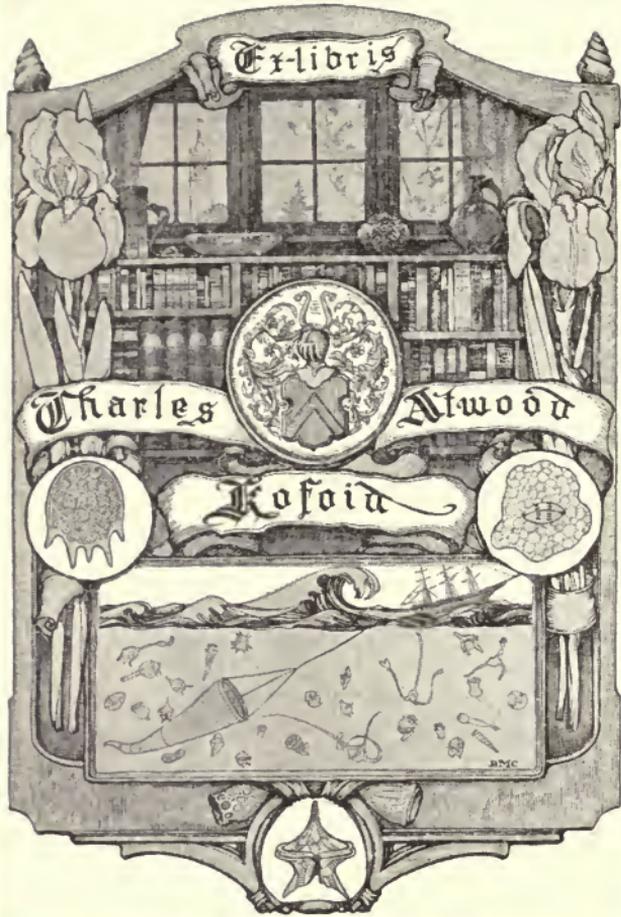


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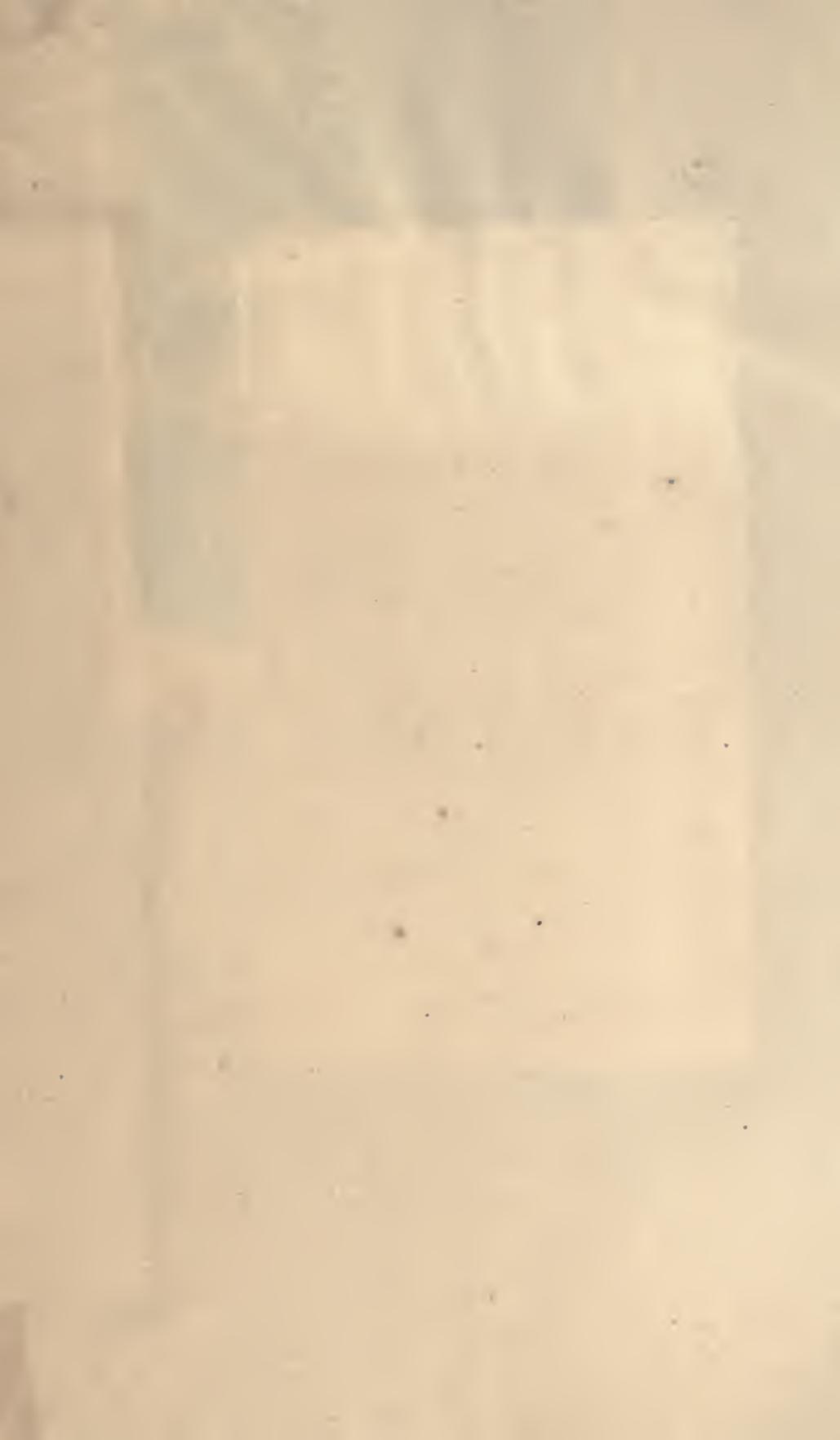
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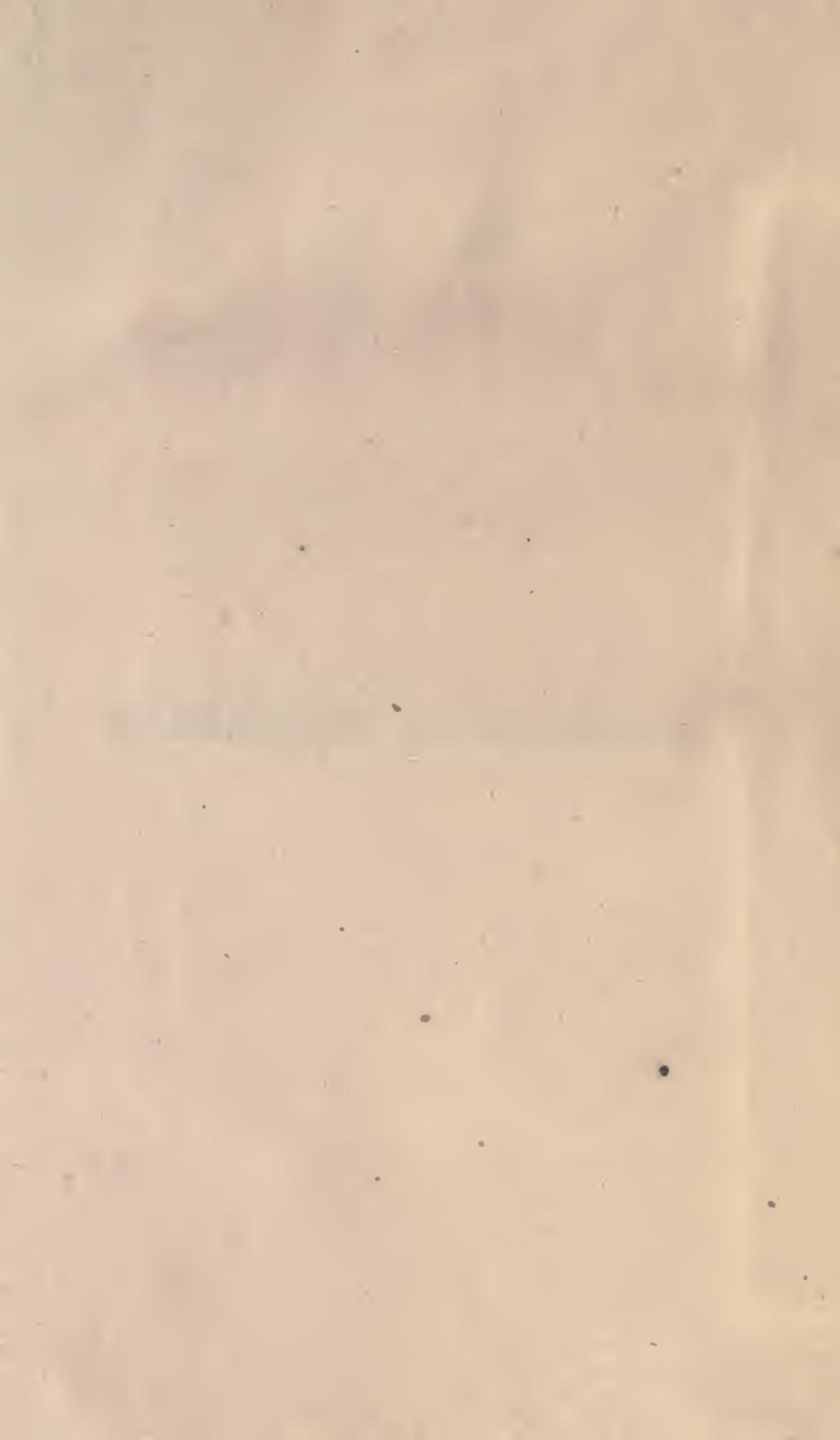
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THE

GARDENER'S KALENDAR.

GARDNER & GREENE

NEW YORK

GARDNER & GREENE

THE
GARDENER'S KALENDAR;

OR,

MONTHLY DIRECTORY

OF OPERATIONS IN EVERY BRANCH

OF

HORTICULTURE.

BY

WALTER NICOL,

DESIGNER OF GARDENS, HOT-HOUSES, &c.

AUTHOR OF *THE PLANTER'S KALENDAR—THE VILLA GARDEN DIRECTORY, &c.*
AND SECRETARY TO THE CALEDONIAN HORTICULTURAL SOCIETY.

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1812.

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LECTURE NOTES

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1812

PREFATORY VIEW

OF THE

WORK.

A KALENDAR, as being a Book of Reference, is allowed to be the most useful form in which to publish a system of Gardening; considered either with regard to the usual divisions of work, or of time. The history or culture of plants, no doubt, may be as concisely and completely detailed, taken individually, by a Catalogue, or a Dictionary: but the Kalendar has this particular advantage over every other book, that it exhibits, at a glance, the business or duty of the Gardener at every moment.

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The usual manner in which Kalendars have hitherto been drawn upon, is deviated from in this Work. The various branches of gardening, in all that have as yet appeared, are not separated, but carried, together, through the whole month and year; nor have I observed, in any of them, such a thing as an alphabetical arrangement of the plants treated of, in any department of the garden; or that in any department (as for instance, the Kitchen Garden), the different articles have been classed; which, of course, occasions considerable perplexity.

In order to obviate these defects, and to simplify the book, I have divided it into distinct *Gardens*; in each of which the articles are classed, and alphabetically arranged, at least as far as the nature of the thing will admit. To each of these Gardens, too, are prefixed an Introduction, and preliminary sections on various important subjects, immediately connected with them; which, it is presumed, will have the effect of rendering the work still more clear and distinct.

The *Culinary Garden*, as being the most important branch, takes preference of the others. The *Kalendar*, in this division, is preceded by a dissertation on Situations for Kitchen Gardens; on Soils, and the various methods of improving them; on Manures, and their application; and on the Rotation of Crops. These important matters I endeavour to discuss in a short and perspicuous manner; and in the *Kalendar*, to exhibit the newest and most approved methods of cultivating and bringing to early perfection, all kinds of Culinary Vegetables, Sallads, and Herbs; and of storing and preserving them for winter use.

In the *Fruit Garden*, the *Kalendar* is preceded by observations on the construction of Garden-Walls; the formation and Improvement of Fruit-borders; on Situations and Soils for Orchards; the proper kinds, with descriptions, of Fruits for Walls, Espaliers, and Orchards, and the aspects in which they should be planted; and on the proper kinds,

arrangement, and manner of planting Small Fruits. It then sets forth the methods of Planting, Pruning, Training, and otherwise cultivating, all kinds of Wall, Espalier, and Orchard Fruits; Currants, Gooseberries, Raspberries, and Strawberries; with effectual methods of destroying the various insects that infest fruit-trees and bushes; the renovating of stunted or worn out wall and orchard trees; and with the manner of thinning, gathering, and storing all kinds of fruits.

To the *Forcing Garden*, the reader is introduced by observations on the rapid extension of that elegant department, in every part of the country; on the Construction of Hot-Houses, and on Soils for various fruits generally cultivated in them; with lists and descriptions of the different kinds of fruits cultivated in Hot-houses, Flued-Pits, and Hot-beds. The Kalendar then exhibits the management of all kinds of Hot-houses, Flued-walls, Pits, and Hot-beds; in the forcing of Apricots, Cherries, Figs; Grapes, Nectarines,

Peaches; Pine-Apples, and Strawberries; Asparagus, Cucumbers, Melons, &c.: setting forth, as it is presumed, methods of culture both simple and easy, (divested of the bustle and intricacy assumed in many works on forcing); and tending to inculcate, throughout, a love for the science, and application, in the young gardener.

