; April, half-past two; May, three; and so on, as the season and fruit advance to maturity. There are some kinds of grapes that do not set their fruits well, owing to a defect in the parts of fructification; to remedy this, I give the vine a good shake when the weather is fine in the early part of the day, which will be found very beneficial in setting the anthers free and dispensing the pollen. Another practice is to leave a few extra bunches, taking them off when in full bloom, shaking them into paper, and giving it a fillip under the flowering bunches. Berries at the time of changing colour have nearly half their size to swell, if well grown; examine, therefore, your outside border, and if the heat has much declined, add some fresh stable manure, and keep a brisk heat until the grapes are coloured, and you cannot fail to reap a due reward for all your care and attention. The loss of colour in black grapes is (in my opinion) by having an over-abundant crop, and in not having thinned them sufficiently. I recommend, when the berries attain the size of No. 3 shot, beginning at the bottom of the bunch, leaving the leading berry, if possible, and, according to the kind of grape, to thin judiciously upward on the bunch; for an inch or two from the bottom, leave the centre berry, taking off the other two, proceeding to the main shoulders, and they should be tied up lightly with Cuba bast.

Take care, *afterwards*, to remove all inside berries, as they scarcely ever colour well, and if the grapes have to hang long on the vine, they contribute to mouldiness in damp weather. The above system of thinning, leaves a bunch equally balanced; by each berry acting its own part, and not robbing another, the bunch will be found to assume a strong forestalk, and be regular as to size in every part. No person should touch the berries with hands wet with perspiration, but he should use a pair of thin gloves, and wear a cotton nightcap, as any perspiration will retard the swelling of the berries, and make them appear as if they had got the rust. When stoned and swelling, thin again, and remove the inside berries, keeping up at this time the temperature to eighty or eighty-five degrees, with a very *humid atmosphere*, allowing the house to cool down in the after part of the day, you will then do without fire by night. I never allow a vine to be syringed with cold water, having a reservoir inside the house which holds about nine tons of tepid water. If the heat at the roots can be maintained by stable manure at ninety degrees, your prospects will be most cheering. Many would remove the manure from the roots altogether at this time; a very *great error!* from which arises shanking of the forestalks of the berries. Frontignacs, Canon Hall Muscats,\* and even Hamburghs, are often thus disfigured.

In the early Spring, after the rods of the vine have put forth their foliage, it will be easy to discover which of the rods should be removed; the *bunches* at each eye will be visible, and of course where they are few and far between on the branch, *it* will be taken off, to make room for its more fruitful rival branch: *three* rods will be amply sufficient from each vine-stem. We cannot enjoy anything, without a perpetual recruiting, and a period of *rest*; neither can the vine flourish and bear well, unless this important object shall be attended to; four months, at least, ought to elapse prior to the period of forcing any vine. Should you commence exciting the roots, by means of heat or liquid manure, until the wood is well ripened, it will either prove barren, or the berries will shank and never come to maturity. Even when engaged in lawful occupations, how soon our spirits flag, unless we daily set some hours apart for a requiem, and banish this world's thoughts and anxieties for a

\* *Vide* Frontispiece.

season, that our souls may be engaged in prayer and praise! I find that I have perpetually to struggle against my corrupt inclinations, and that the thoughts and intents of my heart are only evil, and that continually; but these dark truths shall soon be cleared up, and all that appears *now* to be intricate; and we shall find that blessings arose to us from what at one period promised to be injurious to us. I am sure that you will agree with me, that God's love has been manifested towards us since our youth until the present moment;—may we in everything strive to live to His glory, and may the enjoyment of horticultural pursuits, and the bounties of His providence, elevate our souls to the “delectable mountains,” through faith and confidence in the sole merits of our Redeemer.

#### TREATMENT OF YOUNG VINES.

The shoot from a young vine should be allowed to grow until it reaches the top of the rafter; and one rod will be sufficient where plants are required to be kept during the Winter as bearing wood. The partial shade of vines is advantageous to plants, and many continue longer in flower in consequence. In autumn, cut down the one shoot of the young vine to the bottom of the roof-sash; for it is between this part and the top where grapes are to be produced. The second year, the vine will make rapid progress in growth, and a vigorous shoot will reach the whole length of the roof-sashes. This shoot should be stopped at the highest point of the house, and the wood will be perfectly ripe by the end of the Summer. Grapes ought not to be allowed to grow upon any vines trained in hothouses, until the third season after planting; and then only a limited crop should be taken, until the stem of the vine measures three inches, according to the scale before mentioned. When the autumn pruning arrives, the before-mentioned shoot should be shortened two-thirds back, allowing only one-third for bearing; and it will be found the ensuing Spring that it will show for fruit at every eye; probably at some eyes two or three bunches will appear; but these should all be removed except one—a bunch to an eye is enough—otherwise the bunches and berries will be small, liable to shank, and be of an indifferent colour. The leading main shoot which has sprung from the top eye, must be trained to the extreme point of the house, and then stopped. The lateral shoots, producing



fruit, should also be stopped one eye in advance of that from which the bunch springs; and the successive laterals, which make their appearance during the season, must also be removed at this joint. It must be borne in mind, that although it is necessary to remove superfluous laterals, none of the leaves belonging to the main stem, or principal side-shoots, must be mutilated or taken off on any account; for on these not only depends the proper ripening of the current year's crop, but also that of the following season. A branch may be removed without any fear of the stump bleeding, if the vine is in full leaf. When a tendril is once stopped, no fruit is afterwards produced on it, for all tendrils are abortive bunches. The final thinning of grapes should be accomplished before the berries are as large as very small peas. Twelve or fifteen bunches from each rafter ought to satisfy any reasonable person, averaging from one to four pounds each. It frequently happens that the bunches produce straggling shoulders; cut them away, or your berries will be badly coloured, especially if there is a sluggish action at the root. The flavouring process is carried out through the instrumentality of *three or four large leaves* which accompany the bunch, supposing the shoot to have been stopped *one joint beyond* the young bunch. From the period of the young shoot expanding, until the bunch is fairly developed, the temperature should range from fifty-five degrees at night, to sixty-five degrees by day; and from this period until the swelling is completed, sixty degrees by night and seventy by day must be secured. In sunny weather, between three o'clock and five, p.m., the extreme temperature should not exceed eighty degrees, or a weak and watery growth will be the consequence. The night heat at any time should not exceed sixty degrees, as the vine then requires rest; therefore, if the night *heat* be increased, it only tends to dissipate the energies of the tree. I always advocate a liberal ventilation, and not even to keep vines close during the first swelling; but at this period, give it with very great caution; *half an inch* will suffice in the front sashes, even on sunny days, during the early Spring months. The egress of the heated air at the *back*, at a liberal rate, is advantageous; if no vines are planted there, it is always desirable to give a little air early in the morning. Light fires daily at two o'clock, and let them burn briskly till four; when the dampers should be used, and the fire merely kept in during the night, placing as much fuel on at eight o'clock in the

evening as will be totally consumed soon after midnight. If any remain the next morning, be sure to pull it clean out, and lay the fire for lighting again in the afternoon.

During the swelling of the berry, the temperature should be sixty-five degrees in fair weather—sixty degrees as a night heat, or in wet and windy weather, as heat, without a proportionate amount of light, is productive of injury, and will also prevent the plants drawing. Give a free circulation of air during night, as well as morning, provided the necessary warmth can be maintained, for an early ventilation is of paramount importance. Syringing is required whilst the vines are breaking; but to continue it after *this* period is certainly a most erroneous mode of procedure. This treatment will subdue the red spider, with the addition of sulphur dressing and fumigation, which must be had recourse to on suitable occasions. No plan is more likely to produce a sufficient quantity of young bearing wood, than the long-rod system of pruning, by which one or more young shoots are being constantly brought up from the bottom of the tree, to produce fruit in their turn, when the old or last year's bearers are cut out. This plan has been practised, with success, for the last half century. Great virtue is to be attached to the supply of a reasonable portion of vapour; it is found beneficial in destroying the ova of insects until the leaves are pushed forth, when the house must be shut up, and the vines kept in a warm temperature while they blossom.

The *wood* which has to produce the future crop will be all made during this period; and, with a good heat, *it* will grow compact, and better able to ripen fruit. If the house be kept too cool at the beginning of forcing, the wood will be soft and long-jointed, and therefore subsequently barren. Vines should be planted both outside and inside the house, to secure a succession crop, and the exterior borders so high as to allow of their being laid in close to the top of the front parapet, by which means little of the stems will be exposed to the cold. It is a good thing to cover them with soft hay-bands wound round them, and to water these stems frequently with a syringe, as the moisture contributes to their breaking stronger and the production of vigorous shoots, and the roots must also be encouraged to come to the surface of the vine border, by means of half-rotten hot dung being spread over them, while forcing, every fortnight, the cold manure having been removed, and a copious supply of liquid manure preceding

the restoration of the tarpaulin as an exterior cover against the vicissitudes of our northern clime. The borders should never be dug, but carefully forked a few inches in depth as soon as the frosts are over, merely to render the surface more porous, and that the roots should feel the genial influence and warmth of the sun's rays.

Begin the year by having the flues cleaned out, and well white-washed outside with hot lime; the woodwork and glass should be also washed with soap and water, and the vines with a mixture of soft-soap, sulphur, and tobacco. When the course of forcing coincides nearly with the natural growing season, ripe grapes may be cut in less than five months.

The temperature should be about fifty to fifty-five degrees, until every bud in the house has begun to swell; if hotter, only a few of the leading and strongest buds would start. Use the syringe on the branches freely, and steam the house to enable the buds to push more freely—keeping the thermometer only one degree higher than the hygrometer, and the rise of the sap will be facilitated. Afterwards, raise the temperature gradually to sixty and seventy degrees in the course of *a month*—then keep up the moisture at eight o'clock in the morning, and the time the flues are lighted in the evening, and fill the house with steam, giving air during the day very sparingly—say two inches at the bottom front lights, and six inches at the top lights. Use stable and liquid manure constantly on the borders, and steam the house by sprinkling the flues or pipes until the hygrometer reaches sixty degrees; then bring in some unfermented leaves; these will kill all insects, as they contain a great quantity of ammoniacal gas, and can do no injury until the leaves of the vines expand. Pour a solution of crude muriate of ammonia upon quick lime, and the gas thus obtained may be applied with a pair of bellows to the plants. *Air* should be admitted freely to strengthen the young buds as they are developed, and the exterior and interior temperature should be kept *at an equal height*; this is of the utmost use in vine culture.

Vines will not bleed if they are pruned in the autumn, soon after vegetation ceases, and when the wood is ripe. In all cases, a preventive is better than a cure, and if once it happens to any serious extent, it will injure the forthcoming crop and weaken the vines. Should it ever occur, peel off the outside bark to the eye

and press into the pores of the wood a composition of pounded chalk and tar mixed to the consistency of putty, and wrap round it a piece of ox's bladder; but the most simple method is to thrust the end of the shoot, amputated as above, into a potatoe, and the bleeding will cease immediately.



When vines are in full leaf, they are not liable to bleed when cut, and the largest branches may be cut during the growing season with safety. Tie the vines up, after pruning, to the iron rods, about a foot from under the rafters, so that they may receive the benefit of the sun and air, and the rods will not then be liable to be injured by frosts. If the buds burst strong, it is a good sign that they will show fruit, but if weak, *vice versa*; and if they miss showing fruit on the fourth or fifth joint, they will fail altogether, and in that case the young shoot, with its weak buds, should be broken off, unless situated near the stem, and required to be left for producing wood from which next year's crop is to be expected. Do not let more than one bunch grow on one lateral, for if more, the grapes will not swell well. When the vines come into bloom, the temperature should be kept at seventy-five degrees; and the process of watering the borders, &c., until the fruit be set, should cease, for it would be liable to injure, if not totally destroy, the tender parts of the blossom. Air should now be only admitted by small openings of a few inches at the lower and upper sashes, which will effect a sufficient change. As the young shoots advance, stop those which show fruit at the second joint above the fruit, pinching it asunder with the finger and thumb, and never use the knife. Three strong and properly situated buds should be chosen for the production of bearing wood, near the stem of the vines, and these shoots should be laid in to the length of several feet before they are stopped. Continue to apply liquid manure and soap-suds to the border until the berries are about one-third of their size, and then supply them with clear water, withdrawing it as they begin to colour: syringing must then also be abandoned, as it would destroy the rich bloom upon the berries. At the earlier period of their growth, use the engine with considerable force, first from the right, and then from the left side of the house, that both sides of the leaves may be thoroughly washed morning and evening. Also leave a supply of water on the pathway, and use fumigation of tobacco once a week to destroy

the thrips, green fly, and red spider, before the fruit attains its full size or colour, as it cannot be then applied without injury to the fruit.

