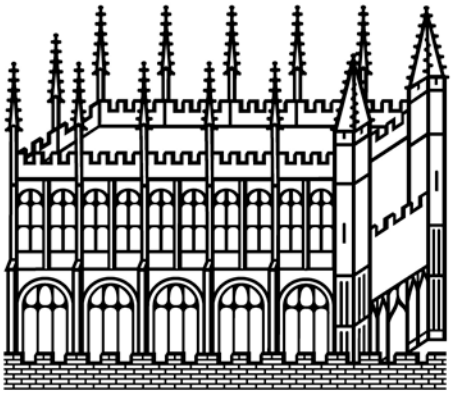

THE FRUIT GARDEN.

J. FLEMING,
GARDENER,
KILMAHEW CASTLE.

A TREATISE

ON THE

VINE, PINE APPLE, PEACH, PLUM, NECTARINE, &c.,

ADAPTED FOR THE USE OF

COTTAGERS AND AMATEUR GARDENERS.

BY

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Kitchen, Fruit, and Flower Manual, &c.

HELENSBURGH:
PUBLISHED BY W. BATTRUM, 43 PRINCES STREET.
1872.

PRINTED BY W. BATTRUM, PRINCES STREET, HELENSBURGH.

PREFACE.

I have been often urged to embody the results of my own experience on fruit, in a manual at once brief and thorough, and the present little treatise is offered as my attempt to accomplish that task.

In the case of fruits, we are every year adding greatly to their numbers, till our lists contain hundreds of changes on the original. We have every year new strawberries, rich peaches, and endless apples and pears. Our ancestors might well have envied us if they could have seen from their few and small beginnings such results would have arisen. The earth has ever been bountiful, but man has not always known how to make her disclose her treasures. To teach those to whom experience has not gained her lesson is our present object.

It will be observed that I have described the culture of fruits, which at present are beyond the reach of many of those for whom this treatise is principally intended, but this is with the view of instructing parties who have the means in their power, as well as to point out to the aspiring amateur, the means by which he may attain success in his wish to be "his own gardener."

That this little work may be the means of elevating the condition of the cottager, and be found useful to the more exalted classes of the community, is the earnest wish of

THE AUTHOR.

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THE protection of fruit trees being a subject of constant interest amongst gardeners, I have been induced to give a brief remark or two on the subject, and especially regarding dwarf standards, suitable for a miniature orchard.

To form an orchard of this sort, two roods of good ground, lying in a sloping position towards the South, should be selected, that it may be well exposed to the meridian sun, and properly sheltered from the cold North and East winds, as they are very pernicious to the blossoms of all fruit trees during the months of spring. Such an orchard will be found sufficient to supply the demands of an ordinary family, supposing a proper selection to have been made, and which can be obtained from any respectable nurseryman. The adoption of this method will be found much to surpass the system of growing large standard trees, in the

saving of space, the greater quantity of fruit, and in the capability of the trees being more easily and fully protected from the depredations of birds.

A garden of this description must in the first place be surrounded by a wall; the wall to be 9 feet high at the north side, 8 feet high on the east and west sides, and 7 feet on the south side.

An objection may be made to such walls as being too low, but I have, in my experience, had walls of various heights, from about 7 feet high to 18 feet; and I have found that I got far more fruit off these low walls, in proportion, than off the high ones; besides, they are much more easily got at, as to the routine of management, pruning, &c., than walls of a much greater elevation. I would next have borders of the same breadth as the height of the walls, as the effect is not pleasing when they are either broader or narrower. In a garden of this kind four doors would also be requisite both for the convenience of the proprietor, and the readier access of the operator; while walks of 6 feet would be quite sufficient as to the breadth. If the soil is not already good, *i.e.* good loam, the top *spit* from old pasture ground is the best to be used, and it should be laid past for about twelve months to undergo the process of decomposition.

Before putting it into the garden, I would add one proportionate third of loam and vegetable mould pro-

perly mixed, without using manure properly so called, as I find when manure is employed to any great extent in the formation of young fruit-tree borders, it makes them send forth too luxuriant shoots, and never of that fine, short-jointed, and firm texture that is to be found in trees not so highly fed. Before this soil is put in, the garden should be well drained with tiles, and about six inches of broken stones, rather larger than road metal, laid upon the top of them, for more complete and thorough drainage, and a few spruce branches on the top of all, or, in lieu of these, straw, to prevent the earth from filling up the crevices of the stones.

This system I have adopted in practice, and I have every reason to be satisfied with its result ; and would also advise that the borders where the finer trees are planted, should be done in the same manner. Trees, indeed, of every description, when fruit is in question, should be nourished in the same manner ; and I have no doubt but that the want of this treatment contributes greatly to the development of that canker which so many fruit trees exhibit. A few old trees for example, under my own charge were going fast to decay, and I had recourse to this remedy and found it quite effectual. First of all, having taken them up, I curtailed their roots a good deal, cut out all the dead and cankered wood, then placed them in their new position, in pits about four feet square, having a bottom layer

of six or eight inches of broken flagstones covered with good mould, after which they throve so remarkably well, that the very next season some of them bore a good crop.

For the efficient protection of the garden thus attempted to be described, it would be well to have the north wall planted with the finer sorts of fruit trees; and, where expense is not considered to be above the advantage of having a sure and abundant crop, a glass front might be added as follows :—At a distance of 12 inches from the wall a parallel row of small stone piers about 6 inches square, sunk into the ground at intervals of 8 or 10 feet, and 6 inches high, with a small wall-plate on the top $3\frac{1}{2}$ inches in breadth, and the same in depth, with a groove of 2 inches for the sashes to slide in; the top of the wall to be similarly furnished with a wall-plate, about 3 inches deep, and sufficiently broad to meet with the one below, and a groove in like manner for the top of the sashes. These sashes being used judiciously for exposing the trees as late in the season as possible without danger to the buds, before putting on the glass, in giving them an abundance of air, and fumes of tobacco being used occasionally, with a liberal use of the syringe after the blossom is past, plenty of fine fruit and healthy trees would be the result; and I have little doubt will eventually repay the outlay.

The north border I would plant with strawberries; the east and west walls with red and white currants, the borders with the same sorts; and as for the south wall it might be planted either with black, red, or white currants; likewise the south border the one half with black, and the other with raspberries. As for the centre of the garden I would have it laid off in different compartments for apples on the Paradise stocks, dwarf pyramids of pears, cherries, plums, and gooseberries; each compartment 20 feet broad, with almost 3½ feet alleys betwixt each. The trees to be planted 4 feet apart, row from row, and 4 feet apart in the rows. The annual root-pruning of these must be well attended to, else they will become too luxuriant in a fertile soil.

Temporary trellis should be placed round each of these rows in spring, with beech, or spruce branches interlaid, as this would form an admirable protection for the dwarf pyramids; and when the fruit approached maturity, a net could be easily laid over them as a preventative to birds. Any person adopting a garden something like this might always rely on being fully rewarded for the expense and labour bestowed on it.

CHAPTER I.

VINE CULTURE.

IN the sacred writings, the vine is frequently mentioned as one of the principal productions of Palestine; nevertheless, although it was cultivated throughout the Holy Land, there were particular spots where it flourished with special luxuriance, such as by the brook of Eschol. As to its productiveness we find that the spies of Joshua cut a bunch of grapes, which required two men to carry.

The earliest account we have of the vine is in Genesis, where it is said that "Noah began to be a husbandman, and he planted a vineyard and made wine." Vines are also mentioned in Jeremiah, in connection with fig-trees —"They shall eat up thy vines and thy fig-trees." It would further appear that extensive vineyards existed in the days of Solomon, as he is reported to have had one at Ballhamon. "He let the vineyard," it is said, "unto keepers, every one for the fruit thereof was to bring a thousand pieces of silver."

The vine is to be found growing even in the southern parts of Russia, and is abundant in various parts of the States of America. It is plentiful in France, though in some respects a very different plant from ours. The vineyards that produce the celebrated wines there are very small, and the kind of wine produced from every few acres varies. In some places it is bad as produced by vines on the top or bottom of a hill and good only from vines in the middle ; while the soil is stony and poor, the situation is hot. From the sloping sides of high hills, in the south of France, large masses of stones roll down into the valleys, covering perhaps twenty acres, which being overlaid, in process of time, and having a good exposure, vines are produced that give out a most excellent wine. The stem of the vine is generally one or two feet high, terminating in a knot, owing to the young sprouts being always there ; they are rough, and in general as thick as a man's arm. When a shoot is left from these, it is laid along the ground in spring, as with ourselves ; and in summer, if there should be two young ones of that year, they are tied to a three foot stake. The vines are planted three feet from each other in the rows. The number of people necessary to a vineyard is immense as the plants must be always attended to, for which purpose women are constantly employed to go through the fields pruning and tying up the shoots. About the month of July

they are in full leaf and the grapes set. Further south, in Italy, for example, the vines are planted at the roots of trees, which circumstance prevents them from taking too much nourishment from the ground, and also serves to train them, a most necessary purpose, because if untrained the grapes would be useless. It also happens that when they are grown on too rich ground, the wine produced from them has a peculiarly earthy taste.

The vine is easily propagated from eyes, layers, and cuttings; those raised from eyes, however, always make the best plants; the wood of last year's growth should be used for this purpose, and should be well ripened. To effect this, the eye or bud should be cut out, leaving about half an inch of the wood on each side. In March they should be planted in flat-pans or boxes, one inch apart, the soil of which should be composed of one half light loam and leaf-mould well mixed. As soon as this is done, let them be placed near to the glass of a frame, so that they may have plenty of light and air, with a temperature of 60 deg. As soon as they have made shoots from three to four inches, transplant them into a pot of four inches diameter, using the soil indicated with a small portion of rotten manure in the mixture, this will enable them to send forth strong shoots; as they progress, supply them also now and again with liquid manure in a weak state. When they have filled

the first pots with roots they should be removed into 6 inch pots and placed in the vinery or stove, so as to give them every advantage of making shoots several feet. They should be encouraged by every means, so as to have the roots and shoots well established before autumn. (In the month of March, 1868, I put in a few eyes as recommended above, and grew them on in pots till the 13th June when they were planted in the vine border, and about the middle of July, 1869, each of them bore a few bunches well coloured and well ripened. I mention this to let the reader see how soon grapes can be produced from eyes).

When they have arrived at the height of five feet, top them so as to promote their enlargement towards the base. In antumn when the wood is properly matured and the leaves falling, expose them to the atmosphere along with the other vines, or they may even be placed out of doors in front of a south wall filled up to their rims in tan or saw-dust.

Early in the following spring, cut them down to one eye or bud, but not until the buds have swollen considerably ; they can all be rubbed off with the exception of one or two ; when these have grown a few inches the old wood may then be cut away to one eye or shoot as already noticed, aud re-set in pots about ten inches diameter. The soil in which they are replanted in should be good turfy loam—loam from old pasture that

has been stored past for seven or eight months, and hot-bed dung well decomposed.

When they are of sufficient length tie them to stakes, and allow them an abundance of air, so as to prevent them from feeble extension.

By the end of the season they will require to be again placed out of doors as previously noted, when the spring following they will be in a fit state to be planted in their permanent place of growth.

In preparing a place for vines, the first thing to be done is to collect as much good loam from an old pasture as may be sufficient to fill up what are called the borders. This loam should be from the top spit formed into ridges, to be turned over two or three times during winter to undergo the process of decomposition; at the last turning one fourth of good rotten dung should be added.

Both inside and outside borders ought to be well drained with tiles, above which should be afterwards laid fourteen inches of broken shivers to prevent the vine roots from entering uncongenial soil. On the Top of these stones about seven inches of good lime rubbish should be laid.

Mr Richardson (Scottish Gardener, vol. 1, page 90) recommends the border to be as follows:—There should not be less than eighteen inches of stone under a vine bed, and these of a warm character; brick

bats are excellent for the purpose. When the drainage surface is brought to a proper level, proceed to lay thereon six inches of straw; old thatch or long litter from the stable-yard answers this purpose well. In doing this there is a two-fold object, the straw or thatch serves as a filter for the superfluous water, and the roots of the vine will be found to luxuriate in it. Upon this place put twelve or fifteen inches of turfy loam, and the border will be complete. It may be said that the depth of soil is too little, and not sufficiently rich in character. My answer is that I would rather trust to top-dressing in after years, and encourage the roots to come to the surface, than bury them at once in two feet of soil.

My own opinion quite conincides with that of Mr Richardson, as to the propriety of not having the borders too deep, as it is always found that when this is the case, the roots go down in search of nourishment, and are apt to do this even beyond the bounds of a prepared border, especially if the soil be naturally cold and damp. When this takes place, the berries become shrivelled and sour; and I have no doubt but that this is also the main cause why so many shanked berries are to be met with. I have witnessed the effects indicated in several gardens, and cannot but attribute them all to the cause assigned.

After the ground work of the border is properly

finished, a few good days about the middle of March should be selected for the purpose of getting the prepared loam wheeled into the borders, taking great care not to have it trod upon during the process of filling and raising it a few inches above the level for settling.

The breadth I would give for the outside border is 17 feet, and the depth of excavation 42 inches, of which 21 inches should be left for earth, which, with me is quite sufficient, as I use a good deal of liquid manure afterwards, to encourage the roots more to the surface.

When the borders are all completed and settled a little, commence to plant the vines about the first of April, having before hand selected a few of the best of those that have been propagated from eyes; and place one into a pit below the centre of each rafter about the same depth as they were in the pots using leaf-mould, and very rotten tan in the process giving them a good supply of water after they are all planted. They should be planted inside the front parapet which stands upon arches two feet wide, and 18 inches in height. In planting them, they should be all cut down to about 9 inches from the ground (after the buds have started a little) and as the season advances and the plants making good progress, train them up to the wires, allowing one stem upon each. When they are between four and five feet from the top of the rafter, they should be stopped

as this will promote their growth towards the base. Air ought regularly to be given them during the early part of the season; and as the season advances, the temperature should be allowed to range between 70 deg. and 80 deg. during the day.