The *Pleasure Garden* is opened with observations on the Formation of Shrubberies and Parterres; the laying out of Walks, and the arrangement of Shrubs and Flowers.—And in the Kalendar is set forth the methods of planting, training, and cultivating all kinds of Deciduous and Evergreen Shrubs; of sowing and planting Annual, Perennial, Herbaceous, and Bulbous Flowers: the forming and keeping of Grass-plats, Lawns, Verges, Walks, &c.

Lastly, and as an appendage to the *Pleasure Garden*, the *Green-House* and *Conservatory* are introduced; with observations on their proper situations and construction. The

planting, training, and general culture of plants in the Conservatory and Green-House, and the management of these compartments throughout the year, complete this volume of the Kalendar.

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Notes on the Green House

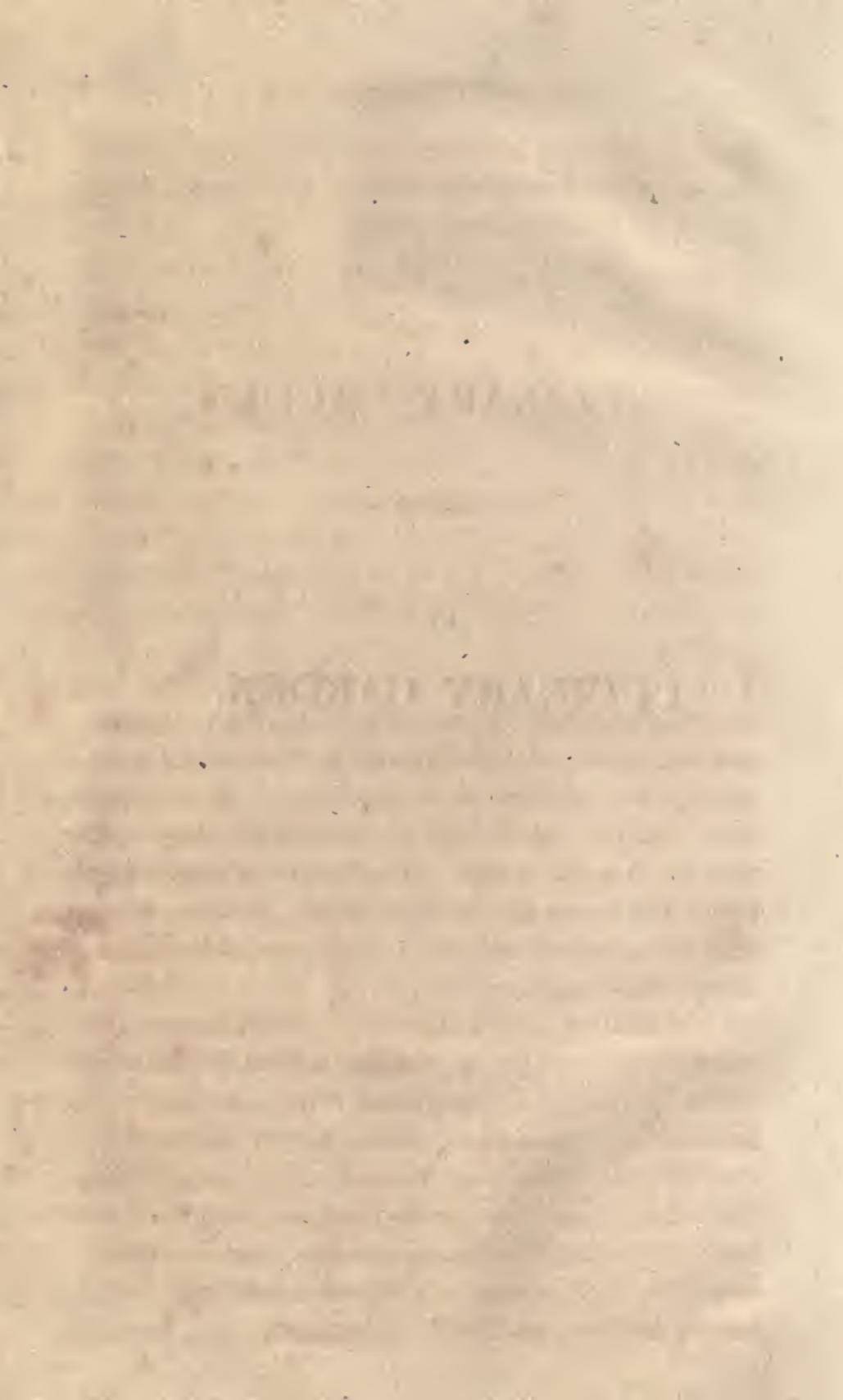
The Green House

Notes on the Green House

The Green House

THE
CULINARY GARDEN.

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THE
CULINARY GARDEN.

INTRODUCTION.

THE cultivation of culinary vegetables is certainly the most important branch of gardening. It occupies the attention of a large proportion of the community, of the fruits of whose labours all daily partake. To the palace, and to the humble shepherd's cot, the kitchen-garden is a necessary appendage. Every city is surrounded by culinary gardens, whose productions are matter of very considerable interest to the inhabitants.

In beholding a well cultivated garden, every one is capable of feeling a certain degree of pleasure. Those indifferent feel satisfied, without perhaps perceiving the reason why. The lover of horticulture is delighted, be the work his own, or that of another. The advantages to the proprietor are great: if it be a public garden, to the community they are considerable. The labours of the industrious man yield peace; of the scientifically industrious man, wealth.

But the garden of the sluggard is a reproach to him, and to the public a certain loss. It behoves us, therefore, to be at all due pains in the cultivation of the earth, and to cherish its products; well knowing, that the more we do for the soil, the more grateful will it be in return, and yield us fruits in abundance.

A knowledge of the quality of soils; how to improve them; the value, effect, and proper application of manures; is the basis of every horticultural improvement: and an acquaintance with the nature of the different plants to be cultivated; their duration; manner of growth, and the soils they most affect, is necessary to him who would excel in gardening.

Hence the necessity of close application and study, and of keen observation in the young gardener. Nothing should escape him; he should mark every occurrence. His situation is different from that of the mechanic, the operations of whose business revolve daily or weekly, who has frequent opportunities to correct mistakes. The operations in gardening revolve more seldom; many of them but once a-year. They are all liable to accidents; to be affected by the changes in the weather, and are subject to the depredations of insect enemies.

The efforts of those most skilful and attentive in the cultivation of the delicate kinds of vegetables, are frequently baffled; more particularly in cases where the soil is not congenial for the purpose. It requires, therefore, no ordinary degree of patience and industry, in bad seasons, to bear up and make head

against the casualties of a climate so changeable, in which we often experience spring in mid-winter, and the effects of winter at mid-summer*.

In order to remedy, then, as much as lies in our power, these disadvantages, let us endeavour to improve the climate, by the high cultivation of the soil. To drain it of superabundant water, should be the first object of the improver; by which noxious vapours may be expelled, and the air may be rendered more pure. To drain it of latent water, is necessary to the production of wholesome vegetables; for in a soil surcharged with moisture, neither fruits nor kitchen esculents will thrive, but languish.

Next to draining, effectual digging and trenching, aërating and incorporating the soil, according to its quality, and the purposes for which it may be intended, demand our particular attention. By periodical and judicious trenching, subtrenching, and digging; by the discreet application of fit manures; and by a proper rotation of crops, the soil of the garden may be preserved fresh and sound for a long series of years, so as to be capable of producing wholesome and plentiful crops of vegetables.

In the following Sections, I shall endeavour to set forth these matters in a clear point of view; and in the Kalendar, I shall endeavour to exhibit, in a

* In 1802, June 3, the snow fell, and lay till mid-day on the Lomonds in Fife. The same year new-fallen snow lay till two P. M. on the south sides of the hills to the west of Inverness, on the 20th July.

plain and simple manner, methods of cultivating the various culinary vegetables at present in ordinary use, that may instruct the novice, and, perhaps, may assist the adept in gardening.

SECT. I.

ON SITUATIONS FIT FOR KITCHEN-GARDENS.

IN a great place, the kitchen-garden, considered merely as such, should be so situated as to be convenient, and, at the same time, be concealed from the house. It should be sheltered by plantations, but should by no means be shaded, or be crowded by them. If walled round, it should be open and free on all sides, or at least to the south, east, and west, that the walls may be clothed with fruit trees on both sides. Round these walls should be a slip of ground and an outer fence, capable of keeping off cattle, and of excluding hares. This slip of ground should be at least twenty feet broad, in order to afford a sufficient border for the trees, and a walk; but it may be as much more in breadth as may be necessary to give ground, with that inclosed by walls, for the supply of the family; and it may be enlarged on all sides, or on any particular side, for that purpose.

The exposure should be towards the south, and the aspect at some point between south-east and

south-west ; the ground sloping to these points in an easy manner. If quite flat, it seldom can be laid sufficiently dry ; and if very steep, it is worked under many disadvantages. It may have a fall, however, of a foot in twenty, without being very inconvenient ; but a fall of a foot in thirty is most desirable, by which the ground is sufficiently elevated, yet not too much so. If there be no natural stream that can be conducted through it, water should be conveyed from the nearest river, lake, or pond ; soft water being most desirable for the use of the garden.

Under other circumstances than the above-mentioned, and even in places of considerable extent, the Kitchen-Garden is often combined with the Shrubby or Pleasure-Garden, and also placed nearer to the house. There can be no impropriety in this, provided it be kept in good order, and that the walls be screened by shrubbery from the immediate view of the public rooms. Indeed, it has been found, that there is both comfort and economy in having the various gardens of a place combined, and placed at no great distance from the house. In stepping from the parlour to the shrubby or flower-garden, thence to the orchard, and, lastly, to the culinary garden, there is a gradation both natural and pleasant. With such an arrangement, in cases where the aspect of the ground is answerable, and the surface, perhaps, is considerably varied, few faults will be found.

Sometimes we find the kitchen-garden placed immediately in front of the house, which I consider

the most awkward situation of any; especially if placed near, and so that it cannot be properly screened by some sort of plantation. Generally speaking, the kitchen-garden should be placed in the rear, or on the flank of the house, by which the lawn may not be broken, and rendered unshapely where it is required to be most complete. The necessary traffic with this garden, if placed in front, is always offensive.

Descending to the consideration of more humble gardens, circumstances are often so arbitrary with respect to their situations, as that they cannot be placed either so as to please, or give satisfaction by their products. These are cases where the kitchen-garden is necessarily thrust into a corner, and perhaps is shaded by buildings, or by tall trees, from the sun and air; where they are placed on steep hangs, in a northern aspect; and in all cases where the subsoil is a till or a cankering gravel, and the site cold and bleak.

Such situations as these are to be avoided, and should be considered among the worst possible. Next are open, unsheltered plains. But even there, if the soil be tolerably good, and the subsoil be not particularly bad, shelter may be reared, so as that in a few years the garden may produce a return for the expence laid out in its improvement.

With respect to the situation of market-gardens, those in the vicinity of great towns must have more regard to soil and to local conveniencies, than those at a distance need to have, who can choose, perhaps, a free situation, and a better aspect; such

as we find many of the village-gardens, lying on sloping banks, by the sides of streams, that water and render them both pleasant and productive. He who is to pay a high rent should consider well before putting down and improving a garden, whether the situation be eligible, the distance from town convenient, and such as to enable him to carry his goods to market on a footing with his neighbours.

SECT. II.

ON SOILS, AND HOW TO IMPROVE THEM.

IT is a happy circumstance, that in many instances we meet with different soils in the same acre. In the same garden they should never be wanting; and where nature (or natural causes) has been deficient, recourse must be had to art, in as much as the variety of fruits and vegetables to be cultivated, require different soils to produce them in perfection.

It would be absurd, however, to imagine, that for every particular vegetable there is to be a particular soil prepared. The varieties of soil in any garden may, with propriety, be confined to the following: Strong clayey loam; light sandy loam, (which are the two grand objects); a composition of one-fourth strong, with three-fourths light loam; half strong and half light; and one-fourth light, and three-fourths strong. These, by a proper treatment, and

with the proper application of manures, may be rendered productive of any of the known and commonly cultivated vegetables, in the highest degree of perfection.

But, in order to improve a soil, we must be guided much by its nature, so as, if possible, to render it serviceable in a general intention. And hence, our duty is, to endeavour to hit on that happy medium which suits the generality of esculents, in the formation or improvement of the soil in the kitchen-garden. Such a soil should be sufficiently tenacious to adhere to the roots of plants, though not so much so as to be binding, which would certainly retard their progress and extension in quest of food.

Hence, a loam of a middle texture, rather inclining to sand, may be considered as the most suitable soil for the purpose here in view, and that on a double account, viz. The greater part of the valuable kinds of kitchen vegetables delight in such soil, and it is worked at less expence than a stiff one; neither in severe droughts is it apt to crack, or be parched, nor in hard frosts is it so apt to throw out tender plants or seeds.

If soils be too strong, the tender roots of plants push weakly in them, sicken, canker, and perish; and if a soil be too light, and if it be poor withal, plants deposited in it will push their roots far, and in vain, in quest of that stability and nutriment which is necessary and essential to their support. So that, if the butt of our aim be perfection in the production of wholesome and well-matured vegetables, we must put aside careless indifference in

the formation of a proper soil, nor trust entirely to the force of dungs, were they even to be had in the greatest plenty; for dungs, by too free an application, have an effect on the quality of esculents not altogether salutary.

Wherefore, that our efforts may be attended with success, let us bestow a moderate and prudent expence in the first outset, on composing or so improving the soil to be appropriated to this purpose, as that, in our best judgment, it may fully answer the intention.