But, before I proceed, let me warn you against using sheet-glass in your houses, as much as 'the Fire King,'\* for it shrivels and dries up the young vine-leaves when bright sunny weather succeeds that which is cloudy. This burning (which quite alarmed me the other morning, when looking over my promising rods, with about twenty-five bunches on each,) results from waves and knots in the glass, which act as so many foci for concentrating the sun's rays. As a remedy, however, daub the outside of the glass over with a thinnish solution of—say two pounds of glue mixed in two quarts of water boiled in a pot, and about six pounds of whiting being added, until it is of the consistence of paint; apply it with a painter's broad brush when hot, on the outside of your lights, which will thus appear as if they were made of ground-glass; it will remain on during the season, and can easily be removed by rubbing it with a piece of flannel and warm water, and a scrubbing-brush. For the summer, the advantages of ground-glass will thus be secured without its corresponding disadvantages in winter. Had I not discovered this invaluable receipt from the *Cottage Gardener* and the right proportions *by experience*, my promising vines would have been annihilated for this season.

Take off all lateral shoots and tendrils, as they *now* rob the vine and cause confusion, and remove any injured leaves, but never take off any healthy ones, or your fruit will be shrivelled; and admit air freely from all the sashes.

To train vines well, some forethought is required in selecting proper shoots at an early period of the season. It must be pre-determined how to prune and disbud the wood so as to provide for a crop the following season. Such shoots as have been stopped will push again: allow the lateral that pushes to run a few joints, and then cut it back to one, and so on as it pushes, until it stops entirely. When the proper shoot, from which these issued becomes ripened nearly to the extremity, the whole of the said laterals may be cut off at the originally shortened part, or at one joint above it, if there be reason to fear that the uppermost bud of the proper shoot will start. When the fruit is swelling, thin the bunches, so as to give sufficient room for the berries, and

\* Keeping the fires by night at too high a temperature.

tie up the shoulders; one-fourth of the berries will not in most cases be too much to cut off, and such compact growing sorts as the Frontignac should be more fully thinned, to prevent the chance of the berries rotting in damp and cloudy weather after they are ripe, which a free circulation of air among them will materially prevent. Water should be abundantly applied to the plants, both at their roots and also over the leaves, but discontinue at this period the use of liquid manure.

The vine, to be successfully cultivated, must have free admission to light. Heat, although of the highest importance, is secondary to it; for it will bear a more diminished amount of the latter than the former. The leaves, in consequence, are augmented in point of size and succulency, and it conduces, together with stopping, to a concentration of the sap in the vicinity of the fruit; therefore, no growing spray, whether lateral or terminal, should be allowed to shade the principal leaves, and no rods should be trained immediately under the rafters.

The native climes of the vine—for it inhabits most of the temperate portions of the northern hemisphere—are Asiatic Turkey, Persia, Greece, the Morea, and on the borders of the Black and Caspian Seas; and in Syria and Armenia it grows in the greatest perfection. All these climates are furnished with much sun and light; and in arresting its rambling tendency by these agents, we may well be astonished at the capabilities which our gracious Creator has implanted in it to supply the wants of man with fruit and beverage.

I have for years seen the attempt to carry out grape culture, in connexion with that of plants in general, and it will succeed where the vines are *not forced*, as the plants will then enjoy a healthy situation during the winter, and be planted out before the vine laterals will much shade them. I find that soapsuds furnish to the vines a nutritious fluid at all times, when a coating of rotten manure covers the border, as the latter prevents the puddling action of the water, and adds greatly to their fertilization, provided the draining of the border can be relied upon. If severe drought occur at any time between the first and second swelling of the fruit, watering will always then prove of benefit, more particularly if the soil is porous and of light quality. The leaves turn brown on a bad rooted vine; and when compared with those on a well rooted one, the deficiency of the border may be immediately detected. The autumnal purple tint on the

leaves is quite sure to accompany a premature and false ripening, caused by an insufficient supply of sap from the roots. Many vines will blossom, set, and swell tolerably well, but when the greatest demand is made on their root action,—which is when the grapes commence their last swelling for ripening them,—the leaves become discoloured. This ripening of the wood can only be obtained by such an exposure to heat and air, as that the juices may become highly elaborated, and pass from the circumference to the centre. All other things being equal, the stronger the wood (provided it is thus matured), the more fruitful it will be. Hence, good grapes are frequently produced from small weakly wood, and poor grapes from that which is strong and rampant; but in the one case the wood was like heart of oak, in the other soft and porous as a willow. It is of importance to give lateral shoots the permission of growing until the vines become strong, so far as your space will allow, and they do not interfere with due exposure to the sun of the principal leaves, because such growth above will secure a similar expansion of the absorbing roots below. In all cases, the leaves must remain so long as there is a particle of green about them; and thus the secretions formed will be stored more plentifully in the beds that remain. The runners of strawberries and the laterals of vines should be allowed to remain, so as to secure a vigorous root action while the fruit is setting, swelling, and ripening, and gradually removed when these things are accomplished; because the juices raised by the vigorous root action will be gradually lessened in their quantity, and the secretions formed rendered more mature, by each remaining principal leaf being more exposed to sun, air, and heat.

Mildew makes its appearance on the under side of the vine leaves, because that has less light in proportion to the moisture—circumstances favourable to the growth of all fungi. It is communicable by contact, and may be stayed by picking off each leaf as soon as it is perceived, or it may be the cause of a similar disease in other plants. It is called *oidium vitis*, or egg-fungus of the vine. The following solution will check it effectually, if not entirely remove it. First,—Use a solution, not stronger than four ounces to the gallon, of salt, and let the temperature of that solution be the same as that of the vinery. Secondly,—Apply the solution about six in the afternoon, and let it remain on the caves for twelve hours; then syringe it off with plain water,

also of the temperature of the vinery. Thirdly,—Repeat the application every evening, followed by as regular a syringing, and the disease will be overcome. Fourthly,—Sprinkle three or four pounds of salt over the surface of the border in which the vine grows—imparting salt to the sap as a cure for fungi.

Upon the more advanced state of this plague, its effects upon the fruit are to produce a swelling and cracking, accompanied by a very strong disagreeable smell, and ending in the grapes becoming a mass of rotteness. The smell is like that of old mouldy, decayed wood. The same fungus has been found on cinerarias and chrysanthemums. All infected plants in pots should be immediately removed out of the vinery. The mildew upon cucumber leaves may be successfully removed by the same saline application.

Atmospheric moisture is absolutely essential both for the foliage, and to enable the flower to burst the calyx or cup which holds it; but a sprinkling of the walls and pathways twice or three times a-day would be amply sufficient without saturating the atmosphere with hot steam, an opinion which once was prevalent. Take a sheet of white paper daily, and collect the pollen or mole dust from the blossoming bunches of good setting sorts, such as black Hamburgh. A gentle flirt about noon each day will shake it down; and this fine dust, which appears like sulphur over the paper, must be applied with a dry camel-hair pencil, touching lightly the surface of the blossoms of the Muscat, or Tokay, or Black Damascus, which are shy setters—the temperature being at eighty degrees.

Overdunging is prejudicial to vines, causing them to run too much to wood, unless the soil is deficient in fertility.

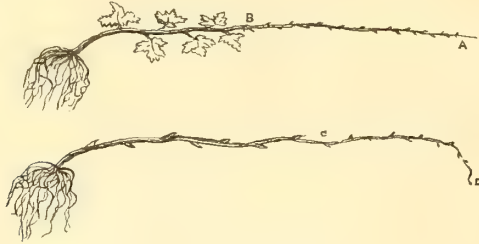
Vines in boxes, two feet deep and one foot square, planted in very rich mould and broken bones, watered with liquid manure, will produce a succession of ripe grapes, when placed *on the flues* in any forcing-house; and when ripe, the fruit upon the plants should be removed into a dry, airy temperature, and after being pruned, they will cover twenty square feet of surface. The vines should be so arranged, that the shoots as they advance can be trained under the glass, and be exposed as much as possible to light. As the shoots also advance, train them carefully, and stop the laterals as they appear. Apply soap-suds or manure water (as before stated) in the growing season, but *when* the plants have matured their crop, during the flowering, and when



the wood has begun to ripen, water should be gradually withheld. The black Hamburgh is the best kind for box culture, and the White Frontignac also succeeds well; the latter sets its fruit best in the coolest part of the house. I prepare the buds or eyes in the way before mentioned—just covering the wood—and use leaf-mould and sand to plant them in, as soon as they have struck root; I then pot them off into eight-inch pots, using a mixture of well-rotted cow-dung, leaf-mould, and strong loam, in equal proportions. After this, I subject them to bottom heat, until the roots fairly show that another shift is wanted, which is the final one—namely, boxes as described.

From the time the vines are started, the strictest attention ought to be paid to admitting air, and to its effects on the hygrometer; in cloudy and wet weather, short fires are to be put on in the morning, so as to raise the heat nearly ten degrees above the night temperature, and a little air admitted both at the front and back of the house, taking care to keep plenty of water on the flues and floor; for a strong fire-heat, accompanied by a brisk circulation, would be very injurious if not counteracted by moisture. In bright weather, equal attention is necessary; for if a great deal of air is admitted to keep down the heat, it is impossible to have the atmosphere sufficiently moist, consequently the vines suffer. Air ought to be admitted, not so much to keep down the heat, as to maintain a current of fresh air in the houses; for which purpose small openings at the front and back are sufficient. Vines will seldom be hurt by sun-heat if surrounded by a properly moistened atmosphere, but to maintain this in dry, hot weather, the utmost vigilance is necessary. As then there is very little heat in the flues, the floors ought to be kept deluged with water. Although the thermometer may be kept steady, it is impossible to keep the hygrometer one degree below it, unless a little air be admitted, and the flues steamed as soon as the sun raises the heat a few degrees, and you keep up a sufficiency of moisture. After selecting the best young vines for the boxes, rub off all the eyes as the vines break but the six or ten lowermost. When these have attained to the length of about a foot, I select the best, and rub the other off, and by the latter end of the season the remaining shoot has made a strong cane, and the preceding year's wood, up to A from B, is completely exhausted of its sap, presenting the appearance of a piece of wire. It is now cut back to B. I leave only last year's shoot nearly at its full length, and everything is then in readiness for commenc-

ing to force in the following spring, when I manage the vines thus:—



I disbud all eyes as soon as I can catch hold of them with my finger and thumb, except those represented above; and when the wood is completely exhausted of its sap from C to D by the growing shoots, I then cut the shrunk branch off at C. I take from each vine, on an average, from ten to fifteen bunches of grapes, and fruit the same vines two years in the same boxes in which they were first planted. I imagine that my success may be attributed to leaving the old wood to be exhausted of its sap by the new; for much finer rods can be obtained by doing this than by the old-fashioned way of managing young vines. I never cut out the eyes of the vine in a dormant state, but allow them to break, for I think it the more advantageous plan to allow the sap to be put in motion first. When there is no outlet for the sap above the growing shoot, it immediately returns to the root, and is taken up in its downward passage by the growing shoot. The circumstance of vines under glass emitting roots at the joints along the shoots is not uncommon, but it is injurious to the prosperity of the vine, and tends to prevent the existing crop from acquiring perfection. Moisture favours the formation of these roots; they shrivel in hot dry weather, but push again during a dull state of atmosphere. They arise from the shoots being in a favourable situation for growth, and the roots the reverse. The leaves elaborate a quantity of sap proportionate to their size, and to the share which light has had in perfecting their development where vigorous growth is promoted. There is always a surplus beyond what the stem and its dependencies above ground require; and the proper destination of this is the roots, that their increase may correspond with that of the plant above them.

When roots of vines are healthy in properly drained soil, sufficiently warm and not too deep, their growth proceeds in proper

proportion to that of the top, but if they are badly conditioned, they can neither act their part, nor appropriate their share of returning juices, consequently an accumulation of the latter takes place in the stems, and favoured by the moist warm atmosphere of the vinery, bursts through the bark in the form of spongioles, continuing to lengthen till they are checked by droughts. They assist in forming foliage during moist weather, but dry up when they are most wanted, and cause the shanking and shrivelling of the fruit. Their appearance may be prevented by maintaining a due proportion between the temperature of the air and earth in which the vines are planted.

ON PRUNING AND THE GENERAL MANAGEMENT OF PEACH-TREES,  
NECTARINES, APRICOTS, &c.

About the first week in February, the buds of the peach-tree will begin to exhibit considerable prominency. Before the trees are fastened to the wall, I would therefore advise their being washed over with the following mixture:—1 lb. of soot, 1 lb. of soap,  $\frac{1}{2}$  lb. flowers of sulphur,  $\frac{1}{2}$  lb. of fine chopped tobacco—put the whole into a vessel of boiling water; add unslacked lime, and a sufficient portion of lamp-black to give it a grey colouring, until the mixture assumes the consistency of cream. Paint every portion of the tree over with this mixture, using a painter's brush, and taking care that the *liquid is hot*, and that it reaches every crevice. If applied in fine weather, it will soon dry, so that a second careful inspection had better take place, and any parts omitted gone over with the brush. When this is completed, the trees may be fastened to the wall, and trained in the usual manner. Peach-trees require protection in the spring till the fruit is set; this may be effected by waterproof calico, fastened by means of loops to the hooks which support the projecting galvanized coping; the canvass is kept from the wall by means of hop-poles, placed in a slanting direction, the lower part of the canvass being tied over the poles to small hooks fastened opposite each lower string or loop in the wall. This covering can easily be put up or taken down, to expose the trees in *not too* sunny weather, and protect them as the evening approaches.