As soon as the plants commence to make wood, give them a good supply of water at their roots, and over their leaves, giving them now and again a little liquid manure diluted with water, so as to maintain as vigorous a growth as possible.

By the middle of September they will have made excellent wood, when a little fire heat should be applied to ripen the wood, temperature morning and evening to be kept, as near as possible, at 70 deg. By the month of November the wood will be all ripened, so as to admit of their being exposed. By the month of January they should be cut back to about 15 inches from the ground; and as the season advances, and the plants begin to grow, they should be taken up with one stem as formerly, going through the same routine of culture as before. In December prune them again, and cut each shoot back to about one-third of the length of the roof; then lay them horizontally along the wires until every bud has started a little, when they may be taken up the rods in the usual way.

The following are extracts from my Diary of work in noting the progress of the vine during the third year

after being planted :—

March 1.—In applying fire heat, I kept the temperature at about 55 deg. at night, and 65 deg. during the day, until every bud had begun to swell.

March 15.—The vines removed from their horizontal position, and tied up to the rods ; water poured upon the heated pipes to produce steam to soften the buds. Temperature—day, 65 deg., night, 55 deg.

March 30—Shoots from 4 to 5 inches long, bunches showing. Temperature—day, 75 deg., night, 60 deg.

April 15—Largest spurs about one foot long ; flower buds about the size of mustard seeds ; bunches 2 inches ; shoots topped at two joints above the fruit ; laterals allowed to run a few joints, and then shortened back to one, and on until they stop entirely. Temperature—75 deg., night, 70 deg.

April 30—Vines in blossom ; no water used with syringe ; this would be destructive ; water poured upon the pipes at night. Temperature—day, 80 deg., night, 75 deg.

May 15—Thinning grapes ; syringe in use every night ; vines supplied with liquid manure. Temperature—day, 80 deg., night, 74 deg.

May 31—Thinning grapes where not finally thinned before. Temperature—day, 80 deg., night 74 deg.

June 15—Bunches all supported ; abundance of clean water given at their roots and liquid manure ; the

syringe well used every night, for the suppression of the red spider, a little insect that burrows on the under part of the foliage and is very destructive to the vine, if due precaution is not taken. Temperature—day 80 deg., night, 72 deg.

June 30—Berries a large size ; some of the Black Hamburghs measuring 1 inch and $\frac{3}{8}$ in diameter. Temperature—day, 80 deg., night, 72 deg.

July 15—No water to the roots nor over the leaves, as all the fruit is coloured ; temperature reduced and night air admitted, leaves pushed aside to assist in the development of both colour and flavour.

July 30—A few bunches of the Frontignac cut ; fires withheld ; fruit nearly all ripe ; and an abundance of air given.

In autumn the canes of this year had made wood about 1 inch in diameter, and ripened. They were all pruned back to two-thirds of the length of roof ; spurs into one eye. December 6th—Buds fine and large. December 20th—Wash them with a mixture of tobacco, sulphur, and black soap, with a little slacked lime added to the mixture ; washed at the same time, all the wood work and trellis, with black soap, and a mixture of sulphur ; supplied the inside borders on the 21st with rotten manure dug in with a three-pronged fork, to prevent injury to the vine roots. The practice I adopt with the outside borders is to have a

covering of leaves laid upon them, and afterwards two or three cart loads of well made stable litter, leaving it to remain in this condition until the end of March, at which time I turn up the borders in a rough state mixing the manure and leaves well in with the soil during the process. By the end of May, or beginning of June, it is all levelled and planted with annuals, etc.

This manure, with the leaves under it, is of vast importance in the protection of the vine roots from frost; it also enables the winter rains to wash down substance to the roots. By this method the vines grow luxuriantly, and always produces a good crop of grapes.

CHAPTER II.

PINE APPLE.

THE pine apple is a native of South America, as well as of some parts of Asia. It is said to have been brought into notice in 1690, and was soon afterwards introduced into Scotland, and cultivated by one Justic. This author gives a plan of a pine stove that he erected himself, and fruited this delicious exotic for the first time in 1732.

We will endeavour, without going into a lengthened detail, to give a few brief remarks on its cultivation, which are as follows :—It is propagated by crowns which grow on the top of the apple, which are removed when the fruit is ripe and planted as soon afterwards as can be conveniently done, and that into three or four inch pots, which will produce fruit in less than three years, according to the sorts in use, and to the kind of treatment given. They are also propagated from suckers growing at the base of the old plants, which should be removed

when the fruit is ripe, or at least when they have arrived about five or six inches long, and of a brownish colour at the base. This will generally take place about the end of August, and the old plants may then be thrown away as useless, unless they be some rare or new variety not sufficiently provided with suckers, when they may be allowed to remain in a corner of the stove to perfect their suckers, which will be known on their base assuming a brownish hue.

The compartment we prefer growing them in at this stage is a hot bed made of stable litter and leaves mixed, built to the height of three feet at the back. When it is all levelled and at the desired height, place on a two or three light frame, as may be found suitable for the demand, and lay on the surface of this bed about six inches of tan in which to plunge the pots. The size of pots will vary from five to six inches, according to the size and strength of the plants. Before planting it is requisite that the pots should be well drained, and the compost used dry, which will be the case if it has been laid past for some time in a dry shed. The best compost for their growth at this period, is leaf mould, light loam and sand, with a small mixture of soot. When the young stock has been all got into the pots, plunge them into the tan up to their rims, arranging them along the back of the bed in a continued line, and proceed with the next row and so on, until the whole is finished;

this done place on the glass, and keep the temperature as near 75 degrees as possible. No water should be given them until they commence to grow, which may be known by the heart leaves beginning to push, as it would cause a mouldness, and in all probability the total loss of the plants. Should steam generate too much, the sashes will require to be lifted up at the back occasionally to allow of its escape, as well as to admit a small portion of air. They must be shaded with mats from the mid-day sun. As soon as the roots have become established in the pots, they will require to be shifted into pots a size larger. At this shifting, providing the heat of the bed has decreased, fresh linings of stable litter and leaves mixed will have to be applied to keep up the required degree of heat. Place the pots back again into the bed, and plunge to their rims as formerly, and shade for a few days from the sun. Cover the glass at night with mats, so as to retain the heat as long as possible. By attending to these directions good plants will be obtained before winter

At the end of October they should be removed to the nursery pit, provided there be room there to be brought forward for the succession house in the following season. This pit should be heated by means of hot water pipes and leaves or tan combined, or smoke flues, which will answer the purpose very well.

These pits, like those we are going to speak about,

will require to have some fresh tan added, and the bed forked up so as to augment the heat. In cold weather a little fire heat may be applied at night to maintain the necessary degree of heat. From 50 to 60 degrees will be sufficient. Pits heated by means of dung linings, if stirred up every fourteen days, and a little stable manure added, will maintain a fine regular heat during winter. In the time of severe frost they should be covered up at night with mats, &c. We would rather prefer using asphalt cloth tacked to a roller $2\frac{1}{2}$ inches in diameter, placed underneath the cope at the top of the roof sashes, and running the whole extent of the houses or pits; this cloth can be made to draw up or down at pleasure by means of pulleys, which will be found more convenient than covering with mats. It must be observed that this covering is to be removed early in the morning, so as to throw all the light possible to the plants. Should snow happen to lie upon them, it must be removed, and the mats or other material used in the process laid up to dry, so as to be in a proper condition for using in the evening. The plants in any of the compartments will require very little water during winter- -once in eight or ten days will be sufficient, and then in a moderate quantity.

Succession House.—Before taking the plants out of the nursing pit into this house the bark bed will require to be renewed with fresh tan, but before this is done

the old tan should be properly sifted, and that of an earthy nature thrown away as useless, and that which is good mixed with the new. The bed should be well forked up, so as to throw a fine heat into the bed. Any repairs necessary to be done should be got forward while the house is empty of pines, and the walls washed with hot lime, &c. When this is done, light the fires so as to cause a mild heat previous to bringing in the plants from the nursing pit, that they may receive as little check as possible. Unless the plants are actually in need of a change of pots, it is much better to delay this operation at this season of the year (September), as it is safer to shift them into large pots about the end of February. Plunge the pots up to their rims, and arrange the tallest plants along the back row, and the others in regular order down to the lowest in front, and give them a little water to settle the soil. It must be observed that in watering pines at all times—but more especially in winter—the water given must be always warmer than the air of the house. The temperature of this compartment in winter may range from 55 deg. to 60 deg. at night, and during the day from 65 deg. to 75 deg., and in summer the temperature may be kept about 70 deg. in the morning, and up to 90 deg. during the day. Air must be given regularly to pines in all their stages by night and also by day, for on this and also a proper amount of moisture depends in a great measure the success

attending the pine-apple. This branch of gardening I have practised for a number of years in giving air at night less or more in all its departments, and the results have been satisfactory.

Fruiting House.—To maintain a sufficient degree of heat, the bark pit will require to be supplied with new bark from the tan pits. When it is procured it is often very wet, and should be spread out to dry or thrown in small heaps to ferment before taking it into the pit. The old tan that previously occupied the bed should be properly sifted and the rotten or earthy parts thrown away, but what is really good mix it up with new tan. Turn all the bed from the bottom to the top, and if leaves are used they should be kept well down, as also the new tan. We deem it advisable to use a large quantity of leaves, as they give out a lasting heat, keeping the tan more to the top of the bed. When the bed is finished and of a proper degree of heat, the plants that have been forwarded in the succession house should be removed at this period (September) into the fruiting house to perfect their fruit, and if found necessary they should be shifted into their fruiting pots, which should be from 10 to 12 inches in diameter. Before planting it is requisite that the pots be all well drained with charcoal and potsherds, with an addition of broken bones, pieces of turf over all, and spagnum, and the soil of the very best description, turfy loam from an old pasture

that has been laid down for some years, and if it has been stored past in a dry shed or otherwise for a length of time before using, it is all the better. It will be as well to look over the plants at this period and see if any of them are infected with insects, which should be got rid of as speedily as possible by washing them with a mixture of soot and water, using a brush in the operation. When this is done tie the leaves gently up with bass matting, until such time as they are all in their new situation—being careful in plunging the pots in the bark bed. Arrange the taller plants in the back row, allowing two and a-half feet from centre to centre of each pot—keeping the lowest in front and so on until the whole bed is finished. It will be as well to mention that as soon as one or two rows are done, the mat which was temporarily tied round the plants for protection should be cut away, to allow of full scope to the leaves. Give them a little water from 80 deg. to 90 deg., so as to settle the mould about their roots. Maintain a steady heat, for if this is not properly attended to the plants will receive a check and show fruit of a deformed description too soon.

The heat of the stove may be kept during winter as near to 70 or 75 deg. at night and during the day it may range from 80 to 85 deg. till the season advances. The fruiting house should be regularly steamed every morning and evening as soon as the required degree of

heat has been obtained.

Thus it will be seen that the period which elapses between the first planting of the crowns or suckers, until the ripened fruit repays our care, is from 18 months till two and nearly three years, according to the varieties and judicious management, and that during this period we are compelled by the delicacy of this plant, whose native region is unvisited by our northern cold, to change its abode often. When pine growing has been continued for a few seasons, there will of course be a regular series of plants, and every house will at all times be occupied. The old plant having performed its office dies, and as we throw it away we bring in from the succession house those that are to fill its place for another season, and die in their turn; and when we carry the young top or sucker to the nursing frames or pits, we at the same time remove from them last season's crowns, and suckers which are now somewhat advanced. The chain of vegetable life which nature has fastened together so wonderfully and so well will not be broken, unless we are negligent in the use of those means which are necessary when we take into a confined garden herbs which were originally meant to be at liberty, and more especially so when, as in this case, we have brought them over the seas for our use and pleasure.

CHAPTER III.

THE MELON.

MELON (*Cucumis Melo*) belongs to the class and order *Monoceia Monodelphia*, and ranks in the natural order *Cucurbitacesee*.

The Melon is indigenous in Asia and Africa, and especially in Persia, where it is cultivated to the greatest perfection. It has been long used by man as food.

We find it mentioned in the sacred Scriptures, in Numbers xi. and 5th—"We remember the fish which we did eat in Egypt freely; the cucumbers and the melons and the leeks and the onions, and the garlick." And in Isaiah i. and 8th—"And the daughter of Zion is left as a cottage in a vineyard as a lodge in a garden of cucumbers." But it was not till 1573 that this plant was introduced from the east into our island.

It was in former days extensively forced in beds of fermenting matter, which method is still practised by many successful cultivators, and the fruit thereby brought to great perfection.

Up to a recent period I also adopted the hot-bed principle, and was successful to a certain degree in rearing good melons.

But considering the great labour and expense of fermenting matter attendant on the hot-bed system, and the continued care and even disappointment in the early part of our seasons, I had a pit erected where the necessary heat could be obtained from hot water. From my experience with this system, I would certainly recommend any one who is inclined to cultivate it for his own use to make a trial of the pit system. Besides the other advantages, it gives an appearance of neatness and order never attainable if the hot-bed is used.

The site of a melon pit depends a good deal on the local circumstances. The situation I would prefer would be on the north side of the garden, with a slight inclination to the east, using the precaution not to have it too near large trees, as they tend to throw a shade upon the melon ground, which is greatly to be guarded against. It would be as well to have the melon ground surrounded with a low wall from five to six feet high, the better to exclude the cold blasts of our prolonged spring. On the north side of the melon ground would be required a compost shed, for the better security of the various materials requisite for the cultivation.