In many cases, the soil of the garden might be improved, in a very considerable degree, at a small expence. Thus, where the bottom is wet, and the subsoil of a cankering nature,—by judicious draining, which is certainly one of the greatest improvements in this case; where the soil is stubborn,—by the addition of small gravel, sea sand, wherein is a considerable quantity of small pebbles and shells, coal-ashes, lime-gravel, pounded brick-bats, brick-kiln ashes, &c. and, above all, by being carefully laid up in ridges in the winter months, and indeed at all times when not in crop, in such a manner as to give the greatest extent of surface for the weather to act upon; where the soil is a poor sand or gravel,—by the addition of clay, or strong clayey loam, scorings of ditches which run through a clayey subsoil, pond-mud in a like situation, or scrapings of roads which lie in a clayey district, &c.

Soils that abound with metallic substances, and which generally make them appear of an iron colour, are termed *fox-bent* or *till*. These substances are

often found to be intimately mixed, or rather consolidated with the soil, in considerable masses, which are adhesive and very ponderous*. Such soils are the most unfavourable to vegetation of any; and are quite ineligible for the purpose here in view, without being much improved. For this purpose, lime will be found the most serviceable of all things, if judiciously applied, and the soil be frequently turned over by digging or trenching; so as that the soil and the lime may be intimately mixed together, and that the atmosphere may have full effect upon them; for without this, the lime will not operate so effectually, nor will the tilly particles of the soil be divided or be meliorated so well.

It may seem unnecessary to observe, that according to the quantity of irony matter contained in the soil, lime will be required to reduce it. In order to ascertain this quantity, a magnet will be found useful; and, by one of the masses being calcined, and then reduced to a powder, will separate the irony particles from the soil or residuum; showing the proportion of iron, and of earth. Thus we may judge what quantity of lime will be required to fertilize the soil; taking for the extremes in ordinary cases, and supposing the lime of a middling quality, 150 and 400 Winchester bushels an acre; applying the lime in a quick or powdered state, and properly working the soil; being careful, in the first place, to drain it of superabundant moisture.

* The Meadow Iron-ore of mineralogists.

Ridging up of land, as above hinted at, has the happiest effect, especially for stiff soils, and should never be omitted when the ground is not under crop. In dead sandy loams also, and in cankering gravels, it is of incalculable advantage, and greatly meliorates them. For it is a fact proved by experience, that, exposing soil to the sun's rays in part, by throwing it into a heap, whereby it is also partly shaded, and trenching it once a-month, or in two months, will sooner restore it to fertility than any other process, exclusively of adding fresh matter.

And thus, if any ingredient, noxious to vegetation, abound in the soil, it may be expelled, or be exhaled by the action of the atmosphere; more particularly if the soil undergo a summer, and also a winter fallow. In the latter case, however, care should be taken to have the surface incrustated by frost, as often as possible, by turning it, and giving it a new surface each succeeding thaw.

That kitchen vegetables do best on what is termed *new land*, is a generally received opinion, and is plainly demonstrated in many instances. It is also a common complaint among gardeners, that their ground, by being, as it is termed, *worn out*, will not produce certain kinds of vegetables: not that it is poor and hungry, or altogether unfitted to the production of them, having perhaps formerly produced the very articles in great abundance; but that the surface has been many years under these crops, and that they have not a sufficient quantity of ground for a proper change. In *walled* gardens this complaint is most general; and it would ap-

pear to be occasioned by the expence of inclosing a sufficient quantity of ground to serve the family, or of composing a body of soil of a competent depth.

That many kinds of kitchen vegetables do as well (if not better) in an open field garden, as in one that is inclosed by high walls, and sheltered, and perhaps shaded with trees, is an undeniable fact; and were it not for the production of the finer fruits, there would be little use in rearing garden walls at all. But the ground thus inclosed is certainly occupied with greater propriety in the production of culinary vegetables, than of any other crop.

As it is presumed the ground thus inclosed is to be occupied as a garden for many years; that the walls have been built at a considerable expence; that the ground has been trenched; walks made and laid out at a considerable expence also; and that, above all, it is desirable to have a supply of wholesome vegetables for the use of the kitchen, while the ground is thus occupied; I shall drop a few hints on the method to be pursued, which I have practised with success.

First, then, it is necessary to have a depth of soil from twenty-four to thirty-six inches; which, in many instances, is not attainable without much expence and labour. If the above object be kept in view, however, this ought to be a secondary consideration; as it requires but once doing, and the matter of from 10 to 20 *per cent.* on the expence of the garden, will, in most cases, be sufficient for its accomplishment. In this case, it is obvious, that

whatever the depth of the natural soil lacks of twenty-four inches, is to be supplied by *forcing*, that is, carrying in soil from the adjacent fields; for it is not advisable to trench up and mix *much* of the sub-soil (of whatever texture it be) with it. Indeed, in many cases, gardens are almost ruined by the injudicious admixture of the subsoil with the surface-mould. The method is this:

To take three crops off the first surface, and then trench *three spit deep*, by which the bottom and top are reversed, and the middle remains in the middle. Take three crops off this surface, and then trench *two spit*; by which the top becomes the middle, and the middle the top. And take also three crops off this surface, and then trench *three spit*; whereby, that which was last the middle, and now top, becomes the bottom; and that which is now the bottom, and was the surface at first, now becomes surface again, after having rested six years. Proceed in this manner alternately: the one time trenching two spit deep, and the other three; by which means the surface will always be changed, and will rest six years, and produce three.

Hence there will always be *new soil** in the garden for the production of wholesome vegetables; and hence also will much less manure be required, than when the soil is shallow, and the same surface constantly in crop.

* I presume the appellation is consistent with the idea we have of New Soil, as certainly in reality there is no such thing; but, by this process, it will be in a great measure renovated.

I have said above, that the soil should be from twenty-four to thirty-six inches deep : I would not advise that it be much more, or at least, that it be trenched to a greater depth, as thereby the surface might be buried too deep from the action of the weather and influence of the sun, and consequently would be crude and unmeliorated for some time after trenching up.

In situations where the soil is only so deep as to allow of trenching two spit, and where expence in making it deeper may be grudged, the above hint may also be followed with advantage, as, by regularly trenching every third or fourth year, the ground will rest half its time ; and, if judiciously managed, and cropped in proper rotation, wholesome vegetables may be produced on it for many years successively.

In many instances, it may be inconvenient, nay improper, to trench the *whole* garden over in the same season ; nor do I wish to advance such a proposition : one half, or a third part at a time, may be more advisable, and also more convenient ; of which, however, circumstances *alone* can determine. But I would here observe, that, in cases where the bottom is wet or tilly, in trenching at any time, care should be taken to go exactly the same depth with each trench ; a matter of evident benefit ; for, if the bottom be left rough and uneven, and if *galls* be left between the trenches, water will stagnate in the soil, and of course, by *souring* it, will injure the crop.

* * The substance of this Section is taken from Chapters I. and II. of the Kitchen Gardener, a work formerly published by myself ; and also the substance of the following Section from Chapter III.

SECT. III.

ON MANURES AND THEIR APPLICATION.

MANURES are to be applied either as simples or compounds; but the latter method is certainly the most eligible. For certain it is, that if they have not undergone a proper fermentation, their effects are, giving a rank and disagreeable flavour to fruits and vegetables; and if an immoderate quantity be applied, of producing a considerable degree of unwholesomeness, and tainting the juices of all plants.

A mixture of stable-dung, sea-weed, lime, and vegetable mould, which has lain in a heap for three or four months, and has been two or three times turned during that period, will make an excellent manure for most kinds of garden-land. Also, cow-dung, hog-dung, and sheep-dung, mixed with soot, or with wood-ashes. Pigeon-dung and vegetable mould, well mixed, will also make an excellent manure for heavy land; or even for lighter soils, provided the pigeon-dung be used sparingly.

Neats-dung and hog-dung, slightly fermented, are very fit and rich manures for light, hot soils. For those of a dry, absorbent nature, none answer better, or last longer; by reason that they retain moisture for a greater length of time, and also ferment more slowly than other dungs.

Pigeon-dung, lime, soot, ashes, &c. should never be applied as simples; the quantity required being comparatively small, and the regular distribution of them difficult, without the admixture of other

matter. But these should generally be applied in compost, of good earth, turf, or sward, or of cow, or other dung of a cool nature ; applying them in quantity according to the cold, or the hot nature, of the soil to be manured ; allowing the compost a sufficient time to incorporate, and mixing it thoroughly.

Marl is a good manure for almost any soil ; and it may be applied as a simple, with as much propriety as any of the kinds of cattle-dung, or even of vegetable earth. The kind called shell-marl, is much to be preferred, and should be freely applied to strong lands, but more sparingly to light ; the loamy kind being best adapted to light lands.

Stable-dung, if used as a simple, should not be applied in too rank a state, nor should it be much fermented. It should generally lie in a heap for four or five weeks ; during which time it should be turned over once or twice. A ton of it in this state, is worth three that has been used in the hot-bed, and is a year old. This manure, and indeed dung of any kind, when applied as a simple, should never be carried from the heap to the ground, till it is to be digged in ; as, by exposure to the air its virtues evaporate, and it is the less effectual.

The necessity of the instant application of seaweed, after landing, if used as a simple, is even greater than the above ; as it instantly corrupts, and its juices flow downwards, and are lost. If this manure be used as a compound, the heap in which it is compounded should be more frequently turned on its account ; that none of the juices may be lost, but that the other part of the compost may absorb them.

Horse-dung, and the dungs of sheep, deer, and of rabbits, are most eligible for cold, wet soils; and all these, or any of these in compost with lime, will be found beneficial. For such soils also, a compost of coal-ashes, pigeon-dung, and lime; or of wood-ashes, whin-ashes, fern-ashes, and stable-dung; or of deer-dung, rabbits-dung, soot, and burnt sward, will make a good manure.

Manures being valuable in proportion to the salts and the oils they contain, are to be applied in quantity according to their quality. Hence the dung of pigeons should be used in much smaller proportion than that of horses, it containing a greater quantity of volatile salts; and so the ashes of vegetables containing a portion of fixed alkaline salts, being more powerful, are to be applied in still smaller quantity. So also, lime, being the most powerful of the calcareous kind, should be applied, in ordinary cases, in much smaller quantity than marl.

Vegetable mould may either be used as a simple, or as a compound, and may be applied with equal propriety to all soils. None can be hurt by it in any degree, since almost every plant will grow luxuriantly in it alone, without the aid of any soil or manure whatever. It seems to be the ambrosia, and the dunghil drainings, the nectar, of vegetable life. The latter, however, if too freely indulged in, is rather of an intoxicating nature.

The importance and effect* of manure being now

* We may briefly define the effects of manures, when properly applied, thus: Correcting tenacity, crudity, and porosi-

generally credited and acknowledged, it would appear to be the indispensable duty of every gardener and cultivator of the earth, to be careful in the collection of it, and also to distribute it with skilful frugality. For this purpose, a well, or cistern, should be contrived so as to collect the dunghil drainings; and in the application of manure of any kind, the greatest care should be taken to divide it equally, according to the quantity to be applied.

All animal substances, when properly applied, are good manures; and as animals derive their sustenance, either immediately or ultimately, from vegetables, these, when properly decomposed, become great promoters of vegetation. Hence dungs, in general, are superior to other manures; and are the more valuable in their kinds, according to the proportion of the oils they contain, which are most easily reducible, by the nitrous acid of the air, into that species of mucilage, allowed to be the essential pabulum or nutriment of plants. Our duty, therefore, is to collect these with care, and apply them with attention.

The dunghil may also be considerably increased, by throwing the haulm and leaves of all kinds of vegetables into a common heap, letting them remain till well rotted, and afterwards mixing them with lime, marl, ashes, or soot; or mixing them in the process of collection. By watering the whole, fre-

ty in the soil; exciting its fermentation, communicating nutritive matter, and affording nourishment to the roots of plants; thereby promoting vegetation, and the perfection of vegetables.

quently, with the drainings of the dunghil, the value would be greatly enhanced.

SECT. IV.

HINTS ON THE ROTATION OF CROPS.

IN farming, a proper rotation of crops forms one of the best features of good management. So it does in gardening; but in the latter it cannot be so effectually followed out as in the former, for these obvious reasons: A garden is smaller than a farm; the articles cultivated in it are more numerous, and also more nearly related in kind, than those cultivated in the farm. A complete rotation can only be followed through, and full justice done to the land, when the crops that are to form the rotation are of a nature quite different, and when the manner of culture is distinct. Under certain crops, land is exhausted, and under others, strength may be restored to it. But in all cases, under good management, land must be fed. It must not be laid down to rest without having had, as one might say, its supper. The practice of not manuring land, but managing by what are termed *resting crops*, has been found fallacious, and is now justly exploded.

Market gardeners, who are generally good managers, and must of necessity make the most of their ground, in order to maintain their families, and be able to pay high rents, have found out the utility of

resting their land, and of following a regular rotation in cropping it, at least in the culture of the principal articles, and as far as the nature of the thing will admit. The best managers sow out a portion of their ground every season in grass, clover, or barley, which is used as green food for their horses and cows. Very generally the barley is sown along with the clover, merely to nurse and shade it, being cut down and not allowed to ripen. The clover is sometimes dug up after the first season, if land for market crops be scarce, but more generally it is allowed to lie a second year. By good managers, the ground is never sown down *in a hungry state*.

Land that has been under esculent crops for many years together, and is, perhaps, glutted with manure, may be *cleansed*, as it is termed, by a scourging crop of oats, wheat, or rye*, which, if thought necessary, may be repeated. If trenched to its full depth afterwards, it will again be fit for the production of culinary crops in great perfection.