Waterproof canvass, or calico, may be procured from Richardson and Co., Tonbridge-place, Euston-square, at 1s. per yard, which, if taken care of, will last for years, and be useful also to wrap round pyramidal pear-trees when in blossom, and to pro-

tect plants in frames from frost (instead of expensive *mats*) during the winter season. My calico coverings are always fixed up at the end of February, when the blossom-buds are advanced on the wall-trees, to keep them from intense sun-light, as well as from frosts, for the former exhausts the juices of the tree faster than the roots can supply fresh sap.\*

Galvanized iron coping prevents radiation also; the wall having become warmed by the sun during the day, parts with the heat again during the early part of the night, and any substance (however thin) which accomplishes this object is desirable, as it arrests the departure of the heat, on the same principle that mats and calico coverings are found to be beneficial. The walls are preserved dry by this coping during the spring and autumn rains, and during the summer it wards off that intensity of sunshine which is too exciting, and in some cases positively injurious: it also, during frosty nights in March, after a bright sunshine during the day, moderates such extremes of temperature.

As soon as the fruit is set on peach-trees, or nectarines, and the young shoots are about an inch long, these coverings may be entirely taken away, and the trees *disbudded*. This latter operation should be performed with the hand; and care should be taken to leave the bud nearest the base of the shoot, as this, in most cases, will be the one to depend upon for next season's bearing. A second disbudding will be necessary three or four weeks later, when the minimum number of shoots required must be determined upon. As the season advances, and during the progress of growth, I would recommend copious syringings with soft tepid water. When the evenings are cold, this should be done in the morning, but the afternoon is preferable in warm weather. This may be repeated twice every week in dry seasons, until the fruit approaches maturity, when all waterings should be suspended.

An important item in the culture of the peach, and too frequently overlooked, is never to overload the trees; if this be done, the quality of the fruit will always be inferior in size and flavour. The fruit should be regulated to about *six inches* from each other. Under all circumstances, this will be an ample crop. The thinning should be effected at two different periods—the first when the fruit is about the size of cherry-stones, and the second immediately after stoning.

\* The calico has lasted three years, and is as good as new.

During the whole period of culture, keep the borders in a loose, friable state, in order that the sun and air may reach the roots; and, if possible, never crop them with any kind of vegetable, how slightly soever it may be done, within a yard round the stem. The soil, if not light, must be made so by turfy loam from a common, or road scrapings, and by (what is indeed the most essential point,) draining. I have a good brick drain at the bottom of my border a foot deep, and half a foot wide, into which I have small drains, the distance of from four to six yards apart, consisting of two-inch pipes covered in with brushwood and rubble, having about six inches fall. Peach-trees especially require a dry shallow border, for if the roots get into the wet subsoil, they will produce nothing but barren wood; whereas, under proper management, such as by digging a trench round the roots, about two feet deep, the third autumn, and paring the roots (if required) until the trees are in a bearing state, filling it up again with leaf-mould, or some light compost, short-jointed shoots, full of flower-buds, will be the result. The depth of the soil for peaches need not exceed two feet, and the border ought to be higher than the walks, and sloping from the wall, in order that the heavy rains may run off immediately. Some people advise the bottom of the border to *be paved with bricks*, to prevent the roots from penetrating the unhealthy soil beneath; but this I am convinced, from dear bought experience, will not answer, except with old trees: a mass of rubble is the *best thing* to keep the soil dry, and at the same time afford a supply of air to the roots—a material, but too often neglected point. Having procured trained plants, the roots should be spread upon the surface, keeping the stem three inches from the wall, and the roots should not be covered deeper than two inches with light soil, forming a little hillock. I do not recommend any manure but leaf-mould being used (excepting a little from the stable-dung, to *mulch* them with during the frost), for it tends to the production of *wood only*. Encourage the growth of the roots near the surface of the border by all means in your power, by never cropping it heavily.

Peach and nectarine trees seldom require root pruning more *than once*, and will not endure it *when advanced in age*, except in extreme cases of great luxuriance, for they are not long-lived trees under any circumstances. Great care should be taken to leave no bruises on the roots, and I invariably prune to a bunch of fibres, for fear that in cutting a naked portion, gangrene might

ensue through a part of the root dying back. I last autumn trenched round my four-year old trees (about three feet from the stem), which are very luxuriant, and cut by this means *under* the roots at that distance.

From this trench, about two feet deep, I got at any tap-root, by scooping the earth away on one side, so as to get quite underneath; but I fear that this system of root-pruning will not succeed with a peach-tree, nectarine, or apricot (even grafted on an apricot stock) *that is eight years old*. A tree generally throws out its roots as far as the branches extend; form an ideal circle to that distance; for the luxuriant trees, cut away one-third—of course the outer circle; for the very luxuriant, cut away half the circle.

I have root-pruned my young apricots, grafted on Almond and APRICOT-STOCKS (instead of, as *formerly*, on PLUM-STOCKS, which prevented the sap from rising at the proper period, and the branches kept dying annually, and the tree did not live out half its days) in this way with advantage; but the operation should not, however, be carried to an extreme, for, like peaches and nectarines, their power of rallying again is not so great as with the pear-tree.

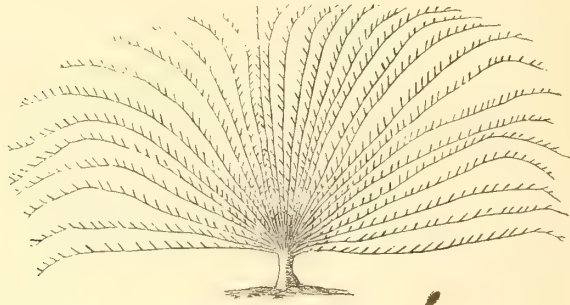
All nailing should be finished by January, and never drive the nail close to the shoot in order to fix it straight, for by this means the shoots get wounded. A very slight degree of attention in placing the shreds alternately in opposite directions, will be sufficient to hold them perfectly firm and straight. If the ground is wet from heavy rains, get some planks or boards to stand on. Small branches of spruce firs, stuck top downwards among the shoots of wall-trees, will, during *slight frosts* in the Spring, protect them; but no material is so efficient as the *calico coverings*, before-mentioned, for either wall-trees or frames. Great attention must be paid to the disbudding of apricots, making it as a rule, that the foreright and all buds be taken away, excepting the leader and the bud near the base on the upper side of the shoot. A few spurs may be also left, and lay in the wood from four to six inches apart, curving each branch to check the sap. The shoots can be stopped when it is wanted to fill up a vacant space. Should green-fly appear on peaches, instead of the usual morning or afternoon syringing with tepid water, wash them with tobacco-water, or with soap-water and sulphur, also applied by the engine. Attend to *disblossoming* and disbudding; and in pruning, leave no more wood than is requi-

site for a perfect tree the following season; stop the leaders when wood is wanted. In pruning, nail in the wood of young trees at full length; and when the shoots are not growing equally, depress the strong, and raise the weaker ones to a more erect position; and this will equalize their growth. Thin peaches regularly, and not much at a time; and if the tree be too luxuriant, it may be checked beneficially by a heavy crop, and if unhealthy, the reverse.

Nectarines should be nailed and thinned in the same way. Thin the fruit to ten inches apart, if the tree is in good condition. Should the red-spider appear, syringe or apply the engine with *some force*, using soap-suds and soot-water. Liquid manure may be given with benefit to both peaches and nectarines. Look over the trees well, when the fruit is stoned, and make a final thinning; this, done in time, with a sharp-pointed knife, will prevent many from falling off.

The month of October is the proper time for moving peach and all other trees, (excepting hollies, which transplant best during the month of June,) and January, February, and June for pruning them; the shoots which grow straightforward out of the tree must all come away (called disbudding), as they are neither sightly nor convenient to train. In August, all watering should cease as soon as they take their last swelling. When ripe, provide for their falling into nets or mats; take off some of the leaves from the fruit, so as to give it the more sun, and nail in any branches that may in the least require support, especially in young trees. As soon as the fruit is gathered, commence syringing; and thin out superfluous shoots, any decayed leaves, &c., and attend to the perfecting of the wood, by giving it all the sun, air, and light possible; it will then get red, and hard, and ripe for the next season. Pruning is generally deferred until Spring; but it may be done with advantage late in the Autumn, except during frosts. Leave a few spurs on the apricots, but depend upon the young wood chiefly; and when nailing, use as few nails and shreds as possible. There is no essential dissimilarity in the cultivation which peaches and nectarines require. It must be recollected that the peach produces its fruit-blossoms immediately from the wood of the previous summer's growth; secure such fruitful shoots by carrying out the side branches in direct *lines* about a foot distant (as already said) from each other. *On the upper side only* of these should the annual wood be permitted to develop; and in the Spring months, all buds should be re-

moved which do not occupy such a position: no buds produced from the lower side will be required. These shoots may be allowed at about eighteen inches distance (*according to the strength of the tree*) from each other along the branch. This will be better understood by the following sketch.



An Apricot grafted on an APRICOT STOCK of four years' growth, originated by Oswald Mosley.—Seymour's System.

Pay attention to the individual strength of each shoot. They seldom or never should be retained more than a foot long, and they should be cut back to a wood-bud, which differs from a blossom-bud, in being small and pointed, whereas the latter is large and nearly round. To maintain this system, a shoot, similar to those just mentioned, is annually required to occupy the place of each; and some others to fill up the fresh spaces occupied as the trees extend. Now these are to be obtained by training in a young shoot in a curvilinear direction at the end from the base of each bearing shoot during the Summer, at full length: of course, the one most conveniently placed will be selected, as near the base as possible. The topmost bud must be allowed to grow a few inches, and then stop it, by pinching out the growing point: all others which *have not* fruit at their base, must be removed, and all *that have*, should be allowed to develop two or three leaves, and then be stopped. Whenever two blossom-buds are placed side by side on the shoot, the weakest should be removed. Whenever, also, a leaf is observed having a blistered appearance, it had better be removed; if in apricots, by hand-picking. This is the work of insects, and the garden engine must be used to dislodge them, at any period except during bright sunshine, from the time the fruit is set until it approaches maturity.

To ascertain the ripeness of the fruit, do not press it with the



fingers, but gently lift it upwards; and if ripe, it will easily be detached, and *vice versâ*. Almost all diseases originate in the soil being too rich, too deep, or too moist; such as mildew, the gum, and the canker. The first is a fungus, and is often brought on by a change in the condition of the atmosphere; but by giving attention to the borders, and protecting the tree by a coping of at least six inches, to keep off violent rains, it might be prevented, as well as the two latter. In favourable seasons, the blossoms often set more fruit than they can support, or have room to attain full growth; and if all were to remain, it would hurt the trees in their future bearing; therefore, they should be timely thinned, when of the size of peas or half-grown gooseberries. There should be a preparatory thinning before the time of stoning, and a final one afterwards; because most plants, especially such as have overborne themselves, drop many fruit at that crisis. Finish the thinning with great regularity, leaving those retained at proper distances; three, four, or even five on strong shoots, two or three on middling, and one or two on the weaker shoots; and never leaving more than one peach, nectarine, or apricot at the same eye, for the spur system is seldom now adopted even with the latter. The fruit on weakly trees, thin more in proportion.

To renovate old and decayed trees, head them down, and renew the soil from an old upland pasture; and if the bottom of the border is moist, or if the roots have gone more than two feet or two feet and a half downwards, pave the bottom, or otherwise render it dry and impervious to roots at the depth of twenty inches or two feet from the surface. This plan will be found almost universally successful in restoring sufficient vigour to resist insects and diseases, and produce abundance of fruit. After a frosty night, if there is any appearance of the bloom of young fruit having been affected, water them with cold water from the garden engine, if they are even discoloured. This operation recovers them, provided it be donè before the sun comes upon them. Whenever that part of the bearing branch which extends beyond the fruit is without foliage, the fruit itself rarely acquires maturity, and never its proper flavour or excellence. This is owing to the want of returning sap, which would have been furnished by the leaves, and has been proved experimentally by in-arching a small branch immediately above the fruit; for it immediately acquired in consequence the highest degree of maturity and perfection.

Young wood of the peach-tree is liable to be covered with black spots or blotches, which are produced by over-rich soil. Cut the blemishes out with a knife in March, and by September the wounds will be healed. Clear off the rich mould *entirely* from the roots, and replace it by light loam, scourings of ditches or *road-scrappings*, old mortar-rubbish, leaf-mould, and turf from an old pasture, chopped up and well mixed together.