A frame ground on an ordinary scale might extend to the length of sixty feet by thirty feet broad. By

having two lengths of pits, each fifty feet in length by seven feet broad, a family could be supplied with cucumbers and melons the greater part of the season, besides the many advantages the gardener would have in being able to supply the table both earlier and better with many of the products of the garden.

The best mode of heating these pits on the hot-water principle certainly is to have one boiler of ordinary dimensions situated at the back range, and pipes leading right and left, and again made to return into the boiler. There could be a built chamber underneath the first range for the reception of the pipes going and returning to the second range. As the first range will be a little further from the heat, it would be well adapted for forcing asparagus, sea kale, &c., without interfering with the heat of the other range, which can be all worked with comparatively little fuel which is at all times an important consideration. The culture of these in pits differs little from the dung-bed system of growing. By the hot water principle I have been enabled to grow excellent melons. By attention to the pouring of water upon the pipes in the morning and at night, when the heat is up, will produce an abundance of steam, which is at all times congenial to the health of the plants, also a great preventative against the red spider. The soil I prefer for the melon is good strong loam, to which is added some well rotted dung, using a small portion of

lime in the mixture which I find at all times an advantage, never being troubled with canker, which I attribute to the use of the lime. My melon pit is renewed every spring, using the above compost, firming it well in during the process of filling. When at the desired height it is all levelled.

About the middle of March I commence to sow my seed —a variety hybridised by myself—using at no time more than two varieties. It is sown in pots from 4 to 5 inches in diameter.

When the plants are up and ready for re-potting, which generally happens in about eight days, I transplant them, inserting two plants into each pot. These pots are kept on the surface of the beds until such time as the young plants have sufficient strength to be planted out into the bed of earth that had been previously prepared for the purpose.

About fourteen days after they have been re-potted, two plants from each are placed in the centre of each sash, and gently watered after they have been all planted; and if the season is warm I generally lay a single mat over each light to prevent them from flagging, exposing them gradually and keeping always a brisk growing heat—maintaining a temperature of about 80 deg. during the day, and 70 deg. during the night, observing at ridging out to take out the embryo bud; and as the plants make further progress and send

forth young shoots, they are pinched off a little above the second eye or bud, which enables them to send out laterals, upon which the fruit generally shows. As soon as the blossoms are thoroughly expanded, take the earliest opportunity of performing the important duty of impregnation, which is essential at this early part of the season. As the shoots extend themselves, they are thinned out to regular distances, and the others neatly pegged down to the bed of earth. They are regularly supplied with water, as the plants stand in need of it; and by attending to regulate the sashes, and pouring abundance of water upon the pipes during their growing season, healthy plants will be the result. When they are commencing to ripen off, water is withheld to a certain degree. About the end of June I have always an abundance of good melons in readiness for the table, while I have others coming on for a succession.

CHAPTER IV.

THE PEACH AND NECTARINE.

THE Peach is indigenous to Persia, and was introduced by the Romans into Europe during the reign of the Emperor Claudius, when it was first mentioned by Columella, and is described afterwards by Pliny.

The Peach appears to have been introduced into England about the middle of the sixteenth century, where it has been cultivated under glass and on walls. The following interesting account of the peach has been communicated to the Horticultural Society by Mr John Braddick, of Thames Ditton :—"Some years ago, when travelling through Maryland, Virginia, and the neighbouring provinces of the United States of America, I had an opportunity of observiug the mode in which the peach trees of these provinces were cultivated, which was invariably from the stone of the peach, the plant never being budded, but always remaining a in state of nature. In the middle and

southern provinces of the United States it is no uncommon circumstance for a planter to possess a sufficient number of peach trees to produce him, after fermenting and distilling the pulp, from fifty to one hundred gallons of peach brandy ; the manufacturing of this liquor and the feeding of hogs being the principle uses to which the peach is applied in those countries. A peach orchard usually contains a thousand or more standard trees. The trees being raised in the manner I have detailed, it is easy to conceive that the fruit growing on them must be an endless variety, scarcely two trees producing alike ; and although by far the greater number of this, in any of these orchards will always be found to produce fruit below mediocrity in point of flavour, yet a judicious observer will never fail, among so great a number, to pick out a few trees, the race of which may be considered worthy of preserving."

The peach is one of the most delicate trees that grows in our gardens. If the soil is not already good loam, the top spit from an old pasture is the best to be used, and it should be laid past for a twelve month to undergo the process of decomposition. There should be no manure employed in the formation of fruit tree borders ; it causes them to produce too luxuriant shoots, and when this takes place little or no fruit may be expected. Whenever a tree becomes too luxuriant, take it up and curtail its roots a little, and replant it ;

this removing of the tree tends to throw it into a bearing state. The other winter I had occasion to remove a few old plum trees under my charge. I tried by way of experiment how some would do by removing all the earth from their roots, and allowing them to remain a whole night in a running stream of water, as I had heard recommended. I then placed them in a new position, in the pits about 4 feet square, having a bottom layer of 6 or 8 inches of broken flag stones covered with good mould. After this they throve remarkably well, in fact some of them bore a good crop the following season. Lately I had occasion to remove a peach tree from a peach house on account of its luxuriance; it was planted in the above manner against a south wall in the latter end of February, and about the first week of September it ripened its fruit. The number being twelve, some of them weighed from six to seven ounces.

Training.—The fan method is the most eligible mode for training the peach, with the lowest branches running in a horizontal line eight inches from the ground level. Trees in a young state, and in the course of training ought to be well cut back to produce abundance of shoots to fill the place allotted to them. If this is not properly attended to the wall would become naked, and in a short time be unproductive. Before the trees (that is either young or old) are nailed

to the wall, have them properly washed with a composition of black soap, sulphur, tobacco, and quick lime, as a preventative against the attack of insects.

The best time for the pruning of the peach and nectarine is before the buds begin to expand, by that time the frost will not injure the shoots, and besides the buds will be so far in advance, as to distinguish the fruit buds from the wood bud. The wood bud is always much sharper and not so much swelled as the blossom one. Trees in a full-bearing state are very often beset with these buds, the wood bud being placed in the centre between two fruit buds; in this case they can be pruned above these ones, owing to the centre one being a leader or terminating shoot; and besides at this season it is better seen where any injury has taken place with any of the shoots, so that they can be removed and the whole done up in a masterly style.

Mr Lindley very justly remarks that "Trees which have arrived at a bearing state, should have their strongest bearing shoots 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."

He further adds :—" When the tree has been pruned in this manner once, 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."

Keep the water engine in use in the mornings during spring, and as the season advances, apply it liberally in the evenings, except at the period when they are in blossom. After the fruit is set, return to the engine ; upon this in a great measure depends the health of the tree. There is nothing better in allaying the red spider (a small red insect that burrows on the under part of the leaves) than a due supply of water upon their foliage. By adopting this method few insects will be found upon them, and healthy trees will be the result of the labour bestowed upon them. I see that a great many of the better class gardeners are very remiss in using this efficient remedy.

For their better protection they should be looked after in the beginning of March, or at least before the blossoms are fully expanded. Various methods are adopted in the protection of the finer fruit trees. Some cultivators cover them with mats, fastened with nails or hooks to the top of the walls. Others again use covering of straw, and not a few make use of spruce branches. By far the best protection I have as yet

obtained, with the exception of glass, is a worsted net half an inch wide in the mesh, with a margin of tape sewed on for the purpose of fastening it to boards projecting fourteen inches over the wall cope. It is allowed to remain on night and day until such time as the fruit is set, and then removed until required, to prevent birds from destroying the fruit.

By the month of May they will have commenced to produce numerous shoots, and as they advance from one to two inches they ought to be disbudded with the finger and thumb, and in no case use a knife unless they have been delayed too long. All fore-right and ill-placed shoots ought to be removed, as they cannot be laid unto the wall. The trees, too, are thus deprived of all luxuriant and unnecessary shoots and leaves; but observe to retain from the various parts of the tree a few of the best placed shoots for the production of future crops, and likewise if the tree is young to furnish the wall with proper wood. These shoots, as they advance, should be regularly nailed to the wall. Avoid placing small pieces of twigs across the young wood as is very generally practised; there is nothing more untidy-like than to see such a plan adopted. If the process of disbudding be attended to in due time it enables the operator to accomplish the work without this irregularity.

Thinning the Fruit.—This is a branch of gardening

too seldom practised. Where too much fruit is retained upon the trees they draw the whole nourishment to themselves, and the consequence is that the trees are unproductive the season following, and probably it will be the third year before a fair crop is realized. In performing this operation it is best done with a pair of sharp pointed scissors, and where the fruit is too thick the largest and best shaped must be retained, and those seemingly to be the best situated upon the wall—but take the others off. It is no easy matter to decide how many are to be kept on the tree.

Upon young and healthy trees I would leave two upon each shoot, reducing the number upon those that are more weakly, and much larger and finer fruit will be the result,

I have no doubt the want of sufficient time causes the neglect of this operation ; but the result is attended with future advantage, both in the production of fine fruit and of healthy trees.

Forcing the Peach.—In the following diary the reader will find a brief description of the cultivation of the peach under glass, which is as follows :—We always find it the surest and safest plan to shut the house about the middle of December, especially if the weather is severe, as it assists in fully developing the embryo flower buds much better than if the house was kept low in temperature during the winter and spring

months. We think this highly suitable, and ought to be adopted, more especially with such houses as are required to be set to work in February and March. If the weather continues mild we expose them as long as possible, but on the approach, and in the time of severe frost we keep them shut night and day. Little or nothing else transpires until the first week of February when the pruning takes place, which is done by cutting the longest shoots to twelve inches, and the weaker ones to ten, and so on in proportion, especially if the trees have become established, and as noted in outdoor culture, cut always at a wood bud, and at those having treble eyes, for if this is not attended to, the fruit will not arrive at maturity without a leading or terminating shoot to draw nourishment for its support. This being done, wash the trees with a composition such as has been described for those grown on the open wall. At the same time washing all the trellis and wood work of the house, as likewise the walls—the walls we wash with a mixture of sulphur and quick lime, never being troubled with insects when this is applied. After having done this tie the shoots to the trellis at the distance of six inches according to their strength.

Feb. 15.—Slight fires made ; thermometer 36 degs. at 9 p.m., and at 45 degs during the day, with the use of the syringe every second morning.

Feb. 22.—Buds swelling, showing a little red, Temperature—day, 52 degs., night, 40 degs.

March 1.—Temp.—day 55 degs., night, 46 degs.

March 7.—Trees in blossom, Temp.—day, 56 degs., night, 50 degs.

March 15.—Leaves one inch long. Temp.—day, 55 degs., night, 50 degs.

March 30.—Leaves and shoots about two inches long—fruit commencing to set; engine set to work with the finest cup on, but only in use every second night at this period. Temp.—day, 62 degs., night, 52 degs.

April 15.—Disbudding the young shoots; fruit the size of large peas. Temp.—day, 60 degs., night, 52 degs.

April 30,—Liquid manure applied to the borders. Temp.—day, 60 degs., night, 56 degs.

May 15.— Pruning and training the young shoots; water shoots removed. Temp.—day, 68 degs., night, 56 degs.

May 30.—Peaches stoning. Temp.—day, 75 degs., night, 65 degs.

June 15.—Tying the shoots to the rods and removing water shoots and laterals. Temp—day, 78 degs., night, 70 degs.

June 30.—Fruit commencing to take their last swelling. Temp.—day, 78 degs., night, 70 degs.

July 15.—Water shoots and laterals removed.

Temp.—day 75 degs., night, 70 degs.

July 19.—All air on that could be given; leaves pushed aside to assist in the development of colour and flavour.

July 20.—Water from the engine ceased to be applied; abundance of air given at every favourable opportunity.

July 26.—Fruit all ripe, and no culture given.

CHAPTER V.

THE APRICOT.

THE apricot is supposed by M. Regnier to be a native of Africa, and its limits appear to be a parallel between the Niger and the range of the Atlas mountains, from whence it has by cultivation been carried towards the north.

The apricot was first introduced into this country in 1524, by one Wollf, then gardener to Henry the VIII.

The following remarks concerning the apricot will be found very interesting. Turner, whose work was written in 1564 and published in 1568, says—"I have sene many trees of thys kynde in Almany, and som in England." Gerard in 1597, notices two varieties which he tells us "do grow in my garden, and now-a-daies in many other gentlemen's gardens throughout England." Parkinson notices two varieties of this fruit, and Coles in 1657, says, "I am not assured that there are more than two sorts of apricot trees."

We have now many varieties of this fruit, some of which by their names inform us whence they were procured, as the Algeir, the Roman, the Turkey, the Breda, and Brussels apricot, besides the Muscadine, the Orange, and several other varieties. It is one of our earliest wall fruits as well as one in the highest estimation.

The fruit, when gathered young, makes an excellent tart; and, when ripe, it is second to no fruit for preserves or jam; it gives an excellent flavour to ice, and makes a delicious liquor. Of all the fruits used in pastry, none is more beautiful or agreeable than the ripe apricot. They should be placed in an open pastry, which adds as much to the flavour as to the appearance.

To prolong the enjoyment of this fruit in its natural state, we should be careful to plant the earliest variety in the warmest situation, as the frost often injures the blossoms of the Muscadine apricot, unless it is protected by a glass shutter or some substitute. The Brussels apricot is the latest ripe, and it should be observed that this variety produces better fruit when not exposed to so full a sun. In this age which exerts so much ingenuity to accelerate the maturity of vegetation, we shall endeavour to point out the best means of retarding or prolonging the season of fruit. The apricot, as well as the plum, may be kept for dessert two or three weeks later by gathering it when

half ripe and placing it in an ice house, or a dairy, or any cool place, where it slowly ripens. Apricots, if not too ripe, agreeably astringe and strengthen the stomach, but, like all other perfumed watery fruit, they lose their aromatic and tempting flavour and become clammy, and are less easy of digestion, when over ripe; they should therefore be gathered at least twenty-four hours before they acquire the least degree of maturity.