By *quartering out* currants, gooseberries, and raspberries, instead of growing them in single lines, particularly if these be properly managed, an opportunity of changing crops might further be afforded; as these should not stand longer than seven or eight years together, but the plantations should be renewed, as hinted at in the Fruit Garden, Sect. VI.

* Rye will thrive in worse land than wheat or barley, but in all kinds of ground it is the greatest scourger of any grain crop.

Strawberry plantations, under proper management, should be renewed every four or five years ; and thus likewise might an opportunity of changing crops be afforded. Also, by the renewal of artichoke and asparagus plantations, which should be done every seven or eight years. In managing all the above-named articles *on a large scale*, new plantations should be made every year, to a certain extent, which would throw a certain proportion of ground regularly into the rotation.

In the culture of esculents, even on a small scale, a sort of rotation, though not very complete, might be aimed at, and would be very considerably furthered by classing certain vegetables ; as the Brassica or Cabbage kinds ; the Leguminous or Pea kinds ; the Tuberos or Carrot-rooted kinds ; the Bulbous or Onion kinds ; and the lighter crops, as Sallads and Herbs.

But in all cases, a studied rotation is advisable, and so as that no crop of the same class may immediately follow another. To facilitate this measure, the kitchen ground should be divided into many *quarters* or portions, and a journal or note-book should be kept, with a reference to their numbers. In this journal, whatever relates to their cropping, manuring, trenching, or fallowing, should be recorded. As a specimen, which may be altered or improved according to existing circumstances, I shall here give an extract from my own journal formerly kept ; which, as a sketch, may be useful, and, as a hint, may be followed up more fully.

QUARTER, NO. 1.

1793. Subtrenched after asparagus, for carrot, without manure. Winter fallowed.
1794. Early cauliflower, with a moderate dunging, 2d March. Yellow turnip, with a compost dressing, 20th July.
1795. Onions, without manure, 8th February. Cabbage, with a light dunging, 5th October.
1796. Charlton peas for a late crop, without manure, 10th June. Trenched three spit deep in December. Winter fallowed.
1797. Potatoes, with a moderate dunging, 20th March. German greens, without manure, 10th September; intended for leeks next June*.

* This extract was published in my Kitchen Gardener, in 1802. It has been approved by many practical gardeners, and the propriety of keeping such a journal or note-book has been acknowledged.

January.

KITCHEN VEGETABLES.

Of sowing Beans.

BEANS may be sown on an early border, or other warm spot, about the middle or latter end of the month. If on an early border, sow in longitudinal rows, and not across it. The Early Mazagan, or Lisbon, are the best kinds for sowing at this time. Sow in drills three inches deep, drawn at eighteen inches apart; dropping them in with the hand, three inches asunder. If the ground be in tolerably good heart, it need not be dunged for this crop. Beans do best, as a full crop, in strong land; but they will be considerably earlier in lightish soil. In either case, cover in with the hoe, but do not tread at this season. Be careful to entrap mice, if the rows be attacked by them, which they are very apt to be at this season, particularly if there be snow on the ground. Their roads should therefore be traced among the snow, and every means should be used to destroy them.

Of sowing Carrot.

A little early Horn-carrot may be sown on a slight hot-bed, or on a border close by the parapet in front

of a pinery, early grape-house, or peach-house. The seeds should be sown in fine light earth, in either case, and should not be covered more than to the depth of a quarter of an inch. If sown on a hot-bed, the seeds may be defended by a frame and lights, or by hoops and mats, from bad weather, and should be covered always at night. If sown on a border in front of a forcing-house of any kind, they may be covered with hand-glasses. When the plants come up in either situation, they should have plenty of free air, as they do no good if they be *drawn*; they should also have moderate supplies of water. A thin sprinkling of radish or lettuce may be thrown in along with the carrot.

Of sowing French Beans.

French beans may now be sown in flat boxes or pans, placed in the pinery, or any early forcing-house, afterwards to be transplanted into large pots, to stand in these compartments, or to be planted out on a slight hot-bed, or into a flued pit, as shall be thought most proper. The speckled dwarf is the best kind to sow. They should be sown thickly, in fine light earth, and be covered to the depth of an inch. Let them have moderate supplies of water, and they will be fit to plant when about three inches in height; of which, see next month.

Of planting Garlick and Rocambole.

Garlick may now be planted. The same kind of culture will answer as for Shallots, (noticed below,) only allowing an inch or two more of room, and di-

viding the heads into cloves. It will thrive in any ordinary kind of garden land; and will grow freely in lightish soil, if moderately rich.

Rocambole may also now be planted, in every respect as Garlick. But if the soil be heavy, and if the weather be wet, they had both better be delayed till next month.

Of sowing Onions.

In order to obtain a good crop of onions, it is proper to sow at different seasons, viz. in light soils, in August, January, or early in February, and in heavy wet soils, in March, or early in April; of which see further in these months. Onions should not be sown, however, in this month, unless the ground be in a dry state, which is not often the case at so early a period of the season; but, if so, advantage should be taken of the circumstance. For full directions on this subject, see next month.

Of sowing Parsley.

Parsley may be sown about the latter end of the month, either in a bed, or in rows; or as an edging to an alley or walk. It will do in almost any soil or situation. If sown in a bed, cover to the depth of a quarter of an inch; and if in drills, let these be half an inch deep, and ten or twelve inches asunder. There are two kinds, *curled* and *plain*.

Hamburgh Parsley, the roots of which are used in soups, may be sown in drills a foot apart, about the latter end of the month. The ground for it should be deeply dug, in order to obtain large roots.

Of sowing Peas.

Peas may now be sown on an early border, or other warm situation, if the weather be open, and the ground be pretty dry. The Early Frame, or Charlton, are most proper for sowing. They may be sown in a row, by the bottom of a wall or hedge; or in longitudinal rows, on an early border, which is better than in cross rows: for if sown across the border, the one end of the rows will be fit for use, when the other end is hardly in flower; which is an inconveniency, especially in cases where ground is scarce for border crops. The drills should be about three, or three and half feet apart, according to the quality of the soil, and two full inches deep. Do not sow too thickly. Cover with the hoe or rake, but do not tread them in, as treading binds the ground too much at this early season. If the ground be in good heart, it need not be dunged.

Peas are often raised in forcing-houses, and are brought to very early perfection. They may now be sown, if that have not been done in October or November, which see. Sow as directed above for French-beans, in boxes; and transplant them when an inch and a half, or two inches high, into the borders of a cherry-house, peach-house, or vinery, either in a single row, or in rows, if you have room, fifteen or eighteen inches apart, and two inches in line; and give a moderate watering, in order to settle the earth about them.

In forcing peas, they should always be transplanted. They become more prolific, and run less

to straw by that management, than when they are sown where they are to remain. Indeed, it would be very well worth while to transplant the earliest crops in the open ground.

Of planting Shallot.

About the middle or latter end of the month, is a good time to plant shallots. They require good rich soil, and a free exposure; but it is better that the ground have been dunged for the preceding crop, as they are apt to canker and become infested with maggots, if planted in fresh dung. They may be planted in beds, at the distance of six or eight inches; or, which is a better way, in rows, ten or twelve inches asunder, and three or four in the row. In light land, they may be planted with the dibble or setting-stick; but in stiff soil, it is better to place them in drills. In either case, let the crowns of the sets be covered about two inches.

Of sowing Spinage.

Sow Round Spinage about the latter-end of the month; on a rich warm spot, to come in as an early spring crop, and to succeed the winter crops. It is better to sow in shallow drills, ten or twelve inches apart, and not too thickly. Some sow in beds, but it is more troublesome to keep clean, than when sown in drills.

SALLADS.

Of sowing Lettuce.

Lettuce may be sown by the middle, or towards the latter-end of the month, if the weather be mild and dry. An early warm spot is to be chosen, and a rich light soil. The kinds fittest for this sowing are the brown Dutch, hardy green, white coss, and green coss. Sow rather thickly, in order to afford plants for transplanting in March. Cover lightly, and rake all in smooth and neatly. Do not tread or beat in the seeds.

Lettuce may be sown and treated in every respect as directed above for carrot, either on a hot-bed, or on a border in front of a pinery or other forcing-house. It may either be sown along with the carrot thinly, or by itself, for a full crop; among which might be sown a sprinkling of short-top radish.

Of sowing Radish.

Short-top and salmon radish may be sown at the beginning, and also these, and the red and white turnip-rooted kinds at the end of the month. Any dry, lightish, and tolerably warm situation, will answer. They may either be sown by themselves, thickly, or among lettuce, onions, or spinage, thinly.

Radishes may also be sown on a hot-bed, &c. as noticed above, along with carrot or lettuce, but should be sown thinly, that the carrot or lettuce may not be too much drawn by them.

Of sowing small Sallading.

Cresses and mustard may now be sown, either on a slight hot-bed, or on the border in front of a stove, as noticed above of carrot; or they may be sown in boxes, broad pans, or on a pyramid, in the stove or other forcing-house; or, in the border of an early cherry-house, peach-house, or vinery, now at work. They should be sown once in eight or ten days, in order to have a proper succession; and a small quantity will do at a time.

February.

KITCHEN VEGETABLES.

Of planting Beans.

IF the early kinds have not been sown, as directed last month, they may now be sown; and the sooner in the month the better. Also now plant, for a full crop, of the long-pod or Windsor kinds, in a free and open exposure, in rows twenty-four or thirty inches asunder, and five or six in the row. In free soils, the setting-stick may be used, but in stiff land it is better to drill with the hoe, about three inches in depth.

Of earthing up Beans.

In a good dry day, stir up the surface with the hoe or rake, among beans that have been sown in October or November, and are now above ground. This is of very great service to the crop, particularly if it grow on strong soil. Towards the end of the month, repeat this stirring, and draw a little earth to the stems of such crops as are most forward; being careful, however, not to cover up the hearts of the plants.

Of sowing Cabbages.

Cabbages may be sown about the first or second week in the month, for crops to succeed those sown in August, and planted out in October. Sow on a rich, light, open spot, thinly, and do not cover the seeds too deep; an eighth to a quarter of an inch is covering enough for these or any sort of *brassica*. Rake all smooth, but do not tread the ground at this early season. Treading may be proper on light soils, in summer, but in spring and autumn, it is not so. On heavy land it is never so, especially in sowing of small seeds.

Also now sow a little red cabbage; choosing the dwarf, dark-red, or purple kind.

Of planting Cabbages.

About the middle or latter-end of the month, plant out a full crop of cabbages, to succeed those planted in autumn. The kinds are the Early Dwarf, Battersea, York, or Sugar-loaf; any of which may now be

planted. Plant on good land in an open exposure, and do not be sparing of the dunghil ; likewise be sure to dig deep, and to cover the manure well in. From eighteen to twenty-four inches square, according to the quality of the soil, is a good distance at which to plant.

Red cabbages may also now be planted, in every respect as above, if of the dwarf kind ; if the tall, which is not the best kind, allow a little more room.

Of earthing up Cabbages.

The cabbages planted out in October (which see,) should now, in good weather, have a little earth drawn to their stems. Observe to stir the ground well among the plants, which will greatly encourage their growth.

Of sowing Carrot.

Carrot, for an early crop, may be sown on a light border or other sheltered spot, about the middle or end of the month ; but it is soon enough to sow the principal crop the beginning of April. The seed, for this crop, may either be sown broadcast, or in drills. If broadcast, shed as equally as possible, cover lightly, and rake all smooth. Tread none. If in drills, let them be shallow ; half an inch in depth is enough ; and ten or twelve inches apart. Cover with the hoe or rake, and dress the surface fine. See further on this subject in April. The *early horn* is fittest for the present sowing, though the *orange* may answer very well.

Attend to the carrot sown as directed in January, and let them be cleared of weeds, have moderate supplies of water, and free air admitted every day, according to the state of the weather.

Of sowing and planting Cauliflower.

Sow on an early border of rich earth, at the beginning, and also at the end of the month, for a succession of summer cauliflower. The border in front of a stove, pit, or early forcing-house, is a very eligible situation, and preferable to a hot-bed.

About the middle or end of the month, plant out, for an early crop, on a warm, rich border, well manured, at two feet square; and observe not to plant too deep. If it be intended to cover with hand-glasses, a few to come in the earliest, they may be planted so as that a glass may cover two plants; but if bell glasses are to be used, one under each will be enough.

Of sowing Celery.

Celery, for an early crop, may be sown about the latter end of the month. Choose a rich, light bed of earth, on an early border; or sow at the bottom of a wall or other fence. Cover lightly, and rake fine. If this vegetable were required very early, it might be sown the beginning of the month; and its progress might be promoted by being covered with a few hand-glasses, or a frame and lights. But observe, this sowing is not to be depended on for a crop; the plants raised so early being apt to shoot for seed. See March and April. Upright *solid celery* is the best kind to sow at any season.

Of planting Chives.

Chives are a substitute for spring onions, and are used by many, both in the kitchen and as sallads. They will grow in almost any soil, and are easily propagated by sets. Plant in rows, eight or nine inches asunder, and four or five in the row. Any time in this month will answer, or in March.

Of sowing French Beans.

Sow more French beans, if a succession of them be required to succeed those sown, as directed last month; either in boxes or pans, in the stove, &c.; in pans placed in a cucumber or melon frame; or in any other hot-bed where there is room. Let them be duly supplied with water, and when fit, plant them out as directed below; or otherwise, as shall be thought most proper.