Fruit, when ripe, may be preserved from wasps and flies by honied bottles, laid in behind the leaves and examined every morning; also by means of two hand-glasses, one placed over the other, the lower one having a small hole at the top and raised upon bricks; a plate containing honey or brown sugar, boiled to a syrup with beer, being placed beneath it to attract them, they will immediately rise after feasting, and find their way into the upper glass, through the small hole, never to return: a slight squib of brimstone mercifully gives them their "quietus." Earwigs may be easily caught by the beetle-trap, reeds or beanstalks, placed in favourable situations about each tree, and often examined.

Always gather peaches a few days before the fruit is required for table, and before it is dead-ripe. A dry, airy shelf in the green-house or fruit-room is the most appropriate place to consign it to. Peach-trees force well under glass, and their ripening may be accelerated in the open air, by being protected by means of old shop-windows; or, when planted against a hot wall, by the application of gentle fires in cold moist weather in August and September. This will ripen the wood; but no attempt should ever be made to accelerate the blossoms early in Spring, as they are almost certain to be cut off unless protected with old windows, &c., as above mentioned.

Nectarines suffer much from the wood-louse; it will therefore be necessary to hang up a number of bundles of bean-stalks about them. No tree suffers more from too hasty disbudding than either the peach or nectarine; indeed, they are exceedingly *sensitive to any injury*. And this may arise from want of solidity in their wood, which is certainly of a very porous character, and may contain, in our cold climate, a much less amount of the cambium, or, as we may call it, "life-blood," of vegetation than our hardier fruits. A very severe disbudding, performed at once, seems to paralyze the whole energies of the trees for awhile, or until an increased amount of foliage is produced through the extension of the growing shoots. Disbudding, therefore, ought

in all cases to be performed by instalments. We do not wish to make it appear a tedious process; but we may say, that for those amateurs who are masters of their time, and enjoy gardening pursuits, it would be well to perform a little *daily*. In commencing to disbud a peach-tree (for the nectarine treatment may be merged in *this*), the first care is to rub off all those coarse-looking young shoots which stand straight out from the wall, and look as though they were ambitious of becoming individual trees. We consider that the free production of these is by no means to be deprecated; they merely denote a very healthy root action, not only at the present time, but one of a retrospective character. All they want is judicious management, and a little adroitness, to turn the flow of sap into more legitimate courses. After slipping off such shoots with the finger and thumb, the next point is to see if any young spray is growing behind the old twigs, in a position to become distorted or crushed between the branches and the wall. These also must be rubbed off; but be it understood, such operations are not obliged to be completed in one day; they may be made to extend over a whole fortnight. Another caution here becomes necessary:—If any vacant spaces exist on the contiguous parts of the wall, some of these crooked portions must be retained; for it is better to have a shoot of this character than a barren portion of walling.

These things being duly carried out, the next thing is to see if even good-looking and well-placed young shoots are not too much crowded. This is sure to be the case if the tree be healthy; and here comes the tug of war—here it is that much discretion and intelligence of a prospective character is requisite. Our practice is to commence at the extremity of every shoot or branch, tracing it from thence downwards. We first remove every side shoot of the young spray which appears likely to enter into competition with the leader; and this will in general cause every young shoot within four inches of the point to be stripped off. No two shoots of young spray should grow side by side, if possible; they should, at the ultimate thinning or disbudding, stand in a regular series successively, from the collar to the extremities, all over the tree. Still, as I before observed, this cannot be finally accomplished until after the lapse of many weeks.

One point of great importance we here would impress—to be sure and reserve the lowest growing young spray all over the tree, which prevents it being *naked*. Of course, in fan-training, blanks will at times occur, and these must be kept filled up by

the produce of reserved shoots. Remove them when getting crowded, and prefer the young spray springing from the *upper* portion of a branch (called Seymour's system) to that which springs from the under side. Pursue a systematic course in these operations; and the eye should be directed to the grosser parts of the tree, or they soon become confused. In earlier disbudding, when shoots present themselves of a doubtful character, there is no occasion to be over nice, but to reserve them for final thinning, and pinch off the points of some of the growing shoots. After a slight disbudding, certain gross shoots thrust themselves forth, caused by close pruning; for in the olden times they were cut back to two or three eyes in October, having rambléd unstopped through the Summer, instead of being stopped in May; and in case these rods again appear, the tree must be root-pruned. Therefore, pinch off by times those shoots which show a disposition to shoot into lateral branches. This will manifest itself by the time they are about six inches in length, and will occur from the first week in May to the beginning of June. All shoots which commence branching off into side spray-wood, should have their points pinched off merely at the extreme end, except in a young tree beginning to acquire strength, when they should be permitted to ramble, in order to get a good root action, and to have the wall soon covered. Stopping established trees is to equalize the sap, that the fruit and all the subordinate parts of the tree may be duly supplied with nutriment.

Nail down shoots which do not overshadow others, and take care to stop them when about eight or nine inches long: secure two pairs of them—others are not worth saving. If shoots having fruit at the foot are growing very strong, and have produced as much as one foot in length, shorten their tops by pinching them in the first week in August. Do not cut out two-year-old wood. *Now*, if possible, try and lay in as many of the annual shoots as are requisite: all really surplus ones must be removed, or cut back to a couple of leaves. In May and August, the general stopping of peaches and nectarines should take place: it is a most essential point of culture, having a direct tendency to moderate that extreme vigour of roots, which at this period of the year, through the influence of a high ground temperature, is apt to produce late growths, especially if the soil is rich, and the roots are at a considerable depth.

Another object is accomplished by stopping. Rapid growth

is inimical to both size and flavour in the fruit, both which qualities are enhanced by what we may term a concentration of the elaborated juices, which at this period should be in full power. Commence stopping as soon as the last swelling of the fruit begins: this will be about the first week in August. Go over the trees three times—beginning first at the extremities, pinching off the mere growing point of every shoot that may be considered a leading one, or inclined to be rather rampant. Not a shoot should be touched on the subordinate part of the tree which has acquired the character of a leader. Stop all shoots which overlap the others near the collar of the tree, and all those which spring forth *from the sides of the young shoots of the current year*: these are termed *axillary shoots*. By this period they will be six inches in length at least; and where more walling remains to be covered, they will be required to remain till the winter's forming, although many foolishly cut them away, for they cannot fancy the appearance of them, as they differ so much from the bearing wood. They produce fruitful shoots in the ensuing year, and if stopped at this dressing, it will impart a woody firmness to the shoots. One-third of the growing shoots should now have been stopped, besides the axillary shoots. In another fortnight, go over the trees again, and stop another third portion, on precisely similar principles; and should any stopped before commence growing again, stop them at every point.

The other remaining weak shoots should not be stopped at all by this systematic course of stopping. It is easy to cause the lower portion of the tree to become stronger than the principal branches. This can be done by winter-pruning, when a fine strong-growing peach-tree covers two-thirds of the space of the wall allotted to it. Much deviation from such a case will be necessary when the trees are weak, as little stopping is required.

Those who have gross and barren trees, may fearlessly prune the extremities of the roots, or leave the trench open for a few weeks, in order to check them by drought; and this will supersede the necessity of more severe operations, especially if a hot and dry summer occurred. It would be tantamount to planting the trees elevated above the ground level, the beneficial effects of which are well known; and the plan of curving all the branches at their termination is not yet sufficiently appreciated.

If this is carried into effect even so late as in April, you will be surprised to find blossom-buds on trees which never produced

any before ; but recollect, as I have before remarked, this must be done with the utmost caution. With young trees, it will answer invariably ; but, from experience, I am convinced that a tree advanced in years had better be removed and a *young one* planted in its room ; for it is only a loss of time to endeavour to renovate *old trees*, more especially peach-trees.

#### ON THE CULTIVATION OF MELONS, &c.

An ordinary dung-frame, or brick-pit, should be covered with unfermentable materials beneath each hillock ; the bed for March should be about three feet six inches high at the back ; but three feet, or even less, will suffice, during the remainder of the season. Tree leaves should by all means be mingled liberally with the dung, in proportion of one-half at least. As soon as the bed is built, linings of long litter should be placed around it, to promote speedy fermentation, and in about one week the bed will have become very hot—hotter, indeed, than at any period afterwards ; and now, the temporary lining may be in part drawn aside, and the bed must receive a thorough watering, using a double amount of water along the centre.

Preparation for the mounds of soil may now proceed, and each centre should be hollowed out a foot deeper than the rest of the bed—for melons love depth of soil ; and with this precaution it is impossible they should burn.

With one foot below the level, and about fifteen inches above, the soil will be two feet deep in the centre, shelving off to about nine inches at the edge of the frame inside. Not that the frame should be soiled over entirely until the plants are becoming established ; it is much safer to start the plants for a week or two at first in the hillocks, leaving a space all around them, and between them and the sides of the frame, of naked fermenting material. The policy of this will be obvious ; for after all the working or fermenting of the dung, some slight amount of noxious gases will remain, or be engendered in the bed ; there is no way so ready or so certain to dissipate them as the application of *water* ; it also assists in raising atmospheric moisture, so necessary to the well-being of the young plant until thoroughly established. Vegetable matter, and also strong loamy soil, are sometimes used, and the success of the melon, as far as the soil is concerned, depends much on the relation the mode of culture bears to the soil in question. Those who use light or vegetable soils lay their

account to a free application of water at certain periods, while those who use adhesive loams apply little water to the roots. If planted in light soils, containing much vegetable matter, the plants will, of course, grow very luxuriantly; and then, if a check ensue through drought, they will generally become a prey to red-spider. For such reasons, there is nothing better than a sound loam of considerable depth.

Nevertheless, as every amateur cultivator cannot always obtain this valuable article, it is well to know that any moderately rich garden soil will succeed, if deep enough; and if poor, it may be enriched with a portion of manures, or vegetable matters in a half-decomposed state. In making the mounds, it is a good plan to fill the hollow formed to receive the soil with lumpy turf, fresh from the pasture or common, and on this the hillock of compost.

As to raising the young plants, the process is similar to that observed in cucumber culture; only, it may be remarked, that the melon cannot well endure so low a temperature as the cucumber. We consider seventy degrees as indispensable; eighty degrees, however, will be found more suitable. They are potted off as soon as the seed-leaf is fully developed; and when they shoot, the central point is in general pinched out: this causes them to push a couple or more of shoots, and those are of a more fruitful character than those first formed, and will be required, without further stopping, to train over the bed. We consider two plants enough for a mound, and they may therefore be placed in pairs, in five-inch pots. As soon as the heat is right, and the plants are established, the sooner they are out the better. Melons do not succeed well where they have been stinted in their pots; we have known them afterwards produce nothing but male blossoms. The subsequent management, until they require to be finally earthed up, will be, like the cucumbers, to sprinkle the frame occasionally, and sometimes to water the plants, using always tepid water. When the roots of the plants begin to reach the outside of the mounds, the soiling must be completed, and the surface should be made to slope from the mound on all sides, thus leaving a convex surface; this keeps the crown of the plant and its stem dry—a necessary course, in order to avoid canker, to which the melon is peculiarly liable, especially in damp and cloudy summers. It is a good plan to cover the surface of the bed with small pieces of slate or fine gravel composed principally of small stones. The fruit will both set better and possess higher flavour.

The pair of shoots from each plant must be pegged out in a proper serpentine direction as they advance; and if the plants stand one north and the other south, one shoot of each may be trained to each angle of each light, and when it nearly meets the angle, the point must be pinched off. When frames are small, it is well to peg the advancing shoots in a serpentine direction. This will be found to give a greater number of eyes; and, moreover, it is a well known fact that the farther the shoots extend, the more fruitful they become, and the finer the produce. Soon after stopping the terminal point, side-shoots will sprout from almost every leaf; and if the plants have been properly managed, most of these will show female blossoms as soon as they are a few inches in length.

As, however, our plan is to turn the linings once a week or ten days, and to top up as often as necessary, it must also be remembered that a proper temperature must be kept up, seventy degrees by day, and sixty-five degrees by night, allowing an afternoon advance of ten degrees in sunny weather. If the bottom heat gets beyond eighty degrees, let water be liberally applied between the mounds, taking care to have all fiery heat well subdued by the soiling period. I have tried various kinds of melons, but find the Beechwood green flesh far preferable to any others.

Can anything be more delightful than to place before your friends this delicious fruit? Remember then to sow *two-year old seed*; and you will not fail to have a *good crop*.

#### MANAGEMENT OF STRAWBERRIES.

I have for several years grown my strawberries in a manner which has improved their culture, particularly the Haut-bois—they produce fruit of a high flavour when planted in a sunny situation.

The British-queens attain the size of eggs, and are well ripened at the tips, which I attribute to watering them freely while they are in bloom. The plants are set two feet apart, and eighteen inches between the rows; the ground having been well double-dug and trenched. Drains, with at least six inches fall, made with two-inch bore-pipes, are laid in about four feet deep. The ground best suited to their growth is a sloping bank with a southern aspect, and the roots of the plants are in the Autumn raised and broken by means of a spade, or transplanted, and well



mulched with cow-dung, which so greatly assists the ripening of the fruit, that the size and flavour are much improved.