The apricot tree produces its blossoms not only on the last year's wood, but also on the curzons, or spurs, from the two year old wood. Great care should be used in pruning not to injure them; and it is advisable to remove all foreright shoots in the growing time.

The Brussels and the Breda apricot are the best as standard trees; they are all propagated by grafting them on plum stocks excepting the Alberge, the seed of which will produce the same fruit, or with very little variation. "Brook's Cyclopædia of Botany," p. 189. Nearly the same remarks may be applied in the pruning, training, &c., of the apricot as to the peach and nectarine.

The apricot produces its fruit chiefly upon the young shoots of last year's growth, and upon short spurs arising on the two or three years wood.

Presuming that the borders have been well drained, and prepared in the manner already described for peaches, young healthy trees of a proper age should be selected and planted about the end of October, at the distance

of 18 feet from each other, and from four to five inches from the wall. We deem it advisable, especially where the soil is light, to plant in early autumn as they get sooner established and make better roots than those planted late, and in the spring months.

About the beginning of March, or as soon as the buds are beginning to move, let the young trees be headed down to five or six eyes, so as to throw out laterals to fill the space allotted them. This like the peach should be trained in the fan system, as we think it is the most natural of all the artifical modes we see practised. The lowest branches should run in a horizontal line, about 8 inches from the ground level, and the other branches trained from four to five inches apart, according to their strength. The young apricot trees that were headed down a twelvemonth ago will have produced a few shoots the previous summer should each be shortened according to their respective lengths, so as to produce more shoots to fill the wall. By following this practice every season, each shoot cut back will produce three or four more, and in a few years will soon fill their allotted space, when they can be pruned in the manner already recommended for the peach.

After the trees have become established, cut out at every winter's pruning all superfluous shoots, leaving a due supply of the last year's wood in every part of the

tree, so as to produce fruit in the following season.

Before commencing to prune the trees, it is requsite that they should be partly unloosed from the wall so as to be conveniently got at while executing this needful work. This being done the shoots should be properly washed with a composition of soft soap, sulphur, and tobacco mixed, using a sponge in the operation; they should then be properly adjusted on the wall. In nailing them it is requisite that they have plenty of room in the sherds so as to allow of sufficient scope to the young shoots; this is a branch of gardening too seldom thought of, or in other terms, too little attention is paid to it, when this is not properly attended to the young shoots swell fast, and the consequence is that they are compressed, and, in fact, many of them entirely cut through, and the result is the total loss of the branch. There should always be as much room left as would admit of another branch similar in size.

As already noticed in the previous chapter, if root-pruning, &c., be looked after in a proper manner, there will be fewer complaints made about bad wall trees than is too often the case. About the end of May they will have commenced to produce their young shoots, and as they advance from two to three inches they should be disbudded in the same manner as the peach—all foreright shoots and any badly situated upon the tree should be removed—observe to leave as many

young shoots throughout the tree, and at regular distances, as will be found necessary for the health of the tree and the production of future crops ; and the smallest shoots should be cut to half a inch, which will cause them to break out and form natural spurs so as to produce flower buds at the base. These like the peach, should be duly syringed so as to keep down insects, and the trees always kept in a healthy state.

CHAPTER VI.

THE PLUM.

THE plum is considered to be indigenous to Britain, at least it is to be found growing in a wild state in the hedge rows in many parts of this country. It is supposed by some to be a native of Asia. Pliny says it was brought into Greece from Syria, and afterwards into Italy.

In some parts of North America the plum is cultivated to a large extent, and we are indebted to the Americans for some of the finest varieties. Lindley in his "Guide to the Orchard," enumerates sixty sorts. Rivers, the celebrated rose grower, mentions about ninety varieties, about twenty of which are of North American origin. As we have briefly shown in the previous chapter how plums, pears, and apples may be propagated by grafting, and the different kinds of stocks best suited to each, we shall now endeavour to treat, in this and other chapters, on the management of these

trees after they are removed from the nursery, and planted either as a wall, espalier, or standard tree. We consider the months of October and November the most suitable season, when the plum may be removed from the nursery and planted in its permanent place. The apple, pear, and cherry should likewise be planted at this season, especially if the soil be light and dry, and the wood properly ripened. As we have mentioned elsewhere in localities where the soil is damp, it is much better to delay the operation till the month of March, as there is nothing more injurious to the young tree than planting in wet soil. If the soil in the borders is already good, we think there will be little need for trenching two spade deep, and adding rotten manure, as is practised by some. In making a new fruit tree border, it should be properly drained with tile and about six or seven inches of broken stones rather larger than road metal laid above the tiles for more complete and thorough drainage, and a few spruce branches or straw on the top of all to prevent the earth from filling up the interstices of the stones. This being done, the the next thing to be considered is at what distance the young trees are to be planted, and what sort of border is best calculated for their growth. Upon the walls we would plant the permanent or dwarfs at the distance of twenty-four feet, with a rider between. It is to be borne in mind that as soon as dwarfs have become

established, the riders are to be removed, so as to allow the development of the permanent trees. Espaliers we plant at the distance of twenty feet, and standards at eighteen. The soil best adapted for their growth is turf from an old and healthy pasture; it should be cut to the depth of three inches, and laid past in a heap to rot for a twelvemonth, when it will be in fine condition, and if road scrapings can be obtained, the two together will constitute a border that will last for half a century. Pits four or five feet square, and from twenty to twenty-four inches deep, and bottomed with pieces of broken flag-stones, will be all that is required, and will in a great measure prevent the roots from going into poorer soil. When the trees have been in their new situation for three years they should be raised up and their roots curtailed, which needful work should be done every alternate year, and a little new soil, with an addition of leaf-mould, should be spread over their roots. Fruit trees treated on this principle will soon become fruitful and in the end repay the cultivator all the toil and care he has bestowed upon them.

Pruning and Training.—Young trees in the course of training will require to be cut well back, that they may produce more shoots to fill up the space allotted to them. The lowest branches should run in a horizontal line seven inches from the ground, and the other branches kept six or seven inches apart. Those trained

in the horizontal method, the side or horizontal shoots must in no case be topped, but allowed to run the whole length allotted them before they are pinched back. At the winter pruning the upright shoot or leader must be cut back to three or five eyes, according to its strength. From these eyes are thrown out laterals, to be trained in their turn to fill the wall or espalier. Plum trees are trained in a variety of forms, some preferring horizontal and others the fan; the latter mode is the most eligible for the majority of fruit trees trained against walls (the pear excepted); but the horizontal method is the best suited for espaliers.

Standard trees, if not pruned in November and December, may be pruned any time in January, or even a little later without any bad effect. Observe to keep the centre of the tree as open as possible, and remove all straggling branches or any branch that may have crossed another. If there be any moss upon them, have it all removed and the trees washed with the following composition, viz.:—Soft soap, tobacco juice, and two or three handfuls of sulphur mixed up into a thick paste, and applied to the branches of the trees with a sponge; this done in the winter season kills any insect that may lodge about the bark. I observe sometimes a very small scale upon the branches of the apple and pear; it is called the oyster scale, and can easily be got rid of by rubbing the branches two or three times in

winter with Gishurst's compound, or a very thick lather of soft soap rubbed on with a sponge, will very soon rid them, and the trees assume a glossy appearance.

The plum may either be trained on the fan system or its branches led in a straight line on each side of the main or centre leader, as the cultivator may think proper. It matters little which of the modes are adopted, providing the trees are kept healthy and in a state capable of producing a plentiful crop. With the exception of the pear, the plum, cherry, peach, &c., succeeds well when trained on the fan system, no doubt it admits of more young wood being laid into the wall, from whence a better supply of fruit may be expected; the pear is more prone to produce its fruit at the extremity of its shoots when trained on the fan system, and in that case the centre of the tree is left unproductive. In consequence of this taking place, we like to train the pear horizontally, and by doing so are rewarded with a supply of fine fruit. As the plum produces its fruit on small natural spurs rising at the ends, and along the sides of the bearing shoots of two or more years' growth, observe when pruning that in no case should the fruit-bearing branches be shortened. About the beginning of June the first or summer pruning will take place, when all foreright and side shoots should be shortened to one inch; in all probability the strongest of these spurs will send out shoots a second time; when

such is the case, it is necessary in autumn when going over the trees to cut off these shoots from whence they originated, for when the shoots are cut after the manner of the first pruning they are never so productive of fruit, and besides it leaves the spurs in time more bulky, and in the end has a very unsightly appearance.

CHAPTER VII.

THE CHERRY.

THE cherry is said to have been brought to Rome from Armenia by Lucullus, a Roman General, who conquered Mithridates, which happened nearly seventy years before the Christian era, and about thirty years afterwards their cultivation had become pretty general on the Continent, and had even found their way into this country a very short time after. Lucullus was the first that brought cherry trees from Asia to Europe, and though that tree thrives so well in many European climates, that it grows in the woods without any culture. Is it possible that no European had ever passed into Asia and thought of transplanting so delicious a fruit into his own country? or if the tree was once transplanted and propagated, how could it afterwards perish? Empires may rise and fall, liberty and slavery succeed alternately, ignorance and knowledge give place to each other, but the cherry tree will still remain in the woods of Greece, Spain,

and Italy, and will never be affected by the revolution of human society.—*Hume in Rhind's Vegetable Kingdom, p.* 334.

The propagation of the cherry is by seeds, grafting and budding by seeds of the cultivated varieties to obtain new kinds, and likewise to raise stocks for budding and grafting (avoiding the *Morella*), so as to continue those that have already been obtained.

By Seed.—The stones should be sown in early autumn on a prepared piece of light earth, in shallow drills at the distance of nine inches, and about an inch and a half deep, and an inch and a half between the stones in the line; after they are sown cover in with the earth, and rake the whole so as to make the surface level. Leaves or any other dry material may be placed over the bed for protection during the winter and cold months of spring, and on the appearance of fine weather this protection should be removed, when the seeds will soon germinate and become fine plants by the end of summer. In October they should be taken up and transplanted in rows 18 inches apart, and one foot apart in the line, observing at the time of their removal to curtail their tap roots. By the end of February they should be headed down to one eye, that only one stem may be brought up. Those intended for dwarfs should be grafted and planted out in the second autumn, in rows $2\frac{1}{2}$ feet apart, and one foot apart in the line, and

should be kept distinct from those intended for budding, as they will require a year longer in the nursery line than those intended for dwarfs.

The cherry, as well as the apple, has got its dwarfing stock (the *Cerasus Mahelab*) on which they grow well, and make handsome plants either for small gardens or the orchard house, for which they are admirably adapted. There are various sorts of stocks used for grafting the different kinds of fruit. The stock generally used for the plum is that obtained from sowing the stones, and is best effected by whip grafting.

Pears are propagated by grafting on five or six different kinds of stocks, namely, the crab-pear stock. The dwarfing stock are varieties of the quince (*Pyrus Cydonia*), which is obtained from seeds, or by layers. This has the same quality of dwarfing the pear as the paradise does in the apple. The pear is chiefly budded on the quince, but may be successfully grafted, especially when it is done very low, and the earth drawn well about it as soon as it is clayed over.

Apples are propagated by grafting either on the wilding or paradise stock. The wilding is procured by sowing the seed of the apple. The paradise stock is procured by cuttings put in of the aslin and paradise pippin, both varieties striking freely. This kind of stock is admirably adapted for dwarfs, as they occupy such a small space, and are suitable for the cottage

garden and the orchard house; but they do not live so long as those grafted on the wilding, that is, stocks raised from seeds sown of the cultivated varieties.

Having spoken a few words about the different kinds of stocks best suited to each class, we shall endeavour to give a remark or two on how the cherry may be managed after it has been brought from the nursery. The soil most suitable is that which is light and sandy. In it they are brought to bear much sooner, and, besides, they produce better fruit than when planted in soil of a stiffer nature. They may be planted in autumn where the ground is light and dry, but in stiff soil I would rather plant in spring. Before their removal, if the borders are not concreted, pits four feet square should be dug out, and the bottom laid with flag-stones closely jointed, and over the stones broken bricks or any coarse material to the depth of six or eight inches —this acts as a drain to carry away the water from the trees, and does not lodge between the flags and their roots. On the top of all lay some turf, with the grassy side undermost, which prevents the earth filling up the interstices between the stones. When this is done the tree should then be planted, and the young fibres nicely spread out, sprinkling a little water over them, and then a little white sand, before covering their roots with leaf-mould and loam; this done, cover well in and allow a few inches above the level for settling. Should

the young trees have five shoots, two of them must be trained on each side in a horizontal line. Have the centre shoot cut back to nine or ten inches to produce side shoots, which can be trained horizontal in their turn, the lowest pair of shoots to be within six inches off the ground level, and the upper ones nine inches apart.

About the end of May the cherry trees should be looked after, and all foreright shoots that are produced from the front of the branches removed, as well as others that cannot be conveniently trained to the wall. Those intended for artificial spurs should be cut into one or two eyes. By attending to this operation in time will prevent too great a confusion afterwards, and admit of more light and air to the trees. When the fruit is set water must be regularly applied from the hose with considerable force upon the branches, the better to prevent the attacks of the red spider, which annoys the cherry trees very much.

The morella bears upon the young wood of last year's growth, and should be trained and cut back in the same manner as peach trees, each shoot according to its strength; supposing a due supply to have been left in the branches of last summer's growth, they should be nailed close to the wall at the distance of from five to six inches.

CHAPTER VIII.

THE APPLE.

THE apple, which is now indigenous to Britain, is allowed to be a native of the East. We find it mentioned in the Sacred Scriptures, in Joel i. and 12, when enumerating the trees of Syria,

"The vine is dried up, and the fig tree languisheth; the pomegranate tree, the palm tree also, and the apple tree, even all the trees of the field are withered."