Of planting out the French Beans sown in January.

The French beans, sown as directed last month, will be fit to plant out, as then observed, when they are three inches high. If intended for large pots, to be placed in the pinery or any other hot-house, they should be planted three or four into each pot, (these being ten or twelve inches diameter,) in light rich earth, or cucumber mould. The pots should only be filled about three-fourths at first, that the plants may be strengthened by being afterwards earthed up, as they advance in growth. They should be placed in the most airy situation in the hot-house, and be plentifully supplied with water. In such si-

tuations, the thrips often attacks French beans, and therefore the plants should be fumigated with tobacco, which destroys that insect. This will be more particularly noticed in the Forcing Garden.

French beans, raised in this manner from the seed, may be successfully planted out in the borders of an early cherry-house or peach-house, so as that they may not be overmuch shaded by the trees; but they seldom do much good in a vinery, where they are shaded by the whole foliage of the vines. They may be planted in lines fifteen or eighteen inches apart, and three inches in line.

Or they may be planted in deep frames, placed on slight hot-beds, at that distance, and in such mould, about a foot in depth, as specified above; where they should have large portions of air admitted to them in good weather, be defended from severe frosts, by carefully matting at night, and be plentifully supplied with water.

But perhaps the best compartment in which to raise early French beans, is a flued pit; such as is described for nursing young pine-apple plants, in Sect. I. of the Forcing Garden. In such, their culture is attended with less trouble than in common hot-beds; and a very small quantity of fuel will suffice, as the degree of heat to be kept up by fire need not exceed 50° in the night. The pit may be managed in every respect as directed in the Forcing Garden for February, under the head, *Forcing Asparagus in a Flued Pit.*

Of planting Garlick and Rocambole.

Now plant a full crop of these roots. Dig the land deep, and break it fine, if anywise stiff; and for directions respecting planting, see January.

Of planting Horse-Radish.

About the latter end of the month is a fit time to make plantations, though it will do very well any time in the two following months. But any thing that can be equally well done this month, ought to be accomplished; as next month may be said to be the busiest in the whole year with the gardener. Any soil, especially if light, will answer. Dig deep, and plant the sets in the furrows, by line, as you go on; eighteen inches between, and six in line. Place the sets upright, and keep their crowns just aboveground. If they be three inches in length, it is sufficient; and it is immaterial how much longer they be. If such sets as these cannot be procured, cuttings of the roots, without crowns, may be planted, and will succeed very well; only they will not be useful so soon. They may be cut into pieces of three or four inches in length, and may either be planted as above (but entirely within ground,) or with the setting-stick.

A little lettuce, radish or spinage, may be drilled in between the lines, which would come off in time, and without injuring the crop.

Of sowing Leeks.

A few, for the first plantation, may be sown in a bed or beds along with the onions (as noticed be-

low), only considerably thicker. The principal crop should not be sown till March ; which see.

Of sowing Onions.

About the latter end of the month is a proper time to sow a full crop of onions, in land of a middling texture. If heavy and wet, the sowing had better be deferred till next month, or till the first of April. There are several sorts of onions, viz. the Strasburg, Deptford, Portugal, or Spanish, red-skinned, silver-skinned, &c. Any of these may be sown at this time ; but the two first (which are indeed said to be one and the same), generally produce the best crops, and are certainly the best keepers. I have, however, often seen very abundant crops of the silver kind.

The land should be well broken in the digging. If it have been manured for the preceding crop, and be in good heart, so much the better ; but otherwise, it will require to be dunged. In this case, a compost of stable-dung, cow-dung, and earth, is to be preferred to any simple dung. At any rate, new, rank stable-dung is improper ; especially for light soils. Neither dig nor sow if the ground be not in a comfortably dry state, otherwise the seeds will not rise freely. Sow either in four-foot beds, thinly, and cover to the thickness of a quarter of an inch ; or in shallow drills, eight or nine inches apart, also thinly. Rake all smooth, but tread none in either case.

The winter crop of onions should be gone over about the end of the month, be cleaned from weeds, and be thinned, if needful ; and let the surface be well stirred up among the plants. If green onions be in

demand for the use of the kitchen, they need not be much thinned out at this time; but rather delay the final thinning till April or May; of which see further in these months.

Of sowing Parsley.

Parsley may again be sown for raising successional crops, in cases where young parsley is in demand; and the Hamburgh sort for stewing, may now be sown, if not sown last month; which see, for directions.

Of sowing Peas.

A full crop of Charltons may be sown at the beginning, and of Marrowfats at the end of the month; choosing an open situation for either. For the manner of sowing, distance, &c. see January; only observe to allow marrowfats, rouncivals, and all the large kinds, six inches more between the rows, and sow them thinner than the Charlton or blue Prussian sorts. There are many kinds of peas, any of which may now be sown, according to fancy; but observe, that the Charlton, dwarf marrow, and Prussian sorts, are most productive: also fittest for small gardens, on account of their requiring less room than the larger kinds.

Of earthing up Peas.

Stir the surface about the early crops that have risen, and earth up those farthest advanced in the manner above directed for beans; which also repeat at the end of the month, choosing a dry day for the operation.

Of planting Potatoes.

A few may be ventured on a warm, light spot, under a wall or other fence, but the nearer to the end of the month, the better; that is, for those who have no better conveniency, or other means of raising early potatoes. But by those who have, some of the early sorts may now be planted *thickly* on slight hot-beds, to be covered with a frame and lights; or to be hooped over, and be covered with mats or canvases at night, and in bad weather; which is a very good method of obtaining early potatoes, as they are not so much drawn, as if kept close under glass. A moderate dung-heat is sufficient for the purpose; and the plants, after they have come up, should be exposed from morning till night, in good weather, but should be carefully covered at night, for fear of frost. Even in using frames and lights, they should be fully exposed in good weather, and should not be kept so closely shut up as is commonly done; by which they are drawn entirely to tops, and do little good at root. In either case, they should have moderate and regular supplies of water.

Of planting Shallots.

Shallots may still be planted, if not already done, and the sooner now the better. See last month for full directions.

Of sowing Spinage.

Spinage, of the round sort, may be sown on an open spot at the beginning, and also for successional

crops, at the end of the month; of which see January.

Of thinning the crops of Winter Spinage.

Now hoe and clean the winter crops; and if they be ever so free from weeds, let the earth be stirred about the plants. These crops should previously be thinned out to eight or nine inches square, if broadcast, and to three or four inches between the plants, if in drills. Spinage thus managed will produce a fine large blade, if in good land, and will fill the basket much better than if left unthinned, which is too frequently done. Choose good weather for this business, and observe to loosen the surface well among the plants, particularly if the soil be stiff, and if the ground have been much battered by heavy rains, or snow in winter.

SALLADS.

Of sowing Lettuce.

Lettuce may again be sown, for crops to succeed those sown last month; in the first week of the month, in a sheltered situation; and in the last week, in an open spot. For the manner of sowing, and of the kinds, see January.

Of thinning the crops of Winter Lettuce.

Now also thin the crops of winter lettuce; hoe and stir the ground among the plants (whether it be clear from weeds or not), which will greatly encourage their growth. The plants may be thinned out

by degrees, and as they are wanted for use; but if it be wished to have them grow to full size, they should finally be thinned out to nine or ten inches apart.

Of sowing Radish.

Radish may now be sown in an open situation, either singly, or among other crops, as hinted at last month, which see. For a constant supply of young radishes, sow every ten or twelve days. Observe to sow the turnip-rooted kinds thinner than the short top or salmon; but none should be sown very thick, as they are in that case apt to run too much to tops, and get sticky at root.

Of sowing small Sallading.

Small sallading, that is, chervil, cresses, and mustard, may now be sown on an early border, either in beds or in rows; but by being sown in rows, they are more easily gathered. Drill half an inch deep, and six or eight inches asunder; and sow thickly. Sow every eight, ten, or twelve days, according to the state of the weather, and the demand for these sallads. A small bit of each at a time will be sufficient to answer an ordinary demand. A drill of each kind, ten yards in length, will give a large supply, the sowings being repeated once a-week.

March.

KITCHEN VEGETABLES.

Of planting Artichokes.

PLANTATIONS of artichokes may be made about the middle or end of the month, according to the forwardness of the season. This plant requires a light, rich, deep soil, to produce it in perfection. The strongest crops I recollect having ever seen, grew in rather a mossy earth, that had been trenched fully a yard in depth, and had been well enriched with dung, and limed. The plants were generally covered before winter, with a mixture of stable litter and sea-weed.

They are propagated by sets, which rise plentifully about the old stools. The ground should be trenched, or dug to its full depth, if that were even a yard, and should be well enriched with dung, or compost, to suit the nature of soil. See the section on Soils and Manures. Plant in patches of three sets each, at a foot apart, and four feet from centre to centre of each patch. Observe to plant no sets that have not fibres, as otherwise they will not succeed well, and do not plant too deep. Crop the leaves so as to reduce the sets to the length of six

inches above the root. Give a hearty watering, if the weather be dry. A little spinage, or turnip, may be drilled in between the lines, which will come off before the plants spread far, or interfere with them.

Of spring-dressing Artichokes.

Let the littery part of the covering (see November) be removed from the rows of old artichokes, and dig in the smaller part of it among them; previously reducing the number of plants on each stool to three or four of the strongest, as otherwise they would grow too thick, and the heads would consequently be rendered diminutive. Old stools should not stand above six or seven years, as they then begin to produce trifling heads. The best way is to plant a few every year, and take up a few every year; by which mode also a succession may be had each season, the new planted ones coming in, in autumn, after the others are done.

Of sowing Asparagus.

Asparagus delights in a rich deep sand. It may be produced in great perfection, however, in light loamy earth, well enriched with dungs, or with compost. In any soil, sea-weed suits this vegetable well; and it has been produced in very great perfection in a sheer sand, without any other manure whatever. It does not thrive well in stiff, wet soils; nor in any that are less than half a yard in depth. Of course, the land should be well trenched, to the depth of thirty inches, if it will admit of trenching

so deep, and should be well broken, if anywise stiff. The manure (see the Section on Soils) ought also to be intimately mixed with the soil, even to the very bottom, and most of it should be applied there; because it is difficult to get it manured afterwards, as the roots of the plants should be as little disturbed as possible.

It is common to raise asparagus on a seed-bed of light earth, and to transplant it at one, or at two years old, either into broad beds, with two foot alleys between them; or into single rows, at thirty inches, or a yard apart; which latter is the better method of the two. But the best method I know is, to sow the seed where it is to remain, in drills an inch deep, and three feet asunder; sowing rather thickly, in order to insure a crop; thinning out to five or six inches after the plants have come up a few weeks. About the latter end of the month is a proper time to sow.

A row of cauliflowers may be planted, or a drill of carrot, turnip, or onion, may be sown between the lines without injury, for the first and second seasons, but not longer. After this time the roots of the plants will begin to spread into the intervals, and must on no account be disturbed by any other crop.

Asparagus roots wear out in eight or ten years, and become unproductive. A little, therefore, should be sown, and a little taken up every two or three years; but market gardeners, and others who force large quantities, need to sow or plant a supply each season.

Of planting Asparagus.

The method of planting is this: Stretch the line across the ground; tread, or beat the surface quite smooth and even, upon the line, and a few inches on each side of it; then cut with the spade, perpendicularly by the line, to the depth of six inches; thus forming a drill upright on one side. Place the roots along this drill or furrow, with their crowns two inches under the surface, and at the distance of six, crown from crown; carefully spreading out the fibres sidewise, and covering up, yard by yard, as you go on. It is of very great importance for the insuring of success in the *planting* of this vegetable, to lift the roots carefully, and to expose them to the air as short time as possible. While planting, therefore, keep the roots in a hamper or basket among a little light earth, covered over with a mat. One, or at most two year old roots are fittest. Older do not succeed well. It is a better method to plant in single rows, thirty inches or a yard apart, than in beds, as said above*.

Of spring-dressing Asparagus.

Now rake off the rough part of the covering, (see November), and point the small or rotten part of it into the intervals of the rows, or into the al-

* I lately saw a row of asparagus that was planted, by way of experiment, about the middle of last June (1809). The plants were two years old, and did remarkably well.

leys, if in beds; in the latter case, and also if the plants be under four years old, with the spade; but otherwise, with a fork; taking particular care to wound the roots as little as possible. No plant feels a hurt in the root more keenly than asparagus; the fibrils are very brittle, and, if broken, do not readily shoot again. In digging, shed a little earth on the crowns of the plants, and smooth all with the rake.

Of planting and earthing up Beans.

Plant more beans for a successional crop, and earth up those already above ground. See February.

Of sowing Beet.

The end of the month is soon enough to sow red beet, as it is apt to shoot for seed if sown earlier. For a full crop, the middle of April is the fittest time. The roots only of the red sort are used; and if the plant shoot for seed, these get hard, and are in a manner useless. Of the white or green sort, the leaves only are used, in the manner of spinage; and as the culture of it resembles that of spinage in all respects, except that it needs a little more room. I shall confine my directions to the red kind; which requires a management more particular.

It likes a deep, lightish earth, moderately rich. It will thrive very well in rich sand; but in stiff, shallow soils, it sickens, and the roots get forked, and canker. Do not sow with manure, except of well reduced compost, as rank dungs induce canker. It is better if the ground have been dunged for the preceding crop. Trench, or subtrench, to the depth

of eighteen inches at least, if you would have the root in perfection ; and break the earth fine, if anywise heavy. Choose the dark-red or purple sort, with small tops. The large-leaved kinds produce poor spindly roots. I have met with an excellent sort in the north of Scotland ; a dark-red, turnip-rooted kind, with small tops. I believe it was introduced by a market gardener at Dundee ; and I have been told he had the seeds from the master of a Dutch or Hamburgh vessel.