The soil should be made of turf from an old pasture, mixed with decayed leaves and well-rotted dung. All runners should be taken off, and liquid manure be constantly applied in dry weather.

#### ON THE GROWTH OF ASPARAGUS.

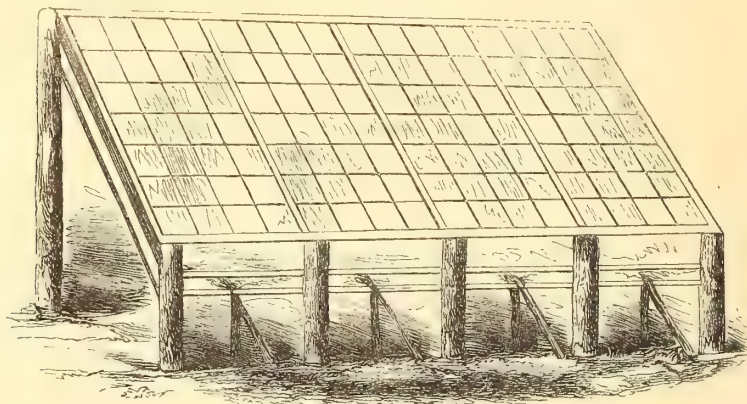
In growing asparagus, the first thing necessary is to excavate the ground to the depth of four feet; and having made a foundation of wood-fagots—drains being underneath six feet apart—the soil should be capable of receiving and parting with water readily; as perfect drainage is of the first consideration. It should be two feet in depth, and each bed about four feet in width, and be mixed with stable-dung, turf from an old pasture, and sandy loam.

The plants are placed one foot apart each side, the roots being well spread out during the month of March, and none should be cut until they are well established. In October, cut the stems off close to the ground, and cover them with old leaves or rotten dung six inches in depth; this may be forked in during the following spring, and salt and liquid manure supplied every fortnight. After the third year, you may cut as much asparagus as is needed, following out this treatment, and abstaining from earthing up the beds, which renders the plants so hard that the tips only can be eaten.

#### THE ORCHARD-HOUSE.

*Plan of training fruit-trees on a trellis*, under glass, which must be regarded as a most needful improvement in horticulture, on account of the greater accumulation of heat, and its radiation from the ground immediately beneath to the leaves, fruit, and branches of apricots, peaches, &c.—an advantage which Mr. Rivers has availed himself of to a very large extent. The trees are planted in a slanting direction, and the main stem brought up above the trellis; and to secure the roots from too much moisture, the lights may sometimes be drawn down over the border, or a good tarpaulin will protect it from heavy rains and frosts. Annexed is the plan of a shed erected in Chancellor House kitchen-garden for training apricots, peaches, &c., so as to render them independent of our uncertain climate. It should

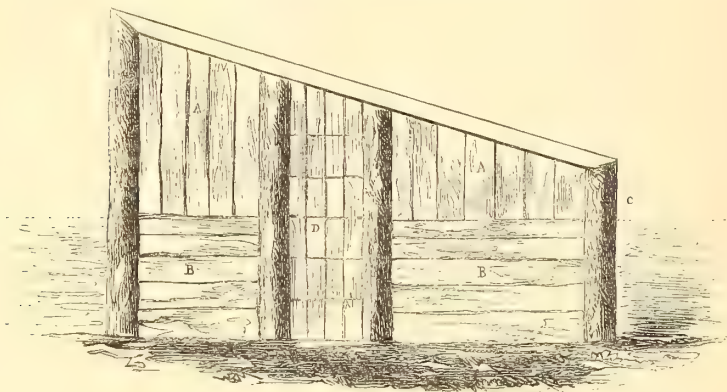
be twenty feet in length, receive four lights, five feet wide and twelve long; and a trellis should be placed in a slanting position



South Front Elevation of Shed, or Orchard-house, during the Summer Months.

fifteen inches below the lights. Strong larch posts support the shed, well-charred, three feet above the ground as well as beneath.

North Section of Shed in Winter. The Lights 12 feet in length, with sheet glass, which I find; the contract for the wood-work and the rest of the building being 18*l.* 2*s.* To be completed in a week.



Back support, 7 ft. 6 in.

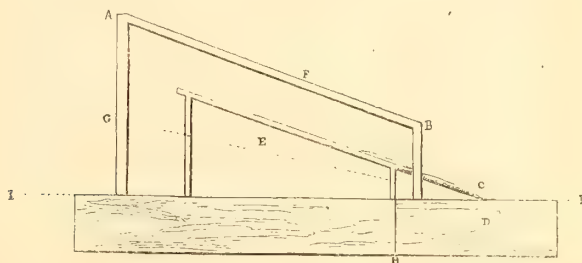
Front post, 4 ft. 6 in.

N. B. Ground banked up to the dotted line. The upper boards, marked A, to be removed *ad libitum*. The lower ones, B, made of oak, to support the soil in the interior. The bars of the lights are cut out so as to form the rebates of the sash, and they serve for the bars of the trellis. The front

border should be twelve feet, and the one at the back of the shed six feet wide, and from three to four feet in depth. The small aperture in the front between the lights and the soil, marked C, may be closed at any time by means of a board fastened back by a small chain or bolt. A pathway through the door, D, two feet six inches wide, runs up the centre of the shed, to enable the gardener to syringe and to disbud the trees; and in the back border are planted dwarf Mahaleb cherries, &c. apricot, standard trees, and peaches and pears. They will produce abundance of fruit of the finest quality, if the soil is composed of rotten leaf-mould, road-scrapings, old turf, mortar-rubbish, well mixed with night-soil. Liquid manure should also be constantly used, and a free current of air allowed, whenever the weather will permit.

*Vide* Mr. Ballenden Ker's plan of Facilitating the Cultivation of the Peach and Nectarines—*The Gardener's Chronicle* for 1848, page 827; and in the Appendix to Mr. River's very useful little work, *The Miniature Fruit Garden*.

A, back support to plate; B, front ditto; C, the tree planted in the border; D, the border, six feet drained; E, the trellis with the tree trained on it; F, the glass lights; G, dotted line, shows the earth banked up under the trellis, H, the level of the ground; I, the main drain.



The interior of my orchard-house is very similar to this plan, with these slight exceptions: my trellis is fifteen inches below the lights, and extends to the top of the shed; I have a back border as well as one in front, and on each side of the pathway oak planks support the soil. My house or shed also is higher, and the border wider and deeper—as seen in the foregoing sketch of the shed at Chancellor House. The addition of moveable boards above the borders, and the side planks, I have found to be of great efficacy in preventing the cold winds of Spring from injuring the blossoms.

In Mr. Ker's plan, the back posts are only four feet six inches from the ground, and the front about three feet; *his* trellis is only two feet six inches from the ground at the back, and one foot at the front; so that it would be difficult for any gardener to disbud the trees in it. "Strong posts are (like those in my shed) placed in the ground at each corner, and other smaller posts inserted at every two feet at the back and front, and strengthened by being united by iron rods; to these posts are nailed rafters every five feet, on a plate two and a half inches by two, to receive the lights, as in a hot-bed frame, and these lights (five feet wide and twelve feet long) are fixed by screws to the plates."—Vide *Gardener's Chronicle* for 1848, pp. 827 and 843.

This invention promises to be the beginning of a new era in English gardening. A model will be found in the window of Mr. Kernan's shop at the corner of Charles-street and Russell-street, Covent-garden, and a pattern is in preparation in the garden of the Horticultural Society. We all know that the apricot, admirable fruit as it is, rarely acquires much excellence here—to say nothing of its uncertainty as a crop—owing to our early frosts. Nor do we at all see why capital grapes should not be had by this plan, without the great expense of hot-houses and heating apparatus—Warner's conservatory boiler being excepted. This contrivance is also applicable to early cherries—such as the Temple Precoce, grafted on Mahaleb stocks—to choice plums—the Reine Claude de Bavay, &c., and to a delicate variety of figs.

STUDS TO BE USED INSTEAD OF NAILS AND SHREDS, THE SHOOTS  
BEING TIED TO THEM WITH CUBA-BAST.

If you wish to keep your walls in good order, and free from insects, and to train your trees at less expense than they can be with nails and shreds (the old plan, which will soon be obsolete), drive in common cast-iron *nails as studs*, after they have been heated till they are red-hot upon an old shovel, and afterwards put into a can of boiling oil—for all corrosion is thus prevented, and durability insured. Fan-trained trees require the studs eight or nine inches apart in every course of bricks; but for pear-trees trained horizontally, they are sufficiently close in alternate courses. A little attention to inserting the studs in straight lines, and at regular distances, gives a pleasing appearance to those parts of the wall to which the branches have not yet extended themselves. The easiest way of proceeding is to procure a

straight board four and a quarter inches wide, and as long as the wall is high. After the first perpendicular row is inserted in the alternate courses, one edge of the board is placed against them, and a straight line drawn down the other edge as a guide by which to drive the second row in *triangular order* (quincunx order), and so on till the work is completed. The upright lines should be proved with the plumb-line once in four or five yards, in order to prevent any deviation from the perpendicular. The shoots must be tied to these studs with Cuba-bast; and a good workman will twist the bast, after it has been dipped in water, and tie the shoots in half the time that he would nail them with shreds.

Placing wire trainers or wooden trellis on walls is very objectionable; for the young shoots get behind them, and the distance at which the trained shoots are kept from the wall deprives them of warmth: and these systems are much more expensive. The shoots, also, unless made too fast, are liable to become half sawn through, by rubbing continually against the wires or trellis. The only situation where they become necessary is against the lower part of the flues in hot walls in forcing-houses.

#### REMARKS ON WALL-TREES.

Never cut out or shorten luxuriant shoots if it can be avoided, but lay them in, and they will produce bearing-wood the following year, and take care that no shoot be trained perpendicularly. This practice will not render the lower part of the peach or *apricot* tree naked. On the contrary, trees suffer much by too freely using the knife, (especially the *apricot*,) except when any portion of the inner bark adheres to the alburnum after a circle has been made, to render it more productive, though ever so small, or the communication will soon be established with the root, and no effect will be produced. In about ten days after the operation has been performed, the part should be examined, and any small portion separated. I have for years had success from adopting this practice, and I also attribute *it* to the *galvanized iron* coping above the trees; it preserves the bearing shoots from frost, and with the use of straw-hurdles and fir-boughs, effectually protects all the blossom-buds.

In fig-trees trained against walls, I cut away the old wood, when new shoots can be trained in as substitutes from the lower extremities of each tree during the winter pruning. The fruit

ripens better, and often it is improved by the removal of any leaves in its immediate vicinity. It is injudicious to break or prune the shoots of the fig-tree, but to render peaches, vines, &c., fruitful, I cut through the cortex and liber of the bark, without wounding the alburnum, and by so doing, I check the descent of the sap, and confine it in the branches above the incision. About half-an-inch I find quite sufficient to take off in a circle from any vigorous young tree. When the fruit is set in vines, and the berries are the size of small shot, I have recourse to this system, and the redundant nutriment passes into the fruit. It is a bad plan to crowd vines in a hot-house; only *one cane* should be planted at each rafter, and the bunches will be larger and more certain. Grizzly Frontignac (as I have stated) are better planted in a given space within the house as the fluid is then put into regular circulation.

When the blossoms on wall-trees have been exposed to a severe night frost; syringe them well with cold water, and the flowers will be restored. It is the sudden transition from cold to heat which destroys them, and this operation ought therefore to be performed before the sun's rays can reach the parts affected. This process of watering is also indispensable to the success of the fruit; indeed, the trouble of syringing, or playing upon the wall-trees with an engine, is only the labour of an hour each morning, and I have been so amply rewarded, that the plan is worthy of general regard.

#### MANAGEMENT OF TREES IN THE ORCHARD-HOUSE.

Having built an Orchard-house according to directions previously given, twenty feet in length by twelve in breadth, two trees should be chosen large enough to cover the trellis, of not over-luxuriant growth, and having well-ripened wood. They should be planted in November, and the roots should be covered with stable-manure and tarpaulin before the severe weather sets in, and great care should be taken not to hurt the fibres when digging up the trees; the mould in which they are planted should be rich, but not stiff; the strong shoots must be taken out, and the rest spread over the trellis, and be left for a few days untied, until they have settled. When the roots begin to work, the buds to swell, and the red-dot makes its appearance in the flower-buds, the admission of air must be lessened, and the light canvass covering will be required to protect the blossoms

from the heat of the sun. Keep the temperature of the roots, externally, by means of hot stable-manure, and the interior of the orchard-house, at fifty-five degrees. On a bright day, air must be admitted and the lights be shaded: when the peaches or apricots have attained the size of a nut, more air will be needful; the shoots must not be allowed to come in contact with the glass. At the period of stoning, much air must be allowed, and still more when the fruit is ripening. Canvass covering will now be required to prevent the sun's rays from falling perpendicularly on trees, and injuring the fruit during the succeeding eight days.