The varieties at present under cultivation appears to be numerous, as will be seen by an extract from Mr Rivers' Fruit Catalogue, when he says "many of the American apples have a soft melting, yet juicy texture, very agreeable to those with delicate stomachs—this is, perhaps, owing to the warmth of their summers." He further adds that the Melon apple, Newton pippin, and Northern spy, are really delicious apples, and quite deserve a trial on a south wall, although they are hardy, and will bear as well as pyramids. This form is highly eligible for gardens, as their culture is so easy and

agreeable, and so many trees may be grown in a small space. My specimen quarter contains 350 sorts—one plant of each—and yet only occupies 350 square yards. The trees are planted 3½ feet apart, row from row, and 2½ feet apart in the rows.

The soil suitable for the growth of the apple should consist of good turfy loam, road scrapings, and lime rubbish, where they can be procured. In this they thrive admirably, and if not cankered, or in any way diseased at the time of their transition from the nursery, should not fail to produce good crops for a number of years. The apple should be sheltered from the cold north, and south-west winds by forest trees, which should not be nearer the garden than 200 feet, if there does not chance to be some sheltered hill on the south-west side of the garden. Trees at the above distance should be placed there, more especially when the situation is high, as it prevents in a great measure the fruit from being blown down in autumn, as the south-west wind prevails greatly at that period. A valley should not be chosen, as in it the blossoms are apt to be destroyed with frost which prevails in the early months of spring, and is very pernicious to every sort of fruit tree when planted in too low a situation.

This, like the pear, should be taken up every alternate year, after the second or third year's planting from the nursery, their roots curtailed, and a due supply of

leaf mould and turfy loam spread over their roots.

The apple is chiefly trained on the fan system, especially when grown on a wall, and if done on this principle the young wood is more easily obtained, so as to fill any vacant space, or to supply any worn-out or decayed branches without in any way spoiling the appearance of the tree.

The apple produces its fruit sometimes on the ends of its branches, and in short robust shoots from half an inch to two inches long, arising from the branches of two or more years' growth ; by judicious pruning their fruit bearing spurs will continue for many years in a fruitful state.

A correspondent in the "Scottish Gardener," vol. 1, p. 100, says, and very justly, "No tree that produces great quantities of breast wood yearly can be productive, neither will any particular method of cutting it off cause the tree to produce fruit. For a tree to be fruitful, the roots must be as much under the gardener's control as the branches. Disbudding should be performed as soon as the young shoots are so far formed that the practised eye can judge between the good and bad. This operation should be performed with caution, and only the superfluous and misplaced buds pinched clear away."

Such shoots that are not required for laying in at the summer pruning should be cut back to the second bud,

to induce, if possible, the germ of a fruit bud from the base.

At the winter pruning a more correct idea can be formed of what the trees are likely to produce. The shoots spurred in at the summer pruning should now be cut back to about half an inch from the base, and all spurs that may have produced fruit the previous year, should be shortened back to the stoutest bud, or cut clean away if they are getting long and unpromising.

Where trees have produced large artificial spurs, a few ought to be cut off at each winter's pruning. They will then produce natural spurs, and attain a bearing state in the third season after being cut back. From this treatment good fruit may be expected, as this cutting out of the large spurs every winter will cause the trees to be in the best condition for bearing. The same author remarks that "the leading shoots should be left entire, provided they do not exceed 18 inches in length, the highest point of luxuriance trained wall trees ought to be allowed to attain."

As the wall forms a chief part of a garden, the trees grown upon them ought to be properly attended to as regards a regular system of training, because partly on this depends the beauty of a tree; in fact, well trained trees are an ornament to a garden; moreover, unless the borders are particularly attended to at

their first formation, it is out of the power of any gardener to train wall trees methodically. I have, no doubt, if the remarks made in the previous chapters be followed up by a judicious system of pruning and training, that fine trees and a plentiful crop will reward him for all his care and labour,

We must confess that there is less attention paid to wall trees than any other branch of the art; in fact, unless it is in gardens of high keeping, it is astonishing to see how deficient wall trees are of being properly trained. To use the words of a professional writer, "we see in almost every garden trees trained, that is by laying in a twig wherever there is an inch of brick to be seen, without any rule or principle, which is certainly a great stigma upon the professor."

CHAPTER IX.

THE PEAR.

THE pear, in its wild state, is armed with thorns, and has upright branches tending to the pyramidal form, in which it differs materially from the apple tree. The twigs or spray hang down, the leaves are ellipitical, obtuse, serrate; the flowers terminating vellous corymbs produced from wood of the preceding year, or from buds gradually formed on that of several years growth on the extremities of very short protruding shoots technically called spurs. It is found in a wild state in England, and abundantly in France and Germany, as well as in other parts of Europe, not excepting Russia, as far north as latitude 57 deg. It grows in almost any soil. The cultivated tree differs from the apple not only in having a tendency to the pyramidal form, but also in being more apt to send out tap roots, is like a seedling plant longer in coming to bearing, taking from fifteen to sixteen years; and when on its own root, or grafted on a wild pear

stock, being much longer lived. In a dry soil it will exist for centuries, and still keep its health, productiveness, and vigour. The pear has been known from the remotest antiquity.

Most of the fine sorts of pears are of Continental origin—the horticulturalists of France and the Netherlands having paid more attention to that species of fruit than those of England. As these varieties have retained their original names, a good many laughable corruptions have been produced in their popular nomenclature. Thus the bonchretian is converted into the boncrutching, the beurre into the bury, the chaumontell into the chasminytell. Such odd names as the bishop thumb and many others which our fruiterers use, may probably be traced to a similar cause.—*Rhind's Vegetable Kingdom*, p. 326.

Towards the end of October the wood of the pear will be sufficiently matured to admit of its being planted, especially where the ground is light and dry. Those planted as standards in the open quarters of the garden, may be placed at the distance of 18 feet, with such currant bushes planted between as may be thought proper.

In planting fruit trees allow them sufficient room; those planted against walls should be at the very least a distance of 24 feet, with a rider between.

The borders intended for pears need not be too

rich, good loamy soil, mixed with road scrapings, will make a good border for them; and as stated in a previous chapter, stones laid in the bottom of the borders are of vast importance, it assists in keeping them warm, and besides their roots are not so much affected by the summer's drought, which tends to nourish the trees, and prevents the roots from going downwards.

When the trees are in a more advanced state we supply them occasionally with liquid manure, which is found to answer well, and to assist in the swelling of the fruit, which is of greater importance, and adds materially to flavour.

The standard pear may be safely pruned any time from November to February, and should consist of a straight stem and be properly secured from boisterous winds which prevail in the autumn and winter months; as the trees become larger they should from year to year be looked after, and the centre of the tree kept as open as possible by removing all straggling branches or any branch that may have crossed another.

Those intended for espaliers and walls should be trained horizontally and brought up with a centre stem and laterals every season, and as they are produced should be laid in a horizontal line on each side of the centre shoot; and the laterals, as they are produced, should be laid in at full length and in no way

toped until they reach their utmost extremity, when each shoot should be kept from nine to ten inches apart.

In summer the superfluous young shoots should be cut back to two inches, allowing the leaders to go at full length. By the middle of September the spurs which were cut back in the summer pruning, will have produced another shoot from their extreme bud, which at this pruning should be cut back from below where this lateral was produced. Also thin out the other spurs, keeping them at regular distances—three inches will not be too near. When going over the trees in winter observe to cut that part off to the next bud on those shoots that have produced fruit in the previous autumn.

The ideas of Mr Duncan Coodham are more correct regarding the cultivation of the jargonelle pear than any other author whom we have consulted, and probably we cannot do him more justice than to give the following excellent remarks in his own words which were communicated by him to the "Scottish Gardener," vol. II, p. 138 :—"Most people who are fond of fruit wish to have the best sorts, so that this prince of early pears, viz., the jargonelle, is an established favourite. It ripens for use from the middle of August to the end of September, according to its situation and locality. When the fruit is eaten at the right ripening point it is delicious, and its colour is of a yellowish green. It should hang on the tree till it gets this tinge ; at least

those who grow it for their own use should not gather it sooner. The tree can be netted over to protect the fruit from birds and wasps, and should any fruit drop it will fall into the net."

Growers, who supply the market with this fruit, gather it before it is ripe. They must do it on account of the fruit having to lie on the dealer's hand for a time till it is sold off. When the fruit is gathered ten or twelve days before it is ripe, it will keep two weeks or a little longer, but at the expense of flavour. To taste jargonelle pears in perfection, eat them in the same week that they are gathered. The jargonelle tree is subject to canker where preventives have not had recourse to, but that it will keep healthy there are many proofs. Let it be kept in view that this variety of pear tree is a free grower, more so than most of the pear tribe, therefore it requires plenty of room, especially when it is grafted or worked on a free stock, and intended to let grow a tree to fill the part of a wall allotted for it. Don't grudge ample range for the branches. To prevent canker, get a healthy young tree from the nursery, having clean bark and well firmed ripened wood. Trim the roots, at least any overgrown ones; leave none of the roots much beyond a foot long; give the tree one year's nursing by planting it in a kindly situation exposed to full sun and air; the soil, fresh maiden loam, and three parts of

half rotted tree leaves. Any time between the end of October and the beginning of March will do to plant in a dry day; don't cut or prune the top of a tree at Planting; leave that operation till in April when the buds are commenced to push; then head down the stem, leaving as many eyes as you wish shoots to spring from, and these must be watched with great care that none of them may get master of the others. Liberty and equality must govern the growth this season. When the tree has got one year's growth by this treatment, it may be planted in a permanent situation; however, I prefer giving two year's nursing before planting it out finally, and then it is well rooted and habituated to the climate where the fruit is to be produced. No time is lost by this nursing, as it induces rather to an early bearing state, and when the tree is planted out in its permanent place it makes a respectable appearance at once. Do not hesitate to transplant the young tree oftener than once. Now we are come to a very important part of the management of the tree. If it is to be planted against a wall, it matters not whether it is against a garden wall, the wall of a court of offices, the gable of a dwelling-house, &c., it must have a large space of wall room; no variety of pear requires more room if well managed. Any variety of soil, from light sandy loam up to heavy clay, will do to plant in if properly prepared, and the key to the whole process is to

drain the subsoil perfectly. Should that be performed well, the consequence will be a dry soil fit to receive all the rain that falls on it, doing more good than harm.

What may be looked forward to is that the branches may extend fifteen feet on each side of the main stem, and perhaps ultimately to twenty feet. As this tree should be trained horizontally, a wall ten feet high will do for height, but the gable of a house, where the tree would have twenty-feet or more of upward head-room, would give more satisfaction in the fruit season. If the draining and other preparations of the ground can be done a whole year before planting, so much the better for after success. As I mentioned before, the ground must be thoroughly drained and trenched, beginning at one end by taking out all the earth from the first trench and putting it where you intend to close. The trench should be one foot deep at the wall, and two and a half feet deep at the distance of twelve feet from the wall, thus giving the bottom an incline outward, for it matters not whither the surface be inclined if all is right below ground.

The trenching should be done in dry weather ; give the ground a good dressing of well made stable dung ; dig all over neatly and take a crop of potatoes, turnips, cauliflower, cabbage, peas, or any other thing that can be removed away by the end of harvest for to get the ground prepared to suit the trees, About the end of

October give the ground a good dressing of turfy loam if that can be got, a quantity of old lime rubbish, and plenty of half rotted tree leaves, dug all in roughly at a dry time ; then the ground is ready to plant in when convenient to do so. Supposing the young tree to have three shoots on each side of the main leader, by the time of final planting fix them to the wall in a horizontal position. Should the undermost pair of shoots be not too gross in habit, lay them in at full length, the next pair cut to nine inches shorter, and the third pair nine inches shorter than the last and so on, and not keeping by an exact inch, but at the best bud that will answer. The main or top shoot, cut at buds to give side shoots in their proper place year by year. The jargonelle makes long growths when in good health ; the shoots of one year's growth may be cut back from a third to a half, according to strength ; this gives fruit buds at the base of the shoot which will not be the case should you not cut back. Take it as a rule in training a tree in this form to have the undermost shoots filling the wall to their full stretch before those above them. After the tree, or trees are planted, never dig the border for at least six feet from the wall ; it may be paved over, covered with gravel, or it can be scuffled with a hoe, top-dressed slightly, small seeds sown in it, such as cresses, cauliflower, or any small thing that can be got quickly off

again ; these will not hurt the tree, but never dig. I could point out some fine specimens of old jargonelle trees planted from sixty to eighty years, in full health and bearing. The soil and situation where they grow are not better than what may be found in any parish in the Lowlands of Scotland ; their roots have the privilege of a dry bed and get peace to rest in it. To sum up, do all you can to get a bush of roots to the young tree before planting out for good and all. These never disturb afterwards, give plenty of wall-room ; the tree will do well on a south, east, and west aspect.

CHAPTER X.

GOOSEBERRY AND CURRANT.

THE gooseberry is a native of several parts of Europe, and in its native or wild state produces only a small green hairy well-flavoured berry. It is to be found growing wild in many parts of Scotland, especially in old castle grounds, or on the tops of old walls, at one time connected with them.

It would appear from Tusser that it was cultivated as early as in the reign of Henry VIII. In the south of Europe it is much neglected, and even in France despised, and very little if at all cultivated.

It is grown to a great extent, however, both in Scotland and England, among all classes of the people. I am informed, indeed, that it is nowhere brought to greater perfection than in Lancashire, at least as to size; but I doubt very much if the berries thus produced, possess such fine flavour as those which are grown in a more northern clime; as in no place have I seen them of a better quality than in the vicinity of Forres.

This fruit so much esteemed, particularly in Scotland, is found to be very wholesome when in a ripe state, which renders the cultivation of it not altogether unprofitable. Indeed it may be said, that no fruit has been more improved by cultivation than the gooseberry.