After digging or trenching, roll the ground lightly, or tread it smoothly ; and sow in drills thinly, an inch deep, and twelve or fifteen inches asunder, according to the quality of the soil. Cover with the hoe or the foot, and smooth all with the rake.

Of sowing Brocoli.

The middle or end of the month is soon enough to sow, as plants sown sooner are apt to start, or button. Sow of the dwarf-purple, green, or of the dwarf sulphur-coloured kinds, thinly, on a bed of light earth, in an open exposure. Cover to a quarter of an inch in depth, and rake fine.

Of sowing Brussels Sprouts.

Brussels sprouts may also be sown any time in the month, and in all respects as directed above for brocoli.

Of sowing and planting Cabbages.

Sow more white cabbages, for crops to succeed those sown last month, and for a full crop ; likewise now sow red cabbages. Plant out full crops of all

these, and earth up the early plants that need. See February.

Of earthing and planting Cauliflowers.

Sow cauliflower on a rich open spot of ground, any time after the middle of the month, for a full crop; and if none were planted last month, let that now be done without delay. See directions in February. Those sown about the beginning of last month, will be fit to prick out about the latter end of this, or first of April. Let this be done on a bed of rich light earth; pricking them in at three or four inches square; watering and shading them from the sun, till they have struck root.

Cauliflower under hand-glasses, should now have a little air admitted to them for a few hours in the middle of the day, and should be supplied with moderate quantities of water. Observe to pick off all dead leaves as they appear, and to admit air more freely, as the season advances.

Of sowing Celery.

Celery, for a full crop, may be sown about the latter end of the month, on a bed of light earth, in an open situation. For directions, see February.

Of planting Jerusalem Artichokes.

Jerusalem artichokes may be planted at any time in this month. It will thrive in any situation, and in any ordinary garden soil; being a plant very hardy, and once planted, not easily eradicated. Plant sets of the root, which are the eatable part of this vege-

table, as in planting potatoes ; in rows a yard asunder, and nine or ten inches in the row. A small quantity will serve an ordinary family, being very productive. The roots grow in tubers, something in manner of a yam ; the stalks tall and upright. In taste, the roots resemble an artichoke, and hence the name. This vegetable, before the introduction of that most valuable one, the potato, was held in great esteem ; being an excellent winter root, of an agreeable taste.

Of sowing Leeks.

Leeks, for a full crop, may be sown about the middle or latter end of the month. Some sow in drills where they are to remain, and thin them out, without transplanting, which is by no means an advisable method ; for by being transplanted, this vegetable is much improved, both in size and flavour. Sow, therefore, in a bed or beds of light earth, as directed last month. The true Scotch or flag leek, is the best.

Of making up Mushroom-beds.

About the beginning of the month may be made, beds for a supply of mushrooms, to last till they come in in the open ground, or even till winter ; which they will often do, if made as directed in September, which see. There is no rule for the time of making up these beds, however, as it may be done at any day in the year with equal propriety.

Of sowing Onions.

Now sow full crops of onions, in the manner as directed last month. Sow in land of a middling texture, at the beginning of the month; but in stiff or wet soils, towards the latter end of it.

Of sowing Parsley.

Parsley may again be sown for successional crops; that is, of the plain and curled sorts. At the end of the month, sow a full crop of Hamburgh parsley. Of which, see January.

Of sowing Parsnip.

This root is, very undeservedly, less in repute than formerly. In changing our religion, we have, in some measure, changed our mode of living. There being fewer Lent-keepers in the kingdom, than in former Popish times, there are fewer consumers of *hard fish and parsnips*. Yet the fish are as good as ever, and the parsnips not worse. The truth is, there are few roots more nutritive. In the north they are often beat up with potatoes, and a little butter; of which the children are very fond, make a most hearty meal, and thrive amazingly upon. For milch-cows, they are excellent food, and make them give largely to the pail in winter, when on hay or straw.

They will grow freely in any kind of garden land, but are most productive in light soils. The same manner of sowing, as directed above for *red beet*, will answer for parsnip.

Of sowing and earthing up Peas.

Sow successional and full crops of marrows, round-civals, Prussians, &c. See last month. Also earth up the early crops that need, as there directed.

Of Planting Potatoes.

Potatoes may be planted about the middle or latter end of the month, on a light early border. If the ground be in pretty good heart, it need not be dunged for this crop; as they are seldom allowed to come to full maturity, and it is only in that case that potatoes exhaust the soil. For crops that are meant to stand till fully ripe, the ground ought to be put in good condition, either by previous or immediate manuring. Choose, for this plantation, some of the early kinds, as the ash-leaved, or early dwarf, but preferring the former. These require less room than any other I am acquainted with. Fifteen inches between the lines, and six or eight in line, is enough. Plant in drills three inches deep, if the ground be anywise damp or still. If light and dry, the dibble may be used; but only to save time; for drilling is to be preferred to dibbling, for all seeds and roots whatever.

Of sowing Salsafy, Scorzonera, and Skirret.

Salsafy, Scorzonera, and Skirret, are all used in the kitchen, in autumn and winter. They are all raised from seed, and may be sown about the end of the month. If sown earlier, they frequently run to seed in summer, and in that case are useless. The middle of April is a good medium time to sow, which see.

Of sowing Savoys.

Savoys for an early crop, may be sown about the beginning of the month, and for a successional crop, about the end of it. There are two sorts, green and yellow; and of the former, two varieties, plain and curled. Sow in all respects, as directed above for brocoli.

Of planting Shallots.

Shallots may yet be planted, if requisite, and the sooner the better, as they will now begin to spring; in which case they make but an indifferent crop. For the manner of planting, see January.

Of sowing Spinage.

Sow Spinage every ten days or a fortnight, till the first of August; of which I shall say no more till that time, when I shall resume my directions about sowing the winter crops for next season. If these, as directed last month, have not been thinned and cleaned, let it now be done.

Of sowing Turnip.

A little of the early Dutch sort may be sown on a rich, light, warm border, or other sheltered spot, about the middle of the month; but if sown at the end of the month, it may be more depended on; as the early sown crops are very apt to run for seed. Sow broadcast, thinly; tread, or beat lightly, and rake fine. If the weather be dry, give a gentle watering, which repeat.

SALLADS.

Of Sowing American Cress.

American cress may be sown either on a bed of light earth, broadcast, or in drills nine or ten inches apart. It may be sown once a-month or six weeks, till August; of which see farther then.

Of sowing Indian Cress.

The flowers are both used in sallads, and for garnishing. It will grow freely in almost any soil or situation. If sown in an open spot, it requires to be *staked*, in the manner of peas. As a hedge, or to screen off any disagreeable object, it is particularly well adapted, on account of its rapid growth; and it is, besides, extremely beautiful. Sow any time this, and the two next months, in drills two inches deep. It will keep flowering till destroyed by frost.

Of sowing small Sallading.

Repeat the sowings of chervil, common cress, and mustard, every ten or twelve days till September, in the manner as directed in the preceding months, when further notice will again be taken of them.

Of sowing Lettuce.

Lettuce may be sown once a-month till the first of September, where a constant succession is required, as already directed; sowing on a north border, or other shaded place, in the summer months. I shall not again, therefore, repeat directions for sowing till August, when the winter crops will fall to be noticed.

Of planting Lettuce.

Plantations will also require to be made from these sowings, as the plants become fit for planting, once a-month; which will afford a regular supply; those transplanted from, always succeeding those left in the seed-beds. The kinds are numerous, and may be sown or planted according to fancy; but those most to be preferred are the Green Coss, White Coss, Hardy green, Black-seeded Coss, Brown Dutch Cabbage, Green Dutch ditto. The Silesia, and some other kinds, grow very large, and are fittest for soups or stewing.

Plant in lines from nine to twelve inches apart, and six or eight in line, according to the sorts, and quality of the soil; and observe never to plant so deep as to bury the heart-leaves.

If the plants sown in January be fit for removal, let a few be planted out in any open situation, about the end of the month; either by themselves, or between the lines of new-planted asparagus, artichokes, currants, gooseberries, or the like, where there is room.

Of sowing Purslane.

This sallad may be sown any time about the end of the month. If sooner, it is apt to be hurt by frost, being very succulent. Sow on a light, early border, much as you would do lettuce, but thinner. It may be sown either so, or in drills, as cresses, on any open spot, once in three weeks or a month, throughout the summer.

Of sowing Radish.

Sow successional crops of radishes once in ten days, or a fortnight, till the first of *September*, when those for standing the winter will be noticed. Any, or all of the kinds mentioned in *January* may be sown, according to fancy.

Of planting Sorrel.

Sorrel is used both as a sallad, and in the kitchen. There are two sorts, the common, and the French. They may be raised from seed; but are generally propagated by slips, or cuttings of the root. They will grow in almost any soil or situation; but they like a sandy earth best. Plant in beds at six or eight inches square, or in rows nine inches apart, and five or six in the row. They will soon cover the ground, in either case; and it is no easy matter to eradicate them afterwards, as every chip of the roots will grow.

HERBS.

OF PROPAGATING VARIOUS POT-HERBS.

Of sowing Basil.

Basil is a high-flavoured herb, and is often used in soups. Sow a small spot under a wall, hedge, or pale, in fine light earth, about the end of the month; and cover it with hand or bell-glasses, as it is very tender. Or you may sow in one-light box, on a slight hot-bed; where let it have plenty of air, and be moderately supplied with water, till fit to plant out.

Of planting Basil.

When the plants have grown to the height of two inches, transplant them into a border of rich light earth, in rows, nine or ten inches asunder, and four or five in the row; or into a bed, at six or eight inches square. Some sow where it is to remain; but it improves in strength, by being transplanted. There are two sorts, the Tall and the Bush Basil, which are both used as pot-herbs, and may be treated alike in every respect. They must have gentle and occasional waterings, according to the state of the weather.

Of sowing Borage.

Borage is used as a pot-herb, and likewise for *cool-tankards*. Sow in a light, dry spot, any time this month, and likewise a little in April and May, for a succession. Wherever it ripens and sheds seed, it will rise again abundantly.

Of sowing Caraway.

Caraway may be sown, as above, either now or next month. A small spot will produce seeds enough to serve an ordinary family.

Of sowing Fennel.

Sow in a spot of light earth, any time in the month. It may also be propagated by slips of the root, and a few plants will be sufficient.

Of sowing Marigold.

Sow in every respect as directed above for borage.

Of sowing and planting Marjoram.

Sow on a bed of light earth, any time this month, and, when fit, transplant into rows nine or ten inches apart, and three or four in line. If the knotted or sweet marjoram be wanted earlier, a little might be sown the first of the month, and be covered with a hand or bell-glass, to bring it forward. Pot-marjoram may also be raised by slips of the root.

Of planting Mint.

Mint, that is, sweet or spearmint, is easily raised from slips of the root, which may either be planted closely in a bed, or in lines six or eight inches asunder. It will grow almost anywhere, but thrives best in a moorish light earth. A small bed, or a few rows, is sufficient for an ordinary family. If wanted early, a little might be covered with a hand-glass or two, or by a frame and lights, from the first of February, which would bring it forward.

Of planting Sage.

Sage will either grow by cuttings, or by slips of the root, with facility. This is the season for planting slips; but the end of July or first of August answers best for making plants by cuttings. Light soil is to be preferred, though they will grow in almost any garden earth; but in wet ground, they often perish in winter. A few slips, either in a bed, or in lines, will be sufficient. If it be wished to dry some for winter use, more will be required. There are two kinds used in the kitchen, the green and the

purple; the variegated kinds are reckoned ornamental plants.

Of sowing and planting Savory.

Savory is propagated in all respects as directed above for marjoram. The sweet sort, if wanted early, may be forwarded by hand-glasses, or by a frame and lights, as above hinted. Winter savory may also be propagated by slips.

Of planting Tansy.

Tansy will grow freely in any garden soil. Plant by slips of the root, and very few; a dozen or two at most, will be enough. Give it room to bush, if you plant in patches; if in a row, allow twelve or fifteen inches between the sets.

Of sowing and planting Tarragon.

Tarragon may be raised from seed, and may be transplanted; or it may be raised by slips, as above; allowing it less room, however. It will also grow very well by cuttings made in August. In wet soils it is apt to perish in winter.

Of Sowing and planting Thyme.

Thyme may also be raised from seed, or by slips. Sow on a bed of light earth, and when the plants are two inches high, plant them out in rows nine inches apart, and four or five in line; or plant slips at these distances; or thin out the seedlings to six inches square, without transplanting. Any of these methods will answer; or edgings for alleys may be

made of the seedlings, planted at the distance of two or three inches in line.

Of propagating various Medicinal Herbs.

This is a proper time for sowing or propagating these; and I shall here enumerate a few of the most useful to have about a family; classing such as are to be raised from seed, and such as can be raised by slips: leaving the manner of sowing and planting to the discretion of those more immediately concerned; as also the determination of the quantities of each; presuming that, generally, the directions given above for the raising of pot-herbs may suffice.

The kinds to be raised from seed are Angelica, Burnet, Caraway, Coriander, Myrrh, and Scurvygrass. Those to be raised by slips are Baum, Chamomile, Hysop, Lavender, Pennyroyal, Peppermint, Rosemary, Rue, and Wormwood.

April.

KITCHEN VEGETABLES,

Of dressing and planting Artichokes.