When the roots are denuded of their covering, a plentiful supply of liquid manure should be given daily, and the fruit will be of a finer flavour than that grown on the wall-trees. The latter will retain their health and vigour longer if they are well syringed at least twice during each day.

#### WARNER'S CONSERVATORY BOILER AND PIPES.

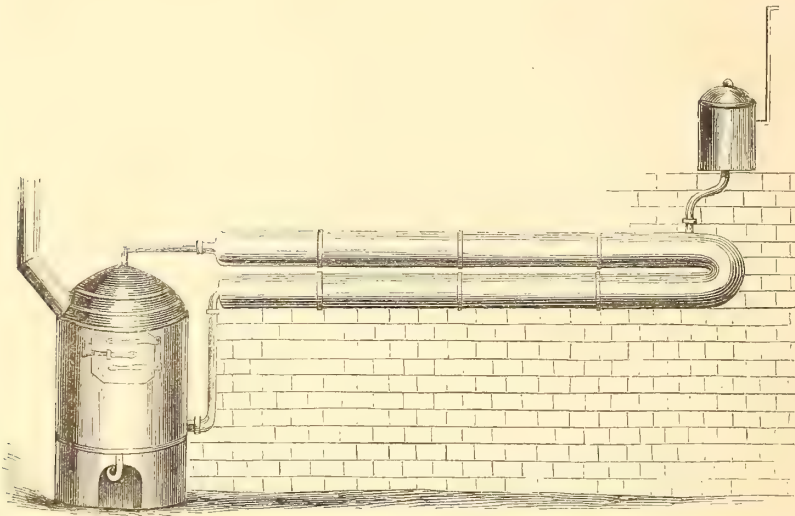
I have introduced a Warner's conservatory boiler, with four-inch hot-water pipes, in order that the trees may enjoy a temperature of sixty degrees, until the fruit is set and stoned, after which I increase it to sixty-five degrees, by which method the fruit will ripen well. The sun-heat may be allowed to raise the thermometer ten degrees above this temperature, especially after the stoning, before it is thought necessary, on account of the steam in the house from syringing the pipes, to admit air. The fruit begins to ripen, from the introduction of artificial heat, about June, and the crop continues to be productive till September, when the fruit on the wall-trees is ready in succession. Warner's conservatory boiler (price 7*l.*) is placed at the further end of the orchard-house, and the chimney-pipe is carried up in the inside, in order that it may give out more heat.

A tank for water is placed at the opposite end of the orchard-house, from which the flow and return pipes and the boiler are supplied, and a safety-valve proceeds from it. The small copper boiler forms the exterior part of the stove; the water, when attaining boiling heat, is forced through the flow-pipe, which, together with the return-pipe, run just beneath the planks which support the plants in pots at the south-side of the house; bottom heat is communicated thereby to the sand in which the plants are propagated. The foliage of the trees on the trellis and the

facility of setting of the fruit are greatly enhanced by steaming the house night and morning from watering the pipes (when the water has been boiling some little time) with a syringe.

Strawberries ripen well on these boards, as well as French beans, &c., at an early period of the year. I have two trained Moor Park apricots (grafted on apricot stocks) on the trellis; a Royal George peach; Noblesse and Violet, T. Octavo ditto; also trained at the back of the house; six standard apricots (dwarf), viz., three large peach-apricots, and three Moor Park apricots; a dwarf Marie-Louise pear grafted on a quince stock; a dwarf standard Florence, and a dwarf standard Bigarreau Gros Cœur cherry, grafted on Mahaleb stocks, in my orchard-house. They are planted in pots fifteen-inch; i. e., three to a cast; the bottoms to the extent of eleven-inches being open, with abundance of drainage.

‘The compost. — Two-thirds turfy loam and one-third decomposed manure, to which some road-sand is added; it should not be sifted, and if the loam contains large pieces of turf, the size of an egg, so much the better.’—(*Vide* Mr. Rivers’s treatise, called *The Orchard House*, p. 12.) These trees are planted on the opposite side of the pathway in the house to that where the pipes run, and I have now abundance of fruit on each tree.



Warner's Boiler and Pipes.



From this boiler a wrought-iron pipe rises of about two inches in dimension, to a height equal to that which the four-inch cast metal-pipes have to rise; and the water is conveyed from a small tank, which contains about a gallon and a-half, into the flow and return-pipes and boiler. The tank must be often replenished as high as the safety-valve, as shown in the accompanying sketch. There is no danger of the pipes bursting, as long as the tank contains any water, for the pipes and boiler take about six large water-cans to fill them, and the pipes are hermetically sealed. Of all the methods lately invented for heating conservatories, &c., with hot water, there is not one that I know of equally useful and reasonable. From the small quantity of Welsh coals (by putting on little knobs) that is consumed, this system for economy is well deserving of notice; and I am convinced, from practical knowledge, that an invention more important, on such simple and safe principles, and adapted to such a variety of circumstances, than Warner's conservatory boiler, has not been discovered. The water is made to boil in five minutes; a circulation takes place in the pipes, which is soon given out in the house, and the temperature is maintained for a long period, by means of a damper in the chimney, at nearly a uniform point of sixty-five degrees. Not being liable to accident and derangement, as many other principles on which boilers are constructed, Warner and Co.'s construction must be pronounced without hesitation the acmé of perfection. The form of the boiler presents the greatest surface to be acted upon by the fire, of which the preceding sketch will have given some idea. The exterior forms the boiler, and the centre contains a small fire on a grate, which is easily let down to be cleaned.

#### SYRINGING WITH CAUTION.

Until the blossoms begin to expand, they should be syringed at nine in the morning, and at four, p.m., when the house should be shut up for the night, and a regular heat maintained of sixty-five degrees temperature, which is of the utmost importance to the welfare of the trees, as well as to insure a good crop of fruit. The slower the sap is put into motion the stronger will the buds break, and the blossoms will consequently be stronger. The wood-buds will also push with greater regularity and strength, when air is freely admitted. Great caution must be used that the temperature of the house be not allowed to exceed sixty-five degrees, as before mentioned, for the buds will then push weakly,

and absolutely fall off. Syringing must neither be carelessly nor immoderately done; for the water should act as dew upon the branches and buds to soften them, and to render their breaking more regular. Air should be admitted freely to strengthen the peach and apricot blossoms; and steam from syringing the pipes will insure their setting, by assisting in the dispersion of the farina (or male fertilizing dust of the anthers) upon the female organs; and during this period, while the blossoms are out, the house should be *steamed*, as it cannot be syringed. Any quantity of water, either at the roots or over the branches, would injure the delicate parts of the fructification, and a dry, close atmosphere would be equally injurious. Steaming keeps the plant in vigour, and strengthens the bloom until the *fruit* is set, which will be known by *its* appearing like a small swelling at the base of the style or female organ. A few days' allowance must be made for such parts of the trees as are remote from the glass to set their blossoms, and then the application of the syringe should be again had recourse to, *by degrees*, like small rain, but afterwards with some force to displace the remains of the decayed bloom and insects, which will be sure to make their appearance before the leaves have attained half their size.

The red-spider will be kept under by syringing the leaves right and left; and if it should make its appearance, it will be an evident sign of a deficiency of that operation. The green-fly may readily be destroyed by fumigating with Brown's patent or Pimer's improved Fumigator at least twice during each week, from the time the first wood-buds break into leaf, until the leaves have attained their full size, and the tips of the shoots have become rather hard and strong. When the young fruit has attained the size of peas, the process of disbudding should be attended to, but no thinning of the fruit should take place at present. Water must now *never* be given to the roots until the fruit have formed their stones, as they would drop off by any unnecessary moisture, except liquid manure, which should be moderately poured on the mulching about once during the week. In the orchard-house, steam from syringing the pipes will at this period be sufficient, till the stoning of the fruit has been accomplished, when water may be given abundantly, both at the roots and over the leaves.

Thinning the fruit on healthy trees, to the distance of six inches apart, is very desirable where fine peaches or apricots are an object. No leaves should be picked off them at this time, as

the fruit will swell much better when partially shaded with them ; and two fruits should not remain on a shoot that is not considered sufficiently strong to bring them to perfection. Syringe before the sun acts too powerfully with considerable force, and the last thing at night, so that the water may remain the longer on the trees. Prune and train in the young shoots, and remove laterals. Fire heat may be dispensed with when the thermometer ranges sixty degrees, but it should not be withdrawn suddenly. In dull and cloudy weather it will be necessary, and also in the evenings, if enough heat has not been imparted by the sun ; for if the fruit experience a check at this stage of their growth, it will affect their swelling to a full size.

Should the frosts be over, remove the mulching from the borders and the tarpaulin, and discontinue the application of liquid manure as soon as the stoning season is over. The fumigation of tobacco should be continued, and the aphides eradicated before the fruit begins to swell for ripening, when it must altogether cease. When the fruit is approaching to maturity, give all the air possible, but cover the house in rain, as that would be highly injurious ; and syringing must be left off. The leaves which now shade the fruit should be displaced, to present the full exposure to the sun, leaving about an inch of the leaf, together with the foot-stalk, which may mature the bud at the base. The sashes may be removed from the roof, if they can be immediately replaced in case of rain.

Nets should be suspended under the trees, to catch the fruit which fall when ripe ; but if allowed to do so, it is much injured in its flavour, and should therefore be gathered by the hand. When gathered, it should be carried to the fruit-room, and packed upon clean paper. Peaches may be beautifully coloured or spotted, by sprinkling them with drops of water when the sun is shining upon them ; and the sashes being removed during dry days, greatly improves their flavour, until they are finally taken away when the fruit is all gathered. The apricot and peach-trees should then have a liberal supply of water on their branches and over their roots—the former by means of the syringe, applying the water with force, for the suppression of the red-spider and for refreshing the trees. As the leaves ripen, they should be gently brushed off, to admit the air and the sun to the branches, in order that they may be sufficiently matured for next year's forcing. Water must not be given too plentifully, or the shoots will spring into a second growth.

Standard fig-trees will thrive well in the orchard-house, if planted in pots similar to those used for apricots and peaches with holes at the bottom.

#### ON GROWING MUSHROOMS.

When a melon-bed is prepared for the plants, sow the mushroom spawn on the sides of the hills, and on the surface of the bed; and when the melons are over, and the bine is decayed, put on the lights, and keep them close, taking care to water the mould *moderately* when it becomes dry, or expose it to any gentle shower, for too much wet will destroy the spawn. At the period the bed is taken away, procure and dry the spawn against the return of Spring. The roots of the melons will not be in the least injured; and the catsup obtained from these mushrooms is far superior to any other, being high-coloured and of finer flavour.

#### CONCRETE GARDEN-WALKS.

In the first place, break up your old gravel-walk, and if the foundation be *good*, put on a quantity of lime, about an inch thick; then replace the coarse part of the gravel, after it has been sifted, to the thickness of two inches, and a rise in the centre of three inches; then finish by one inch of the fine-sifted gravel—roll it well, and you will have no more trouble with weeds. This simple plan I have adopted in our flower garden, and it has answered far beyond my expectation. When made, the weather should be dry; and although the frost may have some effect upon these *walks*, and loosen the surface in a slight degree, yet the roller will soon make them as firm as Roman cement.

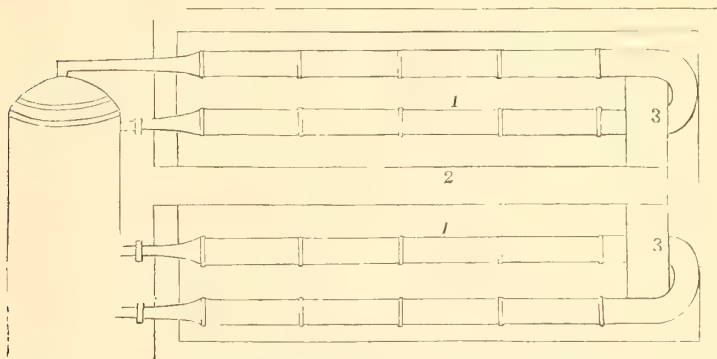
A foundation of broken stones is the best—well drained; and even should the walks or roads be much used by wagons or carts, *if the stones be small*, the wheels will make *no impression*. Storms have no effect upon these roads or walks, as long as they are kept well rolled and drained; and nothing can be cheaper. I used fresh slacked lime, and when required, *watered it* prior to the two inches of rather coarse gravel being put on the walks; the roller was then immediately passed over them, the lime then rose amongst the round stones in the gravel, and set them firmly in their proper level, prior to the *fine gravel* being finally placed upon the walks, which will not require anything more than an inch of the latter for the next five years.