I may mention that as plants are readily obtained from cuttings, the best time for planting these is from December onwards to March, and that the cuttings most answerable for propagation are those of a medium growth. Trim off all buds from the part of the cutting which is to be inserted into the ground, leaving only four buds or eyes on the upper portion of each to form the base of the future tree. A piece of rich soil should be chosen for a nursery bed, where they can be planted in single lines one foot apart, four inches asunder in the rows, and three inches deep.

When these have grown one season in the nursery-bed, they should be all taken up, and any suckers that may be upon them removed, and each shoot cut to within five or six inches of the stem according to its strength. They may be again replanted in lines two feet asunder, and one foot apart in the line, when they can be again taken up at the end of the season and finally planted out into rows in the open quarters of the garden at the distance of five feet each way. All superfluous shoots to be removed, and only two left on

each side of the leading stem which should be headed to within six or seven inches in height to form the future tree ; after prunings to be differently conducted.

In summer, a number of young shoots must be cut out, some of the best, however, to be left throughout the tree for the production of next year's crop. Some of them may also be cut into spurs, as from them good fruit may be obtained ; but all topping of the leading shoots (as some persons injudiciously do to the injury of the tree) should be avoided unless they are unsuitably placed. All straggling branches, or any branch crossing another, should be removed together with any collected moss, so as to reduce insects as much as possible. The moss being removed let them be dusted over with helebore powder in the early part of the season, using with the syringe occasionally, and very few, if any, such insects will exist.

One writer says, that to "destroy the worm, as also the small orange-coloured aphids which often injure the bushes and destroy the fruit, we sprinkle the plants with salt and water early in the spring before the leaves are developed ; the mixture may then be made so strong as to whiten the branches without affecting the future crop. Should the leaves or buds be in part expanded, the brine should be greatly reduced, say one quart of salt to about eight gallons of soft water, applied over the bushes from the rose of a watering pot."—

Hovey's Magazine of Horticulture.

THE BLACK CURRANT.

THE black currant is also a native of various parts of Europe, and is to be found growing to a considerable extent in the woods in many parts of Russia and Siberia. It is also valuable, as it can be made into an agreeable jelly, and likewise used both for tarts and puddings.

Currants, like gooseberry plants, may also be increased by cuttings obtained from the wood of healthy trees of last year's growth, which selected cuttings should be from ten to twelve inches long, according to strength. All the buds should be removed, except the uppermost four, which should be retained, so as to form the base of the future tree. The mode of training them is closely allied to that of the preceding class. Currants produce their fruit upon spurs and on the young wood of the preceding season. The black currants succeed best when planted at the back of a north wall; in this situation the soil is damp, and appears congenial to their growth. The following varieties are worthy of cultivation:—

1. BLACK NAPLES.—This is the best black currant grown; it grows to a large size, and is better flavoured than any of the others.

2. BLACK GRAPE.—It grows to a large size, but has this disadvantage—the berries first ripe are apt to drop before the underpart of the bunch is in a fit state to be

gathered.

3. The Red and White Currants.—The red currant is a native of the northern parts of Europe, and is likewise to be found growing in a wild state both in Scotland and England, in the hedge rows, and sometimes in the woods.

Rhind says, that "the berries of this shrub in its wild state, are uniformly red; cultivation has produced the white common in our gardens." Both varieties are valuable, the red being chiefly used in the preparation of jellies; and the white for the dessert. An excellent wine may also be obtained from both varieties, which according to some modern writers, was used to a considerable extent when foreign wines were at an exorbitant price.

To cultivate either sort, cuttings should be taken off as soon as the leaves fall. Those taken off should be from ten to twelve inches long, and all the eyes or buds removed, except the four at the top part, which should be retained to produce shoots to form the base of the future tree; when this is done, insert the cuttings into the nursery lines, and treat much the same way as the gooseberries, especially while they are young.

When the plants are in a bearing state, each of the main or principal branches, as well as the side shoots, must be shortened to two or three eyes, at the winter pruning, as around these spurs and eyes will produce

bunches of a large size.

It may also be as well to mention here that each tree should have a branchless stem 15 inches high from the surface of the ground, and that any suckers produced through the summer, should be cleared away. The branches ought to be kept thin and regular, and no wood allowed to remain in the centre, for, the more open that the centre is kept, the more air and sunshine will be admitted to the plants, and the fruit will consequently be larger and better flavoured.

Supply them with liquid manure, and dig between the rows, so as to give the whole a neat appearance through the winter.

Currants are very often planted against walls to fill up the intermediate space between young wall trees. Now when this is the case, they should be planted at the distance of three feet, and trained with horizontal leaders at bottom 18 inches on each side of the stem. When the shoots have reached this dimension, they are then to be brought up on a perpendicular line so as to reach the top of the wall ; at the same time other shoots will come away between these which ought likewise to be trained to the top of the wall, the distance between the shoots thus trained should be six inches. As these shoots, however progress, they will throw out side ones which should be cut back to half an inch, which will form fruit spurs round each, and will continue

to bear good fruit for a number of years. When it is desired to have this fruit prolonged for any length of time, it should be covered over with nets to prevent them from destruction by the birds.

CHAPTER XI.

THE STRAWBERRY.

THE strawberry is indigenous to Britain, and is in its wild state chiefly found growing in woods, where for most part the soil is light and dry; it is likewise to be found by the way sides in many parts of Scotland, near the hedges and on shrubby banks. But care and cultivation have brought it to such a degree of excellence that no other fruit, the pine excepted, has a finer flavour.

Plants of this description have so wonderfully increased within these last twenty years, that there are now above a hundred different sorts, as the result no doubt, of cross-impregnation of the varieties.

My method of growing the strawberry is as follows:—I select as many of the best runners, or offsets, as early in the season as possible, it being desirable to have them so well established as to be early in a fruit-bearing state. Having got as many young plants as are considered to suit the demand, I then place them in a bed of rich earth, 5 to 6 inches apart from each

other. As soon as they are thus placed, I give them a due supply of water; and should the weather keep dry, I water them occasionally until they become well rooted, when, by the end of August, they are in fine condition to be planted out into their more permanent place of growth.

Before thus planting them out, however, the ground intended for their reception ought to be trenched to the depth of 2 feet, and mixed with a quantity of well made stable dung. The offsets or runners should then be planted in the soil thus prepared, in single rows at the distance of 2 feet, row from row, and one foot apart from each other in the row.

I find that strawberries generally succeed well on ground that has previously been cropped with early beans. If the autumn be dry, they should be copiously watered, so as to encourage them to take root before the frost arrests their growth.

The month of November is a good time to dress the old beds by removing all the runners; while the leaves should on no account to be taken off as is very generally practised. Some persons, for example, mow them clean off with the sycthe, but this is wrong, as it causes a new growth too late in the season for buds to form for the production of next year's crop. Let the plants be thoroughly cleared from weeds, and a portion of well decomposed dung placed between the rows—

they must then be dug with a potato fork instead of a spade, as in this way their roots are less likely to be injured. They will be all the better to have liquid manure applied two or three times to their roots during winter, as this will tend greatly towards the production of a delicious fruit. It must be remembered, however, that the plants should never occupy the the ground more than four years; and that to keep a succession of fine fruit a new plantation should be made every season. By the month of June the plants should be in bloom, when, if this be the case, they will require a supply of water two or three times a week which will tend at once to the setting of the fruit and the advancement of its growth. Before the fruit sets, however, a thin layer of grass or straw should be laid down between the rows to prevent the soft fruit, when it bends down the slender stalk, from being soiled with earthy matter, as no cleansing can remove it. As little handling as possible is best for the strawberry; And when the fruit has commenced to colour, nets should be placed over the beds to prevent depredation by the birds.

CHAPTER XII.

THE RASPBERRY.

THE raspberry is a native of Britain. In a wild state it is chiefly to be found growing in woods where the situation is moist; but it has been considerably improved by cultivation.

Until a recent period only ten or twelve varieties of plants of this description were enumerated in fruit catalogues. Their number, however, has greatly increased, so much so, indeed, that in "Lindley's Guide to the Orchard," p. 178, twenty-two distinct varieties are mentioned, and in the catalogue of the Horticultural Society, twenty-three.

MODE OF PROPAGATION.—A crop should first of all be raised from the seed, that new and better varieties may thus be obtained. They will be in a bearing state in the second season of their growth. In raising a new plantation, the young wood or suckers produced from the old stools ought to be chosen for this purpose, and when thus selected they may safely be planted

out in the early part of March, in a moist and partially shaded border, at the distance of 4 feet each way. Before commencing to plant, however, the ground ought to be properly trenched to the depth of 2 feet; and in the course of the operation a considerable quantity of turfy loam and peat, together with a portion of well-made stable manure, ought to be mixed with the soil. This will be found of good service to the enlargement of fruit in the process of time. While only a slight crop may be expected the first season; by the third year they will be in excellent condition, and continue thus in a bearing state for seven or eight years, at which period another plantation will require to be made.

When the plants have become established, remove in October all the canes that have produced fruit during summer, as this timely removal of the old wood will afford more light and air to those intended for next year's crop. The canes produced in summer will require to be properly tied to the stakes to prevent them from being broken by the wind, as it is from them the fruit of the following season is to be obtained. From five to six of the stoutest and best ripened canes should be chosen for this purpose; and unless required to form a new plantation, everything superfluous ought to be taken away so as to throw all possible nourishment into the proper channel. Early in March their

tops ought to be cut off so that the canes may stand about 4 feet high, and when this is done some well made dung should be spread between the rows, and the ground dug with a three pronged fork instead of a spade, that thus their roots may be the less injured.

With freedom from weeds, and the application of a little liquid manure to their roots occasionally, they will require very little attention otherwise until such time as the fruit is ripe.

CHAPTER XIII.

BUDDING AND GRAFTING.

THE operation of budding consists in taking a bud from the young shoot or plant intended for propagation, detaching the bud with part of the bark, and inserting it into the stem or stock of the same genus, without cutting off the head of the stock. Budding is best performed from the first of July to the end of August, or as soon as the buds are formed on the axillæ of the leaf and bark by which they are attached, parting with the wood.

In performing this operation, the operator must be provided with a proper budding knife with a flat ivory handle, and a little bast moistened in water to be used as bandages to tie round on each side of the eye or bud so as to keep it in its due position. The next thing to be done is to cut from off the finest and most healthy trees as many young shoots as is desired should be propagated.

This done, cut off all the leaves, only retaining about

a quarter of an inch of the foot stalk next to the bud; proceed to take off a bud for insertion by entering the knife into the shoot about half an inch below the eye or bud, cutting half-way into the wood and bringing it out about an inch above the eye with a portion of the wood attached. When this is done, hold the bud between the finger and thumb of the left hand, then with the point of the knife and thumb at the upper end of the bud press the bark down so as to detach the woody part clean off the rind and bud, This being done examine if the internal part of the bud is left, for if this is removed, and a small hole appear in that part, the bud will not be in a suitable state to be inserted into the stock. When this takes place another bud will require to be used; this finished, a transverse incision is made in the back of the stock through the wood, and from this cross-cut another should be made perpendicular. Then take the flat end of the handle and separate the bark of the stock from the wood on each side of the perpendicular slit, then insert the eye or bud into this slit or opening with the left hand, while with the right hand press down the bud into its proper place, and the bark neatly closed in and about; as soon as this is done tie the parts round with the wetted bast, and no more will require to be done until the buds have united with the stock, which will be known by the buds being fresh and plump, which generally takes place in four or five

weeks, when the ligatures may be removed, which, if not done in time the buds would be destroyed and would not have free course to develope. Early in March the head of the stock should be cut down to six or seven inches above the bud which will serve to support the young shoot the first season ; and in the following spring the stock should be cut down close to the top of the bud. As this heading down of the stock gives all the nourishment possible to the inserted buds, which will afterwards push strong, one shoot from each, and will sometimes reach from three to four feet high, be careful to displace all the shoots from the stock below the bud as they appear, allowing no more to remain but the bud shoot. In the following March the shoots will require to be shortened, cutting them to four or five eyes, so as to throw out lateral shoots to form the base of the future tree. They may either be allowed to remain another season in the nursery line or transplanted out to their permanent place of growth.

When the trees are intended to be trained as dwarfs for the wall, the bud will require to be inserted into the stock about six or eight inches from the ground. This is the most proper height to bud *peaches*, *nectarines*, *plums*, *apricots*, and *cherries*. In order to raised dwarf trees to be trained on the fan system, so that they may be brought up from the bottom to the top of the wall with proper bearing wood, and afterwards

pruned and trained, as as is described in another portions of the work.

But those intended for riders, or half-standards, will require to be budded from three, four, or even to six feet high and treated in the same way as for dwarfs.

In "The Scottish Florist," p. 219, contains an interesting paper on this subject by Mr Dugid, Goldenacres. He says :—"It may be useful , however, to give an idea of the general practice in a large establishment where the operation is performed in a commercial point of view, this may be thus briefly described.

We commence early in June with evergreens, such as the varieties of hollies, rhododenrons, &c., taking the the buds from the shoots of the previous year, cutting them neatly out with a sharp knife, and then insert them into the stocks, without removing the small piece of wood attached to the shield, such being necessary with respect to evergreens. Then following in succession the various varieties of deciduous ornamental trees, always giving preference to those varieties which are furthest advanced in their growth, as the buds must be taken from the young shoots ; as a general rule we like to be through with these by the middle of July, as the propagation of fruit trees must then be proceeded with somewhat in the following order :—plums, cherries, and pears, from the middle of July until the middle of August, ; apples, apricots, peaches, and nectarines,

from the middle of August until the second week in September."