ARTICHOKES may still be dressed, and new plantations of them may be made with success. For full directions on these subjects, see March.

Of dressing the rows or beds of Asparagus.

If the beds or rows of old grass have not been digged or forked, as directed last month, the work should not now be delayed, as the roots will be in a state of vegetation; in which case, both them and the buds, or crowns, are very easily injured.

Of sowing Asparagus.

The beginning or middle of the month is a proper time to sow asparagus, either for transplanting, or where it is to remain for good. See full directions in March.

In dry weather, let both the new plantations and sowings be frequently refreshed with water, and keep them clean of weeds at all times.

Of planting and earthing up Beans.

Still plant more beans for a succession to those planted last month, and earth up the crops already risen, according to their needs; carefully destroying all weeds that may appear among them.

Of sowing Beet.

Beet, for a full crop, may be sown about the middle of the month. See March for full directions.

Of sowing Brocoli and Brussels Sprouts.

Brocoli, for a full crop, may be sown about the middle of the month. See March for directions; and sow in an open situation, on light soil.

Brussels sprouts, for a full crop, may also be sown at the same time, and in the same manner.

Of sowing and planting Cabbages.

Sow and plant successional crops of all kinds of cabbages ; and earth up, or clean those already planted, according to their needs, and as noticed in the former months.

Of sowing Capsicums.

Capsicums, for pickling or preserving, may be sown either in a hot-bed, or in any kind of forcing-house, in a large pot, pan, or box, filled with fine light mould. When two inches high, they should be pricked out into small pots of three inches diameter, afterwards to be re-potted, and placed in a hot-house ; or to be planted out in June, under a wall or hedge, as there directed. Or they may be planted out at this time, when two inches high, in the border of any kind of forcing-house, so as that they may not be too much shaded, and may have sufficient room. In any of these ways, their culture is simple. They require light, moderately rich earth, and pretty free supplies of water. See more of capsicums in May and June.

Of sowing Carrot.

Now sow carrot for a full crop. The large red, and orange kinds are fittest. The directions given in March, for red beet, will answer, in every respect, whether in regard to soil, trenching, or manner of

sowing. I shall here add, however, that in order to make the seeds separate, they should be well rubbed in the hand, among a little dry earth or sand; sowing thinly, and as regularly as possible.

I have observed of parsnips, that they are good food for milch-cows in winter, making them give largely to the pail. The same may be said of carrots; and also, that the milk has a much less offensive taste and smell, than when the cows are on turnips, (unless the turnips be boiled). It is pretty generally known, that carrots are excellent food for horses, either given alone, or along with hay. So they are for fattening of stall beasts; and they make them eat straw, and very indifferent hay, greedily.

Of sowing and planting Cauliflower.

Cauliflower, for a successional crop, may be sown any time in the month, in an open situation. Also, in an open rich spot, plant for a full crop, of those plants sown in February. Allow them twenty, or twenty-four inches each way between the plants, according to the quality of the soil. Do not plant too deep, which is very injurious to all the brassica kinds, especially cauliflower; and give a little water to each, if the weather be dry.

Prick out a parcel of the plants sown last month. This should be invariably done with every sowing of cauliflower, brocoli, &c. as it greatly strengthens the plants, and makes them put out many more fibres than they otherwise would.

Of earthing up Cauliflower.

Now hoe and earth up the cauliflowers planted out in February, or last month, whether under hand-glasses, or in the open borders, which will greatly encourage their growth. Those under glasses should have free air in the middle of the day, and occasional supplies of water at the root, according to the state of the weather.

sowing Celery.

Celery, for a full crop, may be sown about the beginning or middle of the month. Sow the solid Italian kind, and on a light, open spot of ground, moderately thin; covering lightly, raking smoothly, and watering occasionally in dry weather.

Of sowing French Beans.

French beans may be sown on an early, light, rich border, about the first, and on a more exposed spot of ground at the end of the month, which will give a succession of beans. The speckled dwarf are fittest for the first sowing, and the Negro, Battersea, or liver-coloured, for the last. Sow in drills, thinly, at two feet apart, and two inches deep; or drop in the beans at an inch apart with the hand, which will make a more evenly crop. Cover and dress with the rake, but do not tread the ground.

If it be required to have French beans very early, or to continue a succession to those sown, as directed in January and February, some may be sown in boxes, &c. in the hot-house, or on a hot-bed, about

the first of the month, and, when fit, may be planted out at the bottom of a wall or hedge, in a south aspect, and in fine rich earth. If in a single line, plant at three inches apart; and if in double lines, let them be at a foot asunder, and plant at four or five inches in line; thus keeping the plants as near to the wall or hedge as possible, that they may reap the benefit of its shelter. Observe not to plant too deep, and to give a little water after planting.

The kind called *Scarlet Runners* may be sown any time in the month, if wanted for covering a disagreeable object, or for forming fancy hedges, bowers, or the like; for which they are peculiarly adapted, both on account of their rapid growth and great beauty. If sown in July for a crop, they will prolong the season of French beans to the latest, as they will continue bearing, if sown then, till the frost destroy them. The *White Runners* are equally good for this latter purpose.

Of sowing German Greens.

German greens, for winter and next spring use, may be sown about the end of the month, in all respects as brocoli or savoys. The tall-growing, light green kind is the best, as producing the greatest quantity of sprouts, or small heads on the stalks in spring, when other greens begin to be scarce. They are equally good as Brussels sprouts, and indeed are preferred to them by many people.

Of sowing Leeks.

Leeks may still be sown for a full crop, and if

sown about the beginning or middle of the month, will succeed very well. Water immediately, if the weather be dry, and repeatedly, in order to forward them for transplanting, and that the crop may come to full perfection. See directions for sowing last month.

Of sowing Onions.

Onions may still be successfully sown, and the more so, on dampish soils; but the sooner in the month the better, as, if the autumn prove unfavourable, they may not fully ripen, and of course would not keep well.

Of thinning out winter Onions.

Let the early spring sown crops that have risen be carefully cleared from weeds; also the winter crops; at the same time now finally thin out these to three or four inches square, as, towards the end of the month, or first of May, they will begin to button and swell off. At this time also, pick out the heart-buds of such as are offering to shoot for seed, which must be repeated as they appear. This will cause them to apple or button as well as the others, and produce fully better keeping onions. See further on this subject next month.

Of sowing and sticking Peas.

Sow more peas for a succession, and earth up the other crops that need; also stick those most forward, before they begin to be beaten by high winds. If there be no sticks for this purpose, two lines of strong

pack-thread or spun-yarn may be run along on each side of the rows, fastened to stakes placed at the distance of six or eight feet from one another.

Of planting Potatoes.

Now plant potatoes for a full crop. The middle or latter end of the month is a proper time. For directions, see March. The kinds are numerous, and every gardener has his favourite. I shall only say for myself, that for full crops, at present, I would prefer the kidney, flat white, the grizzly or reddish clouded, and, as the best keeper, the purple with pink eyes. The colour of the soil in which they may have grown, has an effect on the colour of the two last named; but they are in appearance nearly as described, both round, and have pink eyes. They produce large crops in general, and should be allowed two feet between the rows, and nine or ten inches in line.

Of sowing Salsafy, Scorzonera, and Skirret.

Sow all these, for full crops, about the middle or latter end of the month. Treat them, in every respect, as directed for red beet in March; only sow a few inches closer between the lines, that is, from nine to twelve inches, according to the strength of the soil.

Of sowing Savoys.

Savoys, for a full crop, may be sown about the middle or latter end of the month, and in all respects as directed in March.

Of sowing and planting Sea-Cale.

Sea-cale is most successfully produced on a rich deep sand. It will do pretty well, however, in ordinary garden soils, if mixed with a considerable proportion of sharp or drift sand, and if they be well manured. In stiff soils it makes little progress; and in wet ones it is apt to perish in winter.

The manner of culture very much resembles that of asparagus. It may either be raised from seed, or by offsets from the roots, which rise abundantly in spring, and are the parts used of this vegetable *. Sow any time in this month, thinly, in drills thirty inches asunder, and two inches deep; the plants to be ultimately thinned out to fifteen or twenty inches in line. Or plant in lines at thirty inches distant from each other, and at six or seven inches in line; thinning out the one-half at this time next year, if they have all survived the winter. The seedlings, sown as above directed, should not be finally thinned out till a year old, lest they sustain injury the first winter. If the plants, either sown or planted, weather the first winter, there is little

* The sprouts of sea-cale are used, generally, in the manner of asparagus, and some people think them little inferior to it, if well blanched; others prefer putting sea-cale in soup, to any other method of cookery; and in that way, if it be not completely blanched, the defect is not so perceptible as if served up in a dish by itself.

fear of them afterwards, unless in wet soils; but I have observed, that excepting in sand or sandy earth, they often go off the first winter.

The rows should be dressed every spring, just before the plants come through the ground, in every respect as directed for asparagus in March.

The plant is indigenious to most of the sea-shores of England; and if it can be planted in sea sand, or in earth with a large proportion of sea sand in it, and be manured with a compost of stable dung and sea-weed, it will thrive better than in any other soil. Being covered before winter with stable litter and plenty of sea-weed, in the manner of asparagus, it will rise strongly in spring, being manured and invigorated by the salts of the latter.

Of blanching Sea-Cale.

The sprouts, which rise at this time, and in May, being properly blanched, are delicious. Some think them even as good as asparagus. They are the more delicious the better they are blanched; in order to do which in tolerable perfection, they should be moulded up as they advance, once in four or five days, with sand, or with very light, dry earth, until they have sprung to the length of eight or nine inches from the crown of the root.

If the rows or beds were hooped over and covered with mats, the sprouts would be the better blanched, and be the sooner fit for use.

In gathering, clear aside the sand, and twist or slip the sprouts carefully off with the hand, which is a better method than that of cutting, as not inju-

ring the mother roots. It is the third year after sowing, or the second after planting, before they be fit for use. If properly treated, they will continue producing for many years.

But the blanching may be much expedited, and more perfectly accomplished, by covering the sprouts from the time they have sprung a few inches, with large flower-pots turned down upon them; which both shades them from the light, and in a considerable measure *forces* them, by the warmth communicated through the pots in sunshine. The hole in the bottom of the pot should be stopped, as the plants will draw sufficient air from under the pots, for their sustenance. Those who are curious in the culture of this vegetable, however, have blanching pots made on purpose; of which see a description in November, on the forcing of sea-calc. In the using of blanching-pots, or flower-pots, it will be unnecessary to earth up the plants, as above directed: once earthing, previous to placing on the pots, will suffice.

Of sowing Turnip.

Turnip, to succeed those sown last month, may be sown about the middle of this; either in drills an inch deep, and twelve or fifteen inches asunder; or broadcast, thinly. Sow of the early Dutch sort, and choose a rich, light, open spot of ground; or sow among new planted artichokes, asparagus, sea-calc, or the like.

Refresh frequently with water, if the weather be dry, both this and the former sowing. Clear it from

weeds; and when the plants have got their rough leaves, thin them out to three or four inches apart.

SALLADS.

Continue successional sowings and plantations of all sorts of sallads, according to their kinds, and as directed in the former months, till August. A repetition of directions, in the summer months, would be all to one and the same effect, without variety. In August, I shall resume directions for the culture of sallads, for winter and next spring use.

HERBS.

If any of those, enumerated last month, be still unsown or unplanted, let it now be done as soon as may be convenient. All or any of them will succeed very well, if got into the ground in the course of the month. Presuming that the directions already given on this head (see March), may suffice, both for these and for medicinal herbs, it will not be necessary to repeat them. I shall, however, at the proper seasons, notice the methods of gathering and drying such of the kinds as should be preserved for winter use; of which see July and August.

May.

KITCHEN VEGETABLES.

Of planting Artichokes.

ARTICHOKES, for a late crop, to succeed those of the old stools, and those planted in March, may be planted about the beginning or middle of the month. For the method of planting, see March. Let them have plenty of water for a week or two, if the weather be dry. The heads of these will come in, late in the season, and they will continue to produce till destroyed by frost.

Of cutting Asparagus.

Asparagus will now be fit for gathering for use. Some twist or break off the shoots from the crown, instead of cutting with the knife; which is wrong; as thereby the roots are necessarily less or more injured. The best method is to scrape away an inch or two of the earth from the shoot you would cut, and slip the knife close down, another inch or two; taking care not to wound the crown, nor cut any other shoot that may be rising near the one you would have. The heads most fit, are those three, or at most four inches long, above ground; which, by being cut as above directed, will be in whole, five

or six inches in length. They are often, however, cut shorter, and often much longer; but those opened in the head are not so marketable as the close firm ones.

Towards the close of the season of cutting, be careful to leave two or three shoots to each stool or crown, in order to draw nourishment to it; as otherwise such stool will die out; so leaving the beds or lines full of blanks; which, owing to carelessness in this respect, is frequently found to be the case.

The rows of asparagus, sown as directed in March, will require to be thinned out about the middle of the month. They should be thinned out, in the first instance, to four or five inches; and in a few weeks more, to nine or ten. Choose a showery time for these thinnings, otherwise give a hearty watering immediately afterwards. If the season be very dry, these seedling rows, and any that were planted in March, should have a good watering once in three or four days, till their roots be well established in the ground.

Of planting and topping Beans.

Plant more beans for successional crops. Those fittest are the Windsor, Toker, or Sandwich; but the long-pod, cluster, or white blossomd, will also succeed. Clean, and earth up such of the other crops as may stand in need.