## MELONS AND CUCUMBERS.

My melon and cucumber-frames, in size and appearances, are similar to the orchard-house; the same Warner's conservatory boiler and additional four-inch pipes supply the bottom-heat. Dimensions, twenty feet in length—lights twelve feet. Planks are placed over the flow and return-pipes, and the melons or cucumbers are steamed daily by syringing the pipes.

The essential part to attend to is the keeping up constant humidity, and the red-spider will never appear, or even the thrips. Cucumbers require more steaming than melons.

## GROUND PLAN.

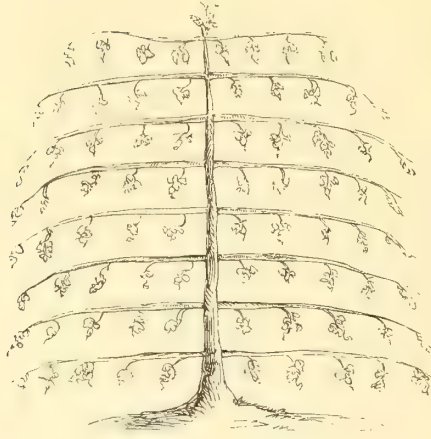


1. The borders raised on planks over the four-inch pipes to the top of the exterior ground.
2. The centre walk.
3. Cast metal water tanks to supply the pipes.

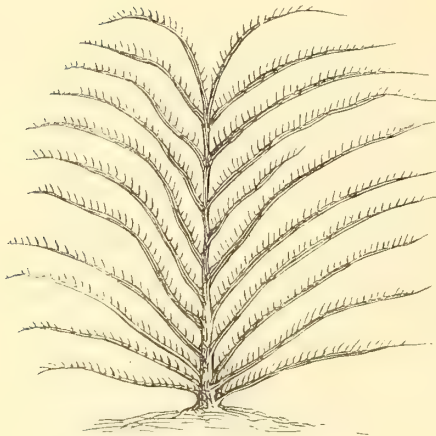
The outside walls at the back six feet sunk considerably below the level of the soil, and about four feet high in front.

## ON TRAINING FRUIT-TREES.

The curvilinear, wavy, or drooping fan-shape, are decidedly the best methods of training peaches, apricots, plums, and pear-trees against walls; each extremity of the trees should turn upwards, or be pendulous. Lay the branches in regularly, avoiding crossing any of them, and observe that each side ranges in the same manner and position:—



Pear Tree, drooping shape.



Apricot, wavy fan Shape.—Seymour's pruning.

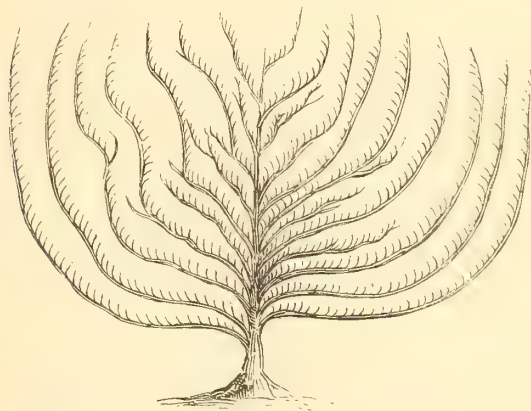
By these improved methods of training, the greatest degree of control is attained over the circulation of the *sap*, which being checked at the terminal points, is sent back to the bearing or blossom-buds, and ensures their fruitfulness. These plans, and the curvilinear on the ensuing page, are excellent. The trees should have some protection, and even fixing old shop-windows before them during the months of February, March, and April, I can highly recommend as being most useful.

## INSECTS AND SYRINGING.

When the young wood-bud appears on peaches, &c., the aphides will accompany it, and the mischief committed is great, often before a recipe is applied, particularly to the lower parts of the tree, which is the cause of so much barren wood in successive years. Apply tobacco-liquid as soon as the stamens and pistils have performed their office, and you will not then injure the ensuing crop; but if the development of the blossoms is still going on, they will not endure this treatment.

## ON MR. SEYMOUR'S SYSTEM.

It is of the utmost importance to see if there be any existing vacancy, or any probability of it, on the lower part of the tree; a good shoot should then be trained in at full length, or shortened to a few eyes, to force out as many shoots as may seem necessary, and due precaution is therefore requisite to have a sufficient stock of young wood. As pruning goes on, take care to have the branches re-nailed as soon as possible.



Peach Tree, or Nectarine, trained in Seymour's Curvilinear Inclination.

This method is most popular, and has many advantages; but it would be difficult, in training the peach, to carry this to any extent; the ends of the leading branches are elevated, so that they may all form the same curvilinear inclination with the horizon, which is of paramount importance in the training of peaches and nectarines. "Commencing with the winter pruning,

the first rule to be laid down as a basis of all the rest, is to shorten every shoot in proportion to its strength, and to prune to where the wood is firm and well-ripened; this will cause all the pithy and unripened wood to be removed, thence causing a supply of that which is better ripened for the ensuing year. But, in order to give every facility to the ripening of the wood, it must be trained thin, not in profusion, according to the general custom, but such shoots only as may be required for the following year. Trees which have arrived at a bearing state should have their strongest branches shortened to twelve or fourteen inches, those next in strength to eight or ten, and the weaker ones to four or six inches, pruning each to what is termed a treble eye, or that where there is a blossom-bud on each side of a wood-bud; where branches are not in a bearing state, these treble eyes will not be found; they must therefore be pruned to a wood-bud alone, which is always known by its sharp point. When the trees have been pruned once in this manner, the shoots must be trained neatly, nearly parallel to each other, so that a line continued in that direction would lead itself clearly out to the extremity of the tree."—*Dr. G. Lindley in his "Guide to the Orchard," &c., p. 302.*

Never crop the border, add no manure, keep the trees clean and healthy by syringing with tobacco-water, and elevate the ends of the leading branches so that they may form the same curvilinear inclination with the horizon.

#### RASPBERRIES.

The large-fruited monthly raspberry requires a rich soil, and to be cut down within three inches of its roots when planted, and it is most prolific.

#### STRAWBERRIES.

I have (through God's blessing) had such success in the cultivation of strawberries, that I should be glad to hear of all my horticultural friends being similarly prosperous in obtaining good crops annually of such agreeable and wholesome fruit as strawberries, both in a medicinal and palatable point of view: in the former they are little inferior to water-creases; and, in the latter, when gathered from the beds *ad libitum* in the morning, and in the preserved state, few, if any fruit, excel them.

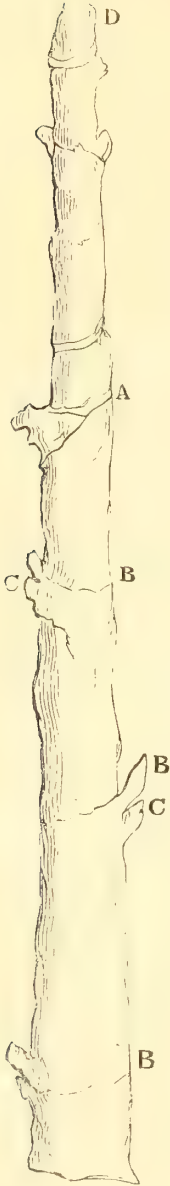
In the early spring, my young friends are pleased to call our "Strawberry" the "Paradise-gardens," and the enjoyment that



is thus afforded them amply repays me for the trouble and expense which attend their prolific cultivation. I invariably plant a new bed of each sort annually, and select the first runners for that purpose. Early in the Autumn, I mulch them well round the crowns, and down each row, with rotten dung and decayed leaves; and for three years successively they repay me by most abundant crops of fruit. But their successful culture depends upon the plants being well watered during dry weather, particularly when in flower.

One of my friends cautioned me *not to do so*, but I persisted, and the consequence was, that my blossoms set and that he was not equally fortunate. A change of ground is certainly required to produce British-queens the size of eggs every three years, although the rows are two feet apart, and every plant one foot from each other, and no runners are allowed to grow unless required to form new beds; the roots of each plant are also broken every Autumn by being raised with a spade and replaced. I pursue the old method of putting clean wheat straw between the rows and underneath it: when laid down, sprinkle some lime and soot to destroy the grubs and snails. Mice I catch by the tile-traps between each row, baited with long-pod beans. The fruit enjoy a free circulation of air, attain a high flavour, and are gathered at all times with facility, being perfectly freed from weeds and runners. British-queens force well if they are planted in No. 48 sized pots, and the soil (a good loam from an old pasture) be beaten down as hard as possible. An abundant supply of liquid manure and bottom-heat are the two requisites to ensure an abundant crop. Should air be given freely, the size of the fruit will assimilate to hen's eggs, and be perfectly ripened at the sharp end.

FIG-TREE.



The figure represents a shoot of last year. The first figs were produced on the wood of the previous year (which is not shown). The first growth, previous to Midsummer, extends up to A; at the joints B B B a second crop was formed and immediately removed, and other embryos are now formed below at C. From A to D is the second shoot, showing figs for the first crop of next season. Thus along the whole growth of last year figs are brought to perfection. Whenever a branch is too luxuriant, press it between the finger and thumb till its soft cellular substance has yielded.

In pruning figs, I take out the old naked wood, but invariably lay in all the young shoots that come from the lower extremities of the tree, whether they will nail to the wall or not; for if the knife is used freely, to bring the tree into shape, it will be destitute of fruit, and the bearing branches will die back. The first figs that appear are those that will ripen, the second crop will not have sufficient heat of the sun in this northern latitude to bring them to maturity, excepting under glass in the orchard-house, where they succeed remarkably well. Short-jointed and well-ripened wood, trained after the curvilinear shape, will not fail to produce an abundant crop, when nothing else is allowed to grow on the border, and some rotten dung has been forked in as manure.

I take off the figs which are produced after Midsummer, in order that the *young ones* should grow there, which will form fruit the following Autumn that will ripen. The embryo is then formed at the base, as shown in the adjoining figure.

FUMIGATION FOR DESTRUCTION OF THE RED SPIDER IN A  
HOTHOUSE THIRTY FEET LONG AND SIXTEEN WIDE.

Six ounces of flower of sulphur are sufficient for one fumigation. The best mode of proceeding is to dissolve a lump of soft soap, about the size of a walnut, in warm water, adding to this some clay-water, made by working a lump of clay in warm water until it becomes of the thickness of thin paint, and then mix in the sulphur. When all are well blended together, apply the mixture by means of a brush upon the sides of the flue; this must have been previously heated. The best time to apply it is late in the afternoon, just previously to closing the house for the night.

## FUMIGATION TO DESTROY GREEN-FLY AND THRIPS.

“According to the size of the place to be fumigated, one or more pieces of cast iron, one inch thick and three inches over, are made red-hot—placed in No. 24 sized iron pots, on which is put the tobacco—one pound of which is sufficient for three heaters, in equal parts. The tobacco is so quickly consumed, that the house is completely filled in a very short time, and but little smoke can escape before the insects are destroyed. The pure heat from the iron heaters prevents injury from gas; and as no blowing is required, there is no dust, it being only necessary to put the tobacco on the heaters, and leave the house.”—Vide *Gardener's Chronicle*.

## RECEIPT TO DESTROY APHIDES.

Syringe with tobacco-water two consecutive evenings—and strong shag tobacco is the best for this purpose. Three-quarters of a pound to a gallon of hot water makes a liquid perfectly efficient. It is applied with a hand-syringe; and the operator, after battering them one way to the end of the wall, returns and batters them again the reverse way—by which means, scarcely a leaf is missed. My trees are covered with canvass, projecting from galvanized iron coping; and I choose a dry evening for the operation, applying the mixture about six o'clock, p.m., and drawing down the *canvass* soon after the operation, and removing it the next day in case of sunshine or rain, in order that the effects of the liquid may not be too soon dissipated.

## INSECTS.

The scale is a most serious pest to the apricot; the eggs will be found in February on the old stems, just beginning to enlarge preparatory to their hatching into caterpillars: unless they are destroyed, they will make their débüt with the young leaf, which they so mutilate and roll up as to damage the crop, and paralyse the tree. Soft soap, lime, and sulphur-dressing, as applied to peaches, will annihilate them if often repeated.

## SULPHUR PAINT.

Beat up three ounces of soft soap with each gallon of tepid water; add four handfuls of flower of sulphur, and some soot to subdue the tone of the colouring imparted, and some thick clay-water, making the whole the consistence of ordinary paint. Let this be applied by a brush to every space between the shoots, and if a little should touch the shoots, it will not harm them. This receipt destroys the scale of the narrow-winged red-bar moth, the *paedisca angustiorana*, and the American blight on apple-trees.

## RECEIPT TO DESTROY THE RED-SPIDER.

Equal quantities of sulphur vivum, Scotch snuff, and slacked lime sifted fine; half the quantity of lamp-black, to be mixed with soft soap and urine till it becomes the consistency of paint. Before the sap rises, the old wood and young shoots should be dressed with a painter's brush.