The apricot, peach, and nectarine, are always propagated by budding, and the stocks best suited for these are as follows :—For apricots, seedlings of the common wilding (which may be produced from seeds), and the Brussels and muscle plums. For peaches and nectarines, the muscle, the white pear, and the black damask plums. The white pear plum, however, is only suitable for some sorts, such as those with the foliage puckered or crumpled along the centre on each side of the mid rib.

GRAFTING.

THE month of March is considered by many to be the best time for this operation. There are various methods practised, such as whip or tongue grafting, cleft grafting, grafting by approach, or inarching, &c. By far the best and simplest method is whip grafting. The stock intended to be grafted upon should be from half an inch to an inch in diameter, and headed down to within six inches of the ground, more especially to have dwarfs this should be the object in view. The scions should be from six to seven inches long. Before commencing the operation the operator must be provided with a sharp knife and strong matting, and a portion of well wrought clay.

In the first place, cut off the stock in a sloping manner upwards, about an inch in length, afterwards par-

ing a small piece of the base of the scion in a similar manner to the stock, then proceed to make a slit or tongue half an inch in length upwards—a similar cut is made downwards in the stock—for the reception of the scion ; this slit or tongue is to be inserted in the slit of the stock, taking care that the inner bark of the scion will correspond with that of the stock. Having thus adjusted the scion, have it immediately tied with a piece of soft matting, partially damped, taking care to keep the scion or graft in its proper position, and afterwards cover it well up with clay so as to bring it about an inch above the stock in a globular form. See that the clay is quite close, and the air to be thoroughly excluded. To prevent the clay from becoming cracked, have a little moss tied round the top, and give it a gentle watering now and again from a fine rosed watering pot.

CHAPTER XIV.

THE FRUIT ROOM.

A fruit room is a necessary appendage to a garden and too little thought of in its first formation, and there are even some places to be met with; when put up they are so badly constructed that they are in no way calculated for the preservation of the fruit.

In our opinion no garden of any pretension should be without its fruit-room, and other similar conveniences of which we are about to speak:—The internal fittings are got up so cheaply now that no one need be without them. Some are advocates for making the fruit shelves of glass, others recommend opened sparred shelves, and others close boarded ones. Mr Drummond, who is good authority, in page 162 of the "Scottish Florist," says—"Mr M'Oll, gardener, Craigforth, near Stirling, keeps his fruit on shelves of Arbroath pavement—his fruit-room having been at one time used as a milk-house. I have never seen better preserved fruit than his appear at the Stirling Horti-

cultural Exhibitions." I would rather use flag-stones or Welsh slate shelves, which are preferable to wooden shelves, or what may prove better than either, glass shelves supported on cast-iron pillars and bearers. I have had a few panes of glass placed over wooden sparred shelves here this winter, and find that on these the fruit keeps very well. There is a coolness in flag-stones, slate and glass, which is essential to the keeping of fruit in a uniform temperature. Crystal palaces and crystal walls are being got up in many quarters as if by magic; they seem to be the rage and order of the day, and why not crystal shelved fruit rooms? Strong rolled sheet glass, in plates, two feet six inches square, with a flange on one side, two inches in depth, might be fitted on cast-iron bearers, with a bedding of gutta-percha between the iron and the glass. It will be of little consequence whither the glass be transparent or not, if the sheets have one smooth surface, and can be got at a cheap rate; perhaps common bottle glass would be the cheapest. We have had our shelves constructed of stone pavement, and the fruit preserved in a sound state for a considerable time; and those we have at present, which have been under our care for a number of years are made of black birch, which communicates no unpleasant taste to the fruit as pine often does. They are cut into spars four inches broad, with about an inch of an opening between, and properly ventilated.

That they have given every satisfaction in the preservation of the fruit is proved by our having kept apples in a sound state almost from the one period of ripening to the other, with only a thin layer of dry hay upon them.

From the period of storing the fruit until March the temperature may range from 38 to 42 degrees, after that period the temperature of the room may be kept as near to 40 deg. as possible. This can best be regulated by ventilators in the roof, by having the windows constructed so as they can be made to push up or down as may be deemed necessary. The coarser apples should be placed in the lower shelves in larger quantities, the others that are more valuable should be placed so that they may not lie the one upon the other; in winter a little soft hay should be placed over them to prevent them from dust, as well as to assist in excluding frost. Each sort should be kept separate and properly labelled. They will require to be examined now and again, so that any of those showing symptoms of decay may be removed so as to prevent the others from being contaminated.

The gathering of fruit is an important part of the garden occupation during the months of September and October; a dry day should be chosen for this purpose, and the fruit fully ripe. When the seeds are of a brownish colour it is a good test; or, if the fruit is

pressed backward on the foot stalk, it will come easily off when ripe ; but on the other hand, if they are found to adhere, it will be better to delay, for when the fruit is gathered before it becomes thoroughly ripe it soon shrivels, and will in a great measure be lost. The pulling or gathering of every sort of fruit ought to be performed with the hand, and it should be carefully laid into the basket to prevent it from becoming bruised. This practice is too little attended to, especially as regards the pulling of standard fruits, which are very often driven down upon the hard ground, and the bruised fruit, when laid past, decays itself, and contaminates the others in the fruit-room.

A select list, containing a description of the best fruit in cultivation, which can be obtained from any respectable nurseryman, either in England or Scotland.

APPLES.

Name.	Use.	Season.	Description.
Alfreston.	K.	Mar.	Very large and keeps well.
Blenheim Pippin.	K.T.	Nov.	Tree of vigorous growth.
Court of Wick	T.	Oct.	An abundant bearer, good.
Codlin Keswick.	K.	Sept.	An excellent kitn. variety.
Claygate Pearmain.	T.	Nov.	Great bearer and first-rate fruit.
Downtin Pippin.	T.	Dec.	Fruit small but good.
Eve.	T.	Oct.	Fruit small and pretty
Early Strawberry.	T.	July.	An excellent dessert fruit.
Emperor Alexander.	K.	Oct.	Fruit large and good.
Golden Drop (coes).	T.	Mar.	Fruit delicious, good bearer.
Gravenstein.	K.T.	Nov.	Fruit large, a valuable apple.
Hawthornden	K.	Sept.	Fruit large, abundant bearer.
Kerry Pippin.	T.	Sept.	Fruit medium, very prolific.
King of the Pippin.	K.T.	Nov.	A good bearer, and handsome.
Nonsuch.	K,T.	Oct.	Fruit medium.
Nelson's Glory.	K.	Dec.	Fruit large, pale yellow extra.
Oslin.	T.	Aug.	One of the best summer apples.

Peach Apple (Irish).	T.	Aug.	Excellent summer dessert apple.
Pearmain (Adams).	T.	Jan.	Fruit handsome and good.
Ribston Pippin.	T.	Dec.	Best of all English dessert apples.
Suffield Lord	T.	July & Sept.	The earliest kitchen apple.
Sturmer Pippin.	T.	June.	One of the best late apples.
Summer Thorl	T.		Excellent autumn dessert apple.
Tower of Glammis.	K.		Very large kitchen apple.

Those marked T. should be used in the dessert; K. such are employed only for culinary purposes. The insertion of the months signifies when the fruit is ripe or in perfection.

APRICOTS.

NAME.	SEASON.	DESCRIPTION.
Early Peach.	Aug.	Early, large, and excellent
Large Early.	Aug.	Fruit above the medium size.
Moor Park.	Sept.	Fruit one of the best.
New Royal.	Aug.	Excellent, fruit large.
Roman.	Aug.	Fruit above the medium.
Turkey.	Aug.	Medium, nearly round.

CHERRIES.

NAME,	USE.	SEASON.	DESCRIPTION.
Adam's Crown.	T.	July.	Fruit medium size first-rate.
Belle de Choisy.	T.	July.	Fruit large and round.
Belle de Orleans.	T.	July.	One of the earliest and best.
Bigarrean.	T.	Sept.	The latest and best
Black Eagle.	T.	July.	Succeeds best on a wall.
Downton.	T.	July.	Large and rich flavoured.
Early Purple Griotte.	T.	July.	A valuable early cherry.
Elton.	T.	July.	The richest of all cherries.
Florence.	T.	Aug.	Fruit large, very juicy and rich.

Knight's Early Black.	T. July.	Fruit early and large.
Kentish.	K. Aug.	Excellent for kitn. purposes.
Late Duke.	T. Sept.	Will hang to the end of Sept.
May Duke	T. July.	A well known early cherry.
Royal Duke.	T. Aug.	Succeeds the May Duke.
Morella.	K. Sept.	Best grown on north walls.
Warders Black Hart.	T. July.	A valuable early cherry.

CURRANTS.

NAME.	DESCRIPTION.
Black Naples ...	Is a great bearer and hardy.
Red Grape. ...	Long bunches ; very acid.
Red Knight's Sweet	Sweeter than the preceding.
White Dutch. ...	The Dutch and white grapes are the best of the white.
White Grape.	

SELECT GOOSEBERRIES.

NAMES.	NAMES.
Champagne, red.	Green Gage, high flavoured.
Champagne, yellow.	Ironmonger.
Coes, late red.	Kean's Seedling, good bearer.
Early Green, hairy.	Old rough red ; best for preserving,
Early Red, Wilmonts.	Terry's late red.
Golden Drop, early.	Warrington red.

I. RED GOOSEBERRIES.

Crown Bob.	Prince Regent.
Farmer's Glory.	Roaring Lion.
Lancashire Red.	Top Sawyer.

II. WHITE.

Chesshire Lass.	Wellington's Glory.
Crystal.	Whitesmith.
Early White.	White Eagle.

III. GREEN.

Early Green, hairy.	Green Ocean.
Glinton Green.	Jolly Angler.
Green Mountain.	Pitmaster Green Gage.

IV. YELLOW.

Bunker's Hill.	Smiling Beauty.
Early Sulpher.	Smooth Yellow.
Rockwood.	Two-to-one, Whittaker's.

GRAPES.

Name.	Colour.	Form.	Sit.	Description.
Black Prince.	Black.	Roundish.	V.	An excellent bearer.
Black Alicante.	Black.	Oval.	V.	Berries large and fine.
Cambridge B. Garden.	Black.	Oval.	V.	A magnificent grape.
Cannon Hall Muscat.	Yellow.	Oval.	H.	Excellent.
Fosters White Seedling.	White.	Roundish.	V.	Berries large and early.
Frontignan Grisly.	Red.	Round.	V.	Flavour excellent.
Frontignan White.	White.	Round.	V.	By many esteemed the best in cultivation.
Hamburg Black.	Black.	Round.	V.	Berries large, one of the best.
Lady Downe's Seedling.	Black.	Round.	V.	Late keeping berry, good bearer.
Madresfield Court.	Black.	Oval.	V.	Late keeper, muscat flavour.
Mrs Pince B. Muscat.	Black.	Oval.	V.	Very late keeping grape.
Muscadine Royal.	White.	Round.	V.	Bunches large and excellent.
Muscat of Alexandria.	White.	Oval.	H.	Excellent hot-house grape.
Saint Peter.	Black.	Round.	V.	Bunches long, and loose.
W. Lady Downe's.	White.	Oval.	V.	Very fine late white.

NECTARINES.

Name.	Tex.	Sea.	Description.
Downton.	M.	Aug.	Flowers small, flesh white.
Fairchild's Early.	M.	Aug.	Flowers large, flesh yellow.
Newington:	C.	Sept.	Good bearer, much esteemed
Pitmaston Orange.	C.	Aug.	Flowers large, and also fruit
Violette Hative.	C.	Aug.	Very rich and juicy.

PEACHES.

Name.	Tex.	Sea.	Description.
Barrington.	M.	Sept.	Tree vigorous and good bearer.
Bellegard,	M.	Sept.	An excellent peach:
Malta.	M.	Sept,	Hardy, fruit keeps well.
Mignonne Grosse,	M.	Sept.	One of the best in cultivation.
Noblesse.	M.	Aug.	Flowers large, tree hardy.
Royal George.	M.	Sept.	Fruit large and one of the best,
Stirling Castle.	M.	Sept.	Fruit large and round.
Walburton L. Admirable.	M.	Sept.	Fruit large and very late.

PLUMS.

Name	Use.	Sea.	Colour.	Description.
Coe's Golden Drop,	T.	Sept.	Y.	Fruit large and oval,
Coe's Late Red.	T.	Oct.	P.	A very late plum.
Imperatrice.	T.	Oct.	P.	Requires a wall.
Jefferson's	T.	Sept.	Y.	One of the largest, and finest plums known.
Kirke's Blue.	T.	Sept.	P.	Excellent.
Mag. Bonum.	K.	Sept.	Y.W.	Profitable as a standard
Green Gage.	T.	Aug.	G,	One of the best.
Mimm's.	K.	Sept.	P.	Large and handsome.
Nectarine.	K.T.	Aug.	P.	Fruit large and good bearer.
Orleans..	K.	Aug.	P.	Fruit medium.
Peach.	T.	Aug.	R.	Large and good.

Purple Favourite.	T.	Aug.	R: A delicious plum:
Victoria.	K.	Sept.	R. O. A first-rate culinary plum.

PEARS,

NAME.	SEASON.	REMARKS.
Brown Beurre.	Oct.	Requires a wall, good bearer.
Beurre Rance.	Mar.	A most excellent pear.
Beurre Dial.	Dec.	One of the largest of pears.
Beurred Arembey.	Dec.	Forms a prolific pyramid.
Citron des Carmine.	Aug.	Fruit medium, excellent.
Dunmore.	Sept.	A very hardy variety.
Flemish Beauty.	Oct.	Fruit large.
Glout Morceau.	Dec.	An excellent melting pear.
Hacon's Incomparable.	Dec.	Hardy pear, slow in bearing.
Jargonelle.	Aug.	A well known variety.
Louise Bonne of Jersey,	Oct.	An excellent variety.
Maria Louise.	Nov.	One of the highest excellence:
Napoleon.	Nov.	A well known melting pear.
Passe Colmar.	Dec.	Worthy of cultivation.
Thompson's.	Nov.	A delicious melting pear.
W Bon Chretian.	Sept.	An abundant bearer.
Uvedale's St German.	May.	Grows large, from two to three pounds; K pear.