Likewise *top* the early crops of Mazagans or Lisbons, which will now be in flower. This diverts the growth into the pods just forming, and forwards them in a very considerable degree. The time for

topping is, just when the flowers on the lower part of the stalk begin to fade. The plant need not be much shortened; an inch or two taken off the top is enough. *Topping* is not necessary for any but the early crops; and that *only* in order to make them the more early.

Of thinning the crops of Beet.

About the middle of the month, the most forward crops of beets will require to be thinned. They should not be thinned out all at once, but by degrees. Thin, therefore, in the first instance, to two or three inches apart in the line; and in a few weeks afterwards, to five or six; choosing a showery time, or otherwise settling the earth about the plants left, by a hearty watering; previously hoeing the ground among them, and closing it well about their roots.

Of sowing and planting Brocoli.

Brocoli, for a late crop, may be sown about the middle or end of the month.

The plants sown in March for an early crop, will be fit to plant out about the middle or end of the month. They should be planted in a free open spot of ground; which should be dunged, if anywise poor; and should be subtrenched, or deeply dug. Plant in lines two feet apart, and eighteen inches in line. In planting, be careful not to bury the hearts of the plants. Give a hearty watering, which repeat, if the weather be dry, and as necessity may direct.

Of sowing and planting Brussels Sprouts.

Brussels Sprouts may both be planted and sown as above directed for brocoli.

Of sowing, planting, and tying up Cabbages.

Cabbage, for crops to come in late in autumn, and in winter, may be sown at the beginning, and also at the end of the month. The best kinds for the *earliest*, are also the best for the *latest* crops; therefore, choose the early dwarf, and the early York.

If succession of cabbages be wanted, more may again be planted; and let those of the advancing crops that need, be cleaned of weeds, and be earthed up.

The earliest cabbages will now be beginning to close in the hearts, and by being tied carefully up with strands of matting, or the like, the blanching of them may be very much forwarded. Whenever the hearts begin to feel a little hard, then is the time for tying up.

Of sowing Capsicums.

If capsicums have not been sown, as directed last month, for want of the conveniency of a hot-bed or hot-house, they may now be sown on a spot at the bottom of a south wall or hedge; and in order to bring them forward, may be covered with a hand or bell-glass. A spot eighteen inches or two feet square, sown moderately thick, will give plants enough for a large family. Sow in rich, light earth, and cover a quarter of an inch in depth. They

will be fit to transplant in June, which see. Water frequently ; and when they have come up, give them fresh air every day ; shutting carefully down at night, for fear of frost ; as very little frost would prove fatal to them.

Of sowing Cardoons.

Cardoons may be sown about the middle or latter end of the month. They should be sown where they are to remain. Cardoons like a deep light earth, not over rich. The leaves are large, something like those of artichokes ; and they require a deal of room. They are blanched in the manner of celery, and are used in soups, and for stewing.

Prepare trenches as for celery, either longwise, or across the ground ; four feet from centre to centre, and just as deep and wide as a single spit will make them ; laying the earth on each side. Then point a little compost-manure into the bottom of the trench thus formed, and sow or drop the seeds thinly, in a drill an inch deep, drawn right in the middle.

When the plants have risen a few inches, they may be thinned out to four inches apart ; but they are finally to be thinned out to eight or nine. See July.

Of thinning Carrots.

The early sown crop may be thinned out, if broadcast, to three inches square ; and if in lines, to one or two in line. As they come to be of use, draw them out regularly, and do not thin all at one place,

as may too often be seen ; finally thinning them out to five or six inches apart. Never thin carrot in dry weather, but always in a showery time ; else give an immediate watering, to settle the earth about those left. For if the drought get down to their fibres and top roots, they stint and canker in consequence. Weed or hoe after thinning, and previous to watering, if that be necessary ; thus closing the earth the better about the roots of the plants.

Of sowing and planting Cauliflower.

Cauliflower, for a late, and last crop of the season, may be sown about the latter end of the month, in a free open spot of light earth. Of this sowing are to be raised the crop for a winter supply, and they should be properly attended to with water, as they may require it, according to the weather.

Plant out more cauliflower for a succession ; and let them be planted on a north border, or other shaded place, as they would now do little good if planted in the full sun. Now also hoe and earth up the formerly planted crops, as may be necessary, and as directed last month ; attending properly to those under hand-glasses, with respect to airing and watering.

Go over the early crop, and if the flower be appearing in any of them, break over a leaf or two upon it, in order to shade it from the sun, and defend it from too much wet ; thus blanching, and rendering them more delicate. This looking over should be frequently repeated, both on the early and late crops ; as, by breaking down the leaves

upon the flower, it is kept back from *blowing* considerably in hot weather ; and at all times, is rendered more delicate, by being shaded.

In dry weather, water all the crops freely ; forming a bason round the roots of the plants, in order to retain the water.

Of sowing and pricking out Celery.

Celery, for a late crop, may be sown the first week of the month, in an open situation. Also, at the beginning of the month, plant out, of the February or March sowings, a parcel into nursery-beds. This is done in order to strengthen them, and cause them make fibrous roots, previous to final transplantation.

Choose a spot of rich, light earth ; which divide into beds four feet broad, with alleys of a foot between them. This is supposing the beds to lie across a border, and to be but short ; as otherwise, perhaps a single bed may be enough. Twenty or thirty square yards of earth will contain enough for an ordinary family, to be pricked out at a time ; and observe, that a quantity of *every* sowing should be thus pricked out into nursery-beds, there to remain four or five weeks, before being planted into the trenches for good. Point over the ground, and lightly roll, or beat the bed smooth with the back of the spade. Choose the stoutest of the plants in the seed-bed ; prune off the points of their tap-roots, pull away a few of the bottom-leaves, and shorten the tops a little with the knife. Then prick them in, three inches square ; observing not to plant so deep

as to bury the heart-leaves. Give a moderate watering, which repeat, according to necessity; and shade with mats, from the sun, for six or eight days.

Some, in order to save the trouble of nursing the plants thus, sow all their celery crops thin; alleging, that by having plenty of room, the plants get strength enough, without being pricked out. But this is a gross mistake; as the plants bush too much in consequence, and after being planted out for good, are apt to run for seed. Now if this happen with any after being pricked out, as above directed, the trouble of putting useless plants into the trenches is saved; and, which is of greater importance, a regular crop *there* is obtained: for plants put in to supply vacancies, never overtake or keep pace with those first planted, and so are next thing to lost.

Of sowing Cucumbers for pickling.

Cucumbers for this purpose may now be sown, either on a slight hot-bed, or, as directed above for capsicums, under hand or bell-glasses. They will be fit for planting out by the latter end of June, or the beginning of July, which see. In either situation, let them be properly attended to, with respect to watering, and the admission of free air.

Of sowing French Beans.

French beans, for successional crops, may be sown in the first, and also in the last week of the month. Of the kinds and manner of sowing, see April.

Of sowing German Greens.

German greens, for crops to come in for next spring use, may be sown about the end of the month. Sow on an open spot, and refresh occasionally with water.

Of sowing Love-Apple.

Love-apple, for soups, or stewing, may be sown about the middle or end of the month. The plant is of the trailing kind, and needs support. Therefore, sow at the bottom of a wall or pale, to which it may be trained, and in a south aspect; as otherwise, the fruit may not come to perfection. Any blank-place on a fruit-wall, the size of a yard square, will contain two or three plants. The seeds may be dropped in, in a line at the bottom, and may be thinned out to three or four plants, after they are up a few inches. It will grow in almost any kind of soil, and needs little other care than being trained to the wall or pale as it advances; and being pruned of its superfluous shoots as the fruit begin to colour, in order to let in the sun, the better to ripen them off.

Of thinning and weeding Onions.

Let the early-sown crops of onions be now thinned out to five or six inches square, if broadcast, and to three or four in line, if in drills; at the same time clearing them from weeds, either with the hand, or with a small hoe. It is best to thin in a showery time; otherwise it will be necessary to give a good

watering, in order to settle the earth about those left. The younger crops may also be cleared from weeds, and be thinned out to half the above-mentioned distances; thinning out finally, when they are more advanced; for it is proper to do this work by degrees, lest the crop in any measure go off by severe droughts, a thing not at all uncommon.

Of laying down the Winter Onions.

Now again go over the winter crop, and pick out the heart-buds of all that are shooting for seed, as directed last month; clean the ground among them of weeds, and then let the crop be *laid over*; that is, let the stems be bent flat down, just above the bulb. This may be done with the hand, but it is more expeditiously performed by two people with a rod, or rake-handle; each taking an end, and walking slowly up the alleys, holding it so as to strike the stems an inch or two above the bulb. This *laying over* is very serviceable to all crops of onions, as thereby the growth of the stem is checked, and thrown into the bulb. To late crops, in bad or wet seasons, it is particularly so; as, by thus checking their growth, they are in a measure *forced* to ripen.

Of thinning Parsnip.

Parsnip that was sown in March will now require to be thinned. Observe what is said above, respecting beet; and, at the same time, clear the crops from weeds. Parsnip may yet be successfully sown, but the sooner in the month the better.

Of sowing and sticking Peas.

Peas, for successional crops, may again be sown. Hoe, earth up, and stick the advancing crops, according as they stand in need. Of sticking, or otherwise supporting peas, see April.

Of hoeing and earthing Potatoes.

Hoe the advancing crops, and draw a little earth to their stems, but always observe to keep their hearts clear.

Of sowing Pumpkins and Gourds.

Some choose to have a few of these fruits for shew, and some make pies of them, or eat them with stakes or chops. They may be raised, in every respect, as pickling cucumbers, which see, only they require a deal of room. They may be trained to a wall or pale, and in that way have a fine appearance, when full in fruit.

Of sowing and thinning Salsafy, &c.

Salsafy, Scorzonera, and Skirret, may yet all be successfully sown; but sow as early now as convenient. The early crops may be thinned, as directed above for beet; thinning in the first place to two, and finally to four inches apart.

Of planting Savoys.

If any were sown, as directed in March, they will be fit for planting out about the middle or end of the month. Plant, in all respects, as directed

above for brocoli. A few may be sown about the end of the month, to come in as late coleworts, or spring greens; of which, see June and August.

Of sowing and planting Sea-Cale.

Sea-Cale may yet either be sown or be planted, but the sooner in the month the better. For full directions, see April. Also, respecting the blanching of this much-esteemed vegetable.

Of sowing and thinning Turnip.

Turnip for successional crops may again be sown; of which see last month.

The early crops will now require to be thinned; but this should be done by degrees, and mostly as wanted for use. If the seeds have risen very thick, however, the broadcast crops may be thinned out to three or four inches square, and those drilled to two or three inches in line; afterwards to be respectively thinned out to nine or ten inches square, and to five or six in line, if it be intended they shall grow to full size. Let them also be cleared from weeds; and observe to thin in a showery time, if possible.

Let the rising crops be cleaned of weeds, if necessary; and let them and the new sown ones be regularly watered in dry weather.

June.

KITCHEN VEGETABLES.

Of planting and earthing up Beans.

BEANS may yet be planted for late crops. Those fittest for the early are also fittest for the latest crops. Plant for a succession to those planted in May, of the Windsor or long-pod kinds, in an open situation, about the beginning, and of the Mazagan or Lisbon sorts, for the latest plantation, in a more sheltered spot, at the end of the month. Hoe, and earth up the advancing crops that need, and *top*, if not done as directed last month, the early ones.

Of thinning the Crops of Beet.

The crops of beet will now require to be finally thinned out, if not done as directed last month; which see. They will henceforth require little further care than being kept clean of weeds; observing to pull out such as shoot for seed, as these are useless, and considerably exhaust the ground. In hoeing among beets at any time, be careful not to wound the roots, as in that case they would bleed much, and probably canker in consequence.

Of planting Brocoli and Brussels Sprouts.

Full crops of brocoli and Brussels sprouts may now be planted. Choose good land, in an open situation, which let be deeply dug, and be dunged, if necessary; and plant in all respects as directed last month. In planting, take advantage of showers, if the weather be moist; but otherwise, let the plants have a hearty watering or two at root afterwards.

Of planting, earthing up, and sowing Cabbages.

Cabbage, for a successional crop, may again be planted. Hoe and earth up the advancing crops as they may need; and about the middle or end of the month, sow a few for coleworts, to be planted out about the end of July or beginning of August, which will then be noticed.

Of planting Capsicums.

The capsicums sown as directed the beginning of May, will be ready for planting out about the end of the month. Plant in a row at the bottom of a wall, pale, or hedge; or in rows across a warm border of rich earth, having a south aspect. They should be planted in the first instance, at four inches in line; and when fairly rooted, in two or three weeks, lift the one-half alternately, and plant them out in a similar situation, at eight or nine inches apart. By this means, a succession will be obtained with little trouble; and if the latest planted half should not ripen, they will answer for pickling

green ; so there will be no loss, as green ones are often pickled, as well as ripe ones.

If they are planted in rows across a border, allow them fifteen inches between, and eight or nine inches in line. Let them be frequently watered till they have struck root, and afterwards occasionally, in dry weather, till they come into flower ; after which time they will require no further care than being cleared from weeds.

Of sowing Cardoons.

Cardoons, for a full crop, may be sown about the latter end of the month. For full directions, see May.

Of thinning the crops of Carrot.

The principal crops may now be finally thinned out to seven or eight inches square, if broadcast ; and to five or six in line, if in drills. Carefully observe the directions given in May, respecting the manner of thinning, which is of much importance in the cultivation of this root.

Of planting and earthing up Cauliflower.

Cauliflower, for successional crops, may again be planted on a north border, or other partly shaded situation. Look