## ANOTHER RECEIPT TO DESTROY THE RED-SPIDER.

Should this pest attack the peach, nectarine, or apricot, soon after the leaf is expanded, sulphur is the sure remedy, for copious ablutions from the syringe are prejudicial. The sulphur should be blended with clay-water, made by well-kneading a lump of clay until it is entirely dissolved: to this add soft soap, and a pint of soot to a gallon of water, and apply this mixture with a painter's brush.—*Errington's*.

## RECEIPT TO DESTROY THE GREEN-FLY.

To prevent these infestive insects, the following mode will prove very successful:—Heat a plate of iron red-hot, then place

a small quantity of cayenne pepper upon it, and close the house. The pepper will not injure the most tender plant, and it not only destroys the green-fly, but keeps the house free from slugs.

RECEIPT FOR DESTROYING INSECTS ON PEACH-TREES, &c.

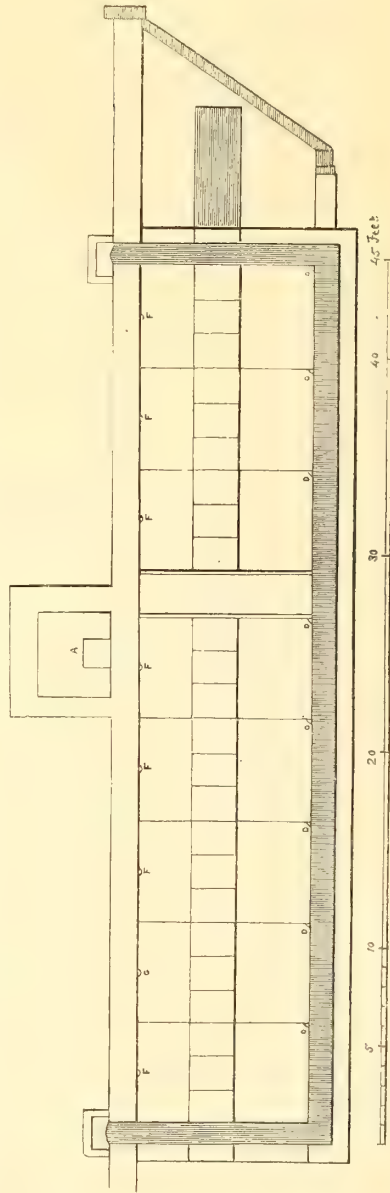
Two pounds of shag tobacco to a gallon of water; three gallons of soap-suds—the latter not very strong—add a quart of water, in which six ounces of shag tobacco have been soaked; strain the liquor through a fine sieve, and squeeze the material to extract the whole of its qualities. Keep the liquor covered for a day or night previous to use, and try a little a night beforehand, to be sure that it will kill the insects without injuring the trees. A fine afternoon is the best time for the operation, and syringe the trees right and left, just prior to the canvass covering being let down for the night.

While sitting under our vines and fig-trees, gratefully enjoying the bounties of Providence, let us reflect on things deeply interesting and instructive; such as God's revelation of his mind and will to man, through the glorious redemption by Jesus Christ. How precious is this free gift to all, as viewed through the blessed Gospel! To embrace it is life eternal to every penitent believer. It is to him a subject of universal enjoyment; he experiences that peace and love which arise from his sole trust in Christ's justifying righteousness, and not in any merit of his own. Salvation by grace alone, and free pardon of all our sins on these gracious terms, should be gladly accepted by all. Ordinances and everything else are valueless, without the knowledge of the truth as it is in Jesus. Our Heavenly Father will then bless all our undertakings, strengthen us by the aid of his Holy Spirit, guide us in every season of perplexity, and succour us when tempted, as weary pilgrims on the road to Zion, until we reach our promised rest.

It is always interesting to read those verses from the first to the eighth of the fifteenth chapter of St. John's Gospel, in which our union to our blessed Lord is likened to a vine-branch, which, unless it is fruitful, is cut away. And except by pruning, how destitute are we of his Spirit and grace! Until God exercise his kind discipline towards *believers*, they do not act conformably to His blessed will; and separated from Him, we are, indeed, worse than nothing.

The following plans show the way in which the hot-houses are constructed at Rolleston Hall:

Two hot-houses, thirty feet each, heated by flues, twenty-four feet wide, having three lights, eight feet each in length; or one hot-house, to be forty-five feet in length, ten or fifteen feet on the rafters. The brick areas to have a fall of six inches towards the main-drain at the lower end of each area—*vide* D on Ground Plan. Frontignac vines to be planted at F. Nine-inch walls round areas to project one brick above the soil; each area being about five feet in width and ten feet in length. Yorkshire flag-stones to form the walk, laid down in such a manner that they may be taken up at any time, to apply liquid-manure to the vine-roots. The bottom of each area to be bricked and well-grounted with lime. The areas to be two feet six inches in depth. Old mortar-rubbish, broken bricks, about the size of walnuts, and bones, for a foundation; to be covered with leaf-mould; chopped turf, and road-scrappings, well-mixed together in equal proportions, to be added. Two-inch bore-pipes to form the small drains from the areas. Exterior vine-border to be twenty-four feet, with a warm air-chamber beneath, heated also by a flue, composed of similar materials, and well drained. All the areas and flues to be level with the ground, and the border to be above the surface of the exterior surrounding ground.

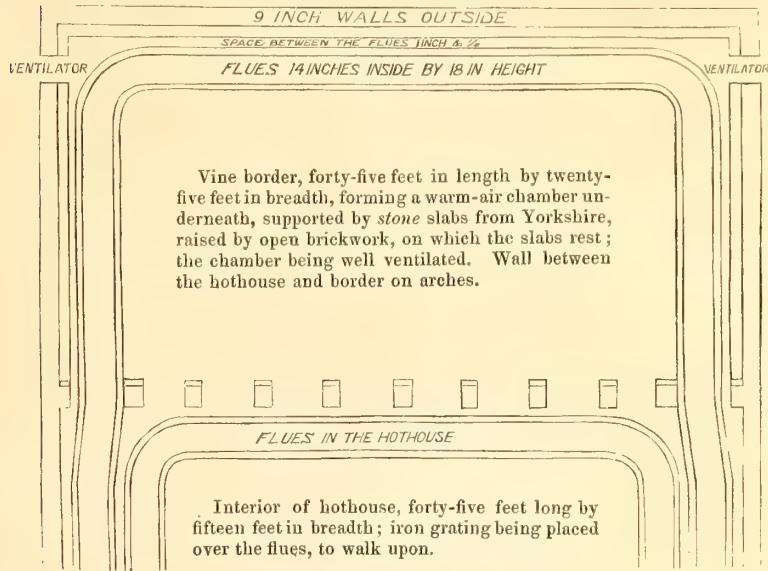


Section, in length, 30 ft. each house, three 8 ft. lights, or 60 ft. long by 24 ft.

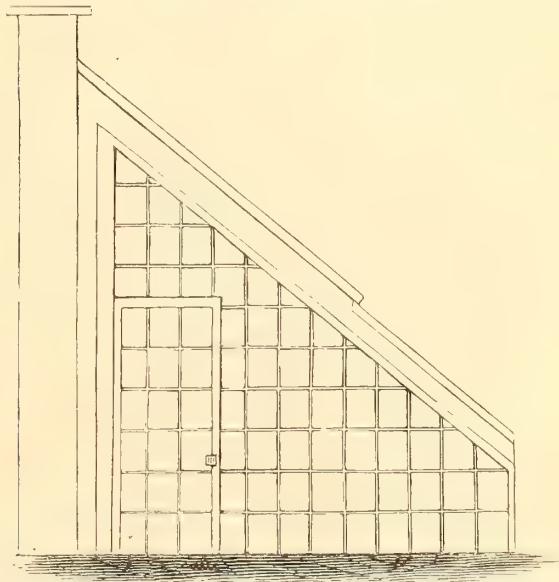
N.B. An almost similar plan at Rolleston Hall. A, heated by flues which commence and terminate at the heated wall, or by an hot-water apparatus. B, Cistern, five feet in depth, about three feet wide, and nine feet in length. C, Areas for vines of the Frontignac Grape. D, Entrance into main drain. F, Frontignac, grizzly, white and black grape vines. G, White Muscats of Alexandria.

OSWALD MOSLEY.

GROUND-PLAN OF HEATED VINE-BORDER AT ROLLESTON HALL.



CONSTRUCTION OF THE HOTHOUSE FOR FORCING AT ROLLESTON.

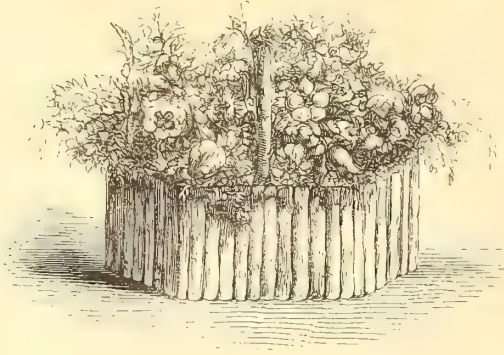


Section illustrating its principle. The roof-sashes may be fixed, and air admitted by ventilators.

## FLOWER BASKETS.

Flower-basket made of old trees is a beautiful receptacle for flowers—of an octagonal shape, five feet in diameter, and fourteen inches deep, makes a stand of very good proportions. Four *Nierembergia*, trailing *Lobelias* five, blue *Anagallise* two, *Mandaryns* three, and behind these four *Verbenas*, eight *Tom Thumbs*, about five *Petunias*, three yellow *Calceolaria*, and two *Heliotropes*—a tasteful group.

THE FIRST DESIGN IN THE PLACE OF THE TOROLOSA CUPRESSA.



SECOND DESIGN FOR FLOWER-BASKET OPPOSITE DRAWING-ROOM WINDOW.



Place the bark carefully outwards, and relieve it by nailing pieces of old rope over it in various ways for embellishment. These baskets are well calculated for growing plants in where dogs abound. Fill it with rich mould, and place the taller flowering plants in the middle, and procumbent ones outside, to hang down in four graceful festoons.



THIRD DESIGN FOR FLOWER-BASKET.



FOURTH DESIGN FOR FLOWER-BASKET.



## CONCLUDING REFLECTIONS.

Having now acceded to your wishes, and to those of my friends, and having brought my "Gleanings on Horticulture" to a close, I cannot dismiss the subject without expressing an earnest hope that the Divine blessing may attend my weak efforts to make the labours of my friends in this pursuit interesting and profitable, and the means of leading their minds from these familiar objects to Him who has so lavishly furnished them for the sustenance and enjoyment of his creatures.

"Not to regard the works of the Lord, nor the operations of his hands" is to manifest a degree of insensibility to his creative wisdom, power, and goodness, with which He is righteously displeased: and, on the other hand, to trace his footsteps in the garden, to see how beautifully his skill is developed in every tree, "from the cedar of Lebanon, to the hyssop that springeth out of the wall," with all their variety of fruit and foliage, and from the loftiest to the lowliest flowers, is to show a grateful reverence for Him who "openeth his hand and satisfieth the wants of every living thing;" "who maketh the outgoings of the morning and the evening to rejoice;" "who visitest the earth and waterest it;" "maketh it soft with showers, and blessest the springing thereof;" "who crowneth the year with his goodness, and his paths drop fatness."

In the narrative of the redemption of man, as well as in the works of creation, our attention is frequently excited and enlivened by a reference to the same topics so interesting to horticulturists. It was during the mysterious humiliation of our adorable Redeemer, that He said to one whose devotions in the garden were known to Him—"When thou wast under the fig-tree, I saw thee"—and to all his faithful disciples, he thus announces Himself—"I am the vine, ye are the branches," "as the branch cannot bear fruit of itself except it abide in the vine; no more can ye, except ye abide in me."

The care He bestows upon his suffering people is beautifully manifested when he says, in language so touching and encouraging—"Consider the lilies how they grow, they toil not, they spin not; and yet I say unto you that Solomon in all his glory was not arrayed like one of these." And in that future state, the circumstances and glory of which are but imperfectly dis-

closed to us, we are taught to anticipate a scene in which there will be "a pure river of water of life, clear as crystal, proceeding out of the throne of God, and of the Lamb, and, on either side of the river, the tree of life, which bare twelve manner of fruits, and yielded her fruit every month: and the leaves of the tree were for the healing of the nations."

'Look to the lilies, how they grow!  
'Twas thus the Saviour said, that we,  
Even in the simplest flowers that blow,  
God's ever watchful care might see.

Yes! nought escapes the guardian eye—  
However vast, however small—  
Of Him who lists the raven's cry,  
And marks from heaven the sparrow's fall.

Why mourn we, then, for those we love,  
As if all hope was reft away?  
Let not our sorrowing hearts refuse  
Meekly to bend, and to obey.

Shall He, who paints the lily's leaf,  
Who gives the rose its scented breath,  
Love all His works, except the chief,  
And leave His image, Man, to death?

No! other hearts and hopes be ours,  
And to our souls let faith be given,  
To feel our lost friends only flowers,  
Transplanted from this world to heaven









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