PINES.

NAME.	COLOUR.	FORM.	REMARKS.
Black Antiqua.	Pale Yellow.	Oval.	Weighs from 4 to 5 pounds:
Lemon Queen.	Pale Yellow.	Oval.	From 4 to 5 pounds
The Queen.	Yellow.	Cylindrical.	3 to 4 pounds.
Black Jamaica.	Yellow.	Pyramidel.	3 to 4 pounds,
Enville	Orange	Oval	4 to 6 pounds
Globe.	Yellow.	Globular.	3 to 5 pounds
Ripley.	Reddish Brown.	Oval.	Flavour excellent.

RASPBERRIES.

Name.	Remarks.
Antwerp, red.	Excellent.
Antwerp, yellow.	
Fastolff.	A great bearer, fruit large.
Double Bearing, white.	Bears in autumn.

STRAWBERRIES.

Name.	Remarks.
Black Prince.	Very early, and first quality.
Eclipse .	Having a rich and aromatic flavour.
Elton Pine.	Fruit large and late.
Filbert Pine.	Fruit above the middle size, very rich.
Keen's Seedling	Fruit large, exceedingly juicy.
Oscar.	Fruit an immense size, and rich.
Sir Joseph Paxton.	Fruit large, flavour excellent.
Dumbarton Castle.	Fruit large, very juicy and rich.
Wizard of the North.	Fruit large, late and excellent
Wonderful.	Fruit large, a well flavoured fruit

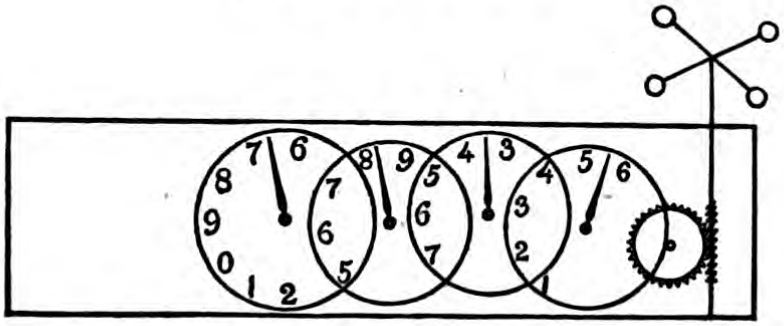
APPENDIX.

Meteorological Instrument &c.,

ANEMOMETER.

The reader will not require to set the wheels to any particular figure. You read the indications exactly as you should read a gas metre before the instrument is set up, or when you begin your observations. When you next observe read in the same way—the difference of the numbers are the number of revolutions made in the intervals, these divided by 500 or multiplied by 2 and divided by 1000 give the number of miles of wind passed over the instrument between the times of observations. In reading it, begin with the wheel to the right, or next the cups.

ANEMOMETER



You will see that the hand is either exactly over a figure or between two figures. In reading set down always the smallest of the two figures between which the points are. Thus suppose the wheels to read in the

above figure, you would enter for 1st wheel 5

2nd „ 3

3rd „ 8

4th „ 6

which, placed in line, will read 6835 and as the figures on the first wheel indicates tens the reading extended is 68,350.

Suppose on the following morning the reading to be

68,350

43,850

24,500 revolutions,

or 24,500 revolutions have been made, multiplying and dividing.

24,500 multiplyed by 2, brings 49,000, then divide 49,000 by 1000, brings 49 miles.

Meteorological Observations, taken at Kilmahew, Cardross, Dumbarton.

1870.	Revolutions of the Anemometer Cups	Miles per Month.	Miles per 24 Hours.	Miles per Hour.	Rain in Inches.	Rainy Days.	Tons of Rain on each acre of surface.	Highest Tem. in shade.	Lowest Tem. in shade.	Mean Tem.	Hours Sunshine.
Jan.	1249980	2493	80·13	3·8	5·50	13	550	45·0	26·0	35·1	24
Feb.	1525950	3048	108.0	4·12	5·30	11	530	50.0	20·0	35·0	47
Mar.	1221590	2432	78·14	3·6	0·80	6	80	58·0	24·0	41·0	99
April.	1120010	2187	72·27	3·0	1·60	10	160	71·0	31·5	51·5	135
May.	1408320	2803	90·13	3.18	4·10	11	410	74·5	29·0	51·5	115
June.	747620	1482	49·12	2·1	1·65	8	165	78·0	44·0	61·0	136
July.	797640	1578	50·28	2·2	2·25	7	225	86·0	42·0	64·0	150
Aug.	1145620	2276	73·13	3·1	1·65	6	165	82·2	39·0	60·1	195
Sept.	1021810	2020	67·0	2·19	4·05	8	405	70·0	37·0	53·1	114
Oct.	1013440	2088	67·11	2·19	6·30	18	630	67·0	35·0	51·0	77
Nov.	800940	1588	52·28	2·12	2·10	7	210	55·0	26·0	40·0	53
Dec.	1311260	2613	84·9	2·12	3·50	8	350	51·0	12·0	31.1	39
Total.	13,374,180	26,608	—	—	33·80	113	3·880	—	—	—	1183

For every inch of rain that falls in rain gauge is 100 tons of rain on one acre of surface—gauge 3 inches diameter.

Meteorological Observations, taken at Kilmahew, Cardross, Dumbarton.

1871	Revolutions of the Anemometer Cups	Miles per Month.	Miles per 24 Hours	Miles per Hour.	Rain in Inches.	Rainy Days.	Tons of rain on each acre of surface.	Highest Temp. in shade.	Lowest Tem. in shade.	Mean Temp.	Hours Sunshine.
Jan.	1463600	2913	93·30	3·21	4·10	13	410	49·0	24·0	36·1	25½
Feb.	1444940	2874	102·18	4·6	6·25	19	620	55·0	27·0	41·0	24
Mar.	1316970	2575	83·2	3.11	4·70	13	470	64·5	21·0	42·1	84½
April.	1071120	2317	77·0	3·5	5·25	12	525	63·0	31·0	47·0	86½
May.	698990	1388	44·24	1·20	1·20	7	120	77·0	26·0	51·1	192½
June.	953520	1898	63·8	2·15	2·90	11	290	71·0	39·0	55·0	109½
July·	507640	1005	32·3	1·8	3·80	19	380	71·5	44·0	57·1	87
Aug.	752880	1515·4	48·27	2·0	3·80	10	380	76·0	43·0	59·1	146½
Sept.	1070860	2133·2	71·13	2·23	2·40	10	240	71·0	32·0	51·1	102½
Oct.	975390	1674·23	54·0	2·6	4·90	16	490	59·0	30·0	44·1	57
Nov.	1305420	2601·16	86·21	2·13	3·40	8	340	53·0	24·0	38·1	55½
Dec.	1189520	2349	75·24	3·3	6·15	20	615	54·0	24·0	39·0	29½
Total.	12,750,850	25·243·21	—	—	48·80	158	4·880	—	—	—	1000½

For every inch of rain that falls in rain gauge is a 100 tons of rain on one acre of surface—gauge 3 inches diameter.

REGISTER OF RAINFALL IN 1870.

Kept at Kilmahew Castle, Cardross, Dumbarton, by John Fleming.

Latitude, 55·57 ; Longitude, 4 W. 39 ; Time of Observation, 9 a.m. ; Height of Receiver of Rain Guage, above ground, 3 inches ; above sea level, 100 feet.

Date.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	·35	·50	-	·10	-	-	-	-	·95	-	-	
2	·05	·10	-	-	-	-	-	-	·05	-	-	-
3	·65	-	-	-	-	·40	·60	-	·05	-	-	-
4	·35	·50	-	-	-	-	-	·95	-	-	-	-
5	...	-	-	-	-	-	·20	-	-	-	-	-
6	·65	·95	-	-	-	-	-	-	1·45	-	-	-
7	1·15	·05	-	-	-	-	·40	-	-	·10	-	-
8	·15	-	-	·10	-	-	·30	-	-	-	-	·40
9	-	-	-	-	-	-	-	-	·90	-	-	·20
10	-	-	-	·20	-	·05	-	-	-	-	-	-
11	·40	-	-	-	·85	·10	-	-	-	-	-	-
12	-	-	-	·10	·25	·45	-	-	·40	·90	-	·30
13	·75	-	-	-	·30	-	-	-	·20	·30	·30	-
14	·25	-	·15	-	·60	-	-	-	-	-	·30	1·10
15	-	-	·25	-	-	·05	·50	-	-	·55	-	-
16	·25	-	·10	-		-	-	-	·05	·20	-	-
17	·15	-	·05	-	·20	-	-	-	-	·05	-	·80
18	-	-	-	-	-	-	-	·05	-	·85	-	·40
19	-	-	-	-	·65	·35	-	-	-	·55	·40	-
20	-	-	-	·10	·10	-	·50	-	-	-	·45	-
21	-	-	·15	-	·05	-	·05	-	-	·20	·30	·10
22	-	·10	-	·30	-	-	-	·10	-	·70		-
23	-	·20	-	·50	·05	·05	-	-	-	·15	·05	-
24	-	-	-	·05	-	-	-	·05	-	·45	·30	·20
25	-	·50	-	·05	-	-	-	-	-	·20	-	-
26	-	·80	-	-	-	·20	-	-	-	·30	-	-
27	-	1·10	-	-	-	-	-	·15	-	·35	-	-
28	-	·50	-	-	-	-	-	-	-	·10	-	-
29	-	-	-	-	-	-	-	-	-	·25	-	-
30	-	-	·10	·10	·55	-	-	-	-	·10	-	-
31	·35	-	-	-	·50	-	-	·35	-	-	-	-
Tt.	5·50	5·30	0·80	1·60	4·10	1·65	2·25	1·65	4·05	6·30	2·10	3·50

REGISTER OF RAINFALL IN 1871.

Kept at Kilmahew Castle, Cardross, Dumbarton, by John Fleming.

Latitude, 55·57; Longitude, 4 W. 39; Time of Observation, 9 a.m.; Height of Receiver of Rain Guage, above ground, 3 inches; above sea level, 100 feet.

Date.	Jan.	Feb.	Mar.	April	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	·90	...	·01	...	...	...	·40	·45	...	·10	...	...
2	...	...	·35	·20	...	...	...	·20	...	·10	...	...
3	...	·90	...	...	·65	·20	...	·25	...	...	...	...
4	·40	·90	...	...	·05	...	·10	...	·20	·10	...	...
5	·30	·50	...	...	·15	...	·05	·20	...	1·40	...	...
6	·65	·30	·30	...	...	...	·20	...	·25	·20	...	...
7	·40	·70	·20	...	...	...	·20	...	...	...	·60	...
8	·15	·15	·20	...	...	...	...	...	·35	...	...	·20
9	...	·30	·95	...	...	...	·15	...	·15	...	...	...
10	...	·05	·20	...	...	...	...	...	...	...	...	·10
11	...	·50	1·00	·65	·05	...	...	...	...	...	...	...
12	...	·90	·40	...	...	...	·10	...	...	...	...	·10
13	·20	·10	·15	.35	...	.05	·25	...	...	·10	·40	1·25
14	·55	·05	·10	·85	...	...	·15	...	...	·30	·50	·15
15	·15	...	·65	·15	...	·90	·25	...	...	...	...	·05
16	·10	...	...	...	...	·05	...	...	...	·20	...	·25
17	·15	·05	...	...	·10	...	...	...	...	...	...	1·20
18	...	·40	...	1·15	...	...	·45	·60	...	·50	...	·30
19	·10	·20	...	·10	·05	·10	·15	.30	·45	...	·45	·15
20	...	·05	...	...	...	·55	...	1·00	·30	...	·25	·05
21	...	...	·10	...	...	...	·15	...	...	·30	·80	·05
22	...	...	...	...	...	...	...	·05	·10	...	·20	·15
23	...	·10	...	·60	...	...	...	·15	·10	·05	...	·15
24	...	·05	...	...	...	·10	·10	·45	...	...	·20	·35
25	...	...	...	·35	·15	·05	·15	·45	...	·15	...	...
26	·05	·05	...	.80	...	...	·05	...	...	...	...	·40
27	...	...	...	·05	...	...	...	...	...	·20	...	·35
28	...	...	...	...	...	·55	·20	...	...	·80	...	·05
39	...	...	...	...	...	·15	·40	...	·05	·20	...	·65
30	...	...	...	·05	...	·15	·30	...	.45	·20	...	·20
31	...	...	..	...	...	...	...	...	...	...	...	...
Tt.	4·10	6·25	4·70	5·25	1·20	2·90	3·80	3·80	·240	4·90	3·40	6·15

P. S.—In considering the rapid strides which all branches of science have been making in modern days, it is gratifying to the lover of flowers and gardening in general, that horticulture and floriculture, if not in the very foremost rank, have yet kept a most respectable position in the advancing band.

Societies for mutual improvement, and such as produce wholesome rivalry in the gardener's craft, have been formed in every district. Periodicals of sterling worth have appeared, devoted solely to this subject, and the present class of gardeners are, in general intelligence, as well as in knowledge of their own profession, much superior to those of bygone times. I have often wondered why gardeners as a class of men were so remiss in not having the Saturday afternoons to themselves as almost all other tradesmen have.

I think that if they would but lay the case quietly before their employers, I am quite certain they would be successful in their wishes. I, and the men under my charge, have had the Saturday afternoons for the last six years.

Mr Burns, who is ever foremost in everthing that is likely to benefit his fellow creatures, has taken the lead in this, and I have no doubt but that his example will be very soon followed by all and sundry employing useful hands.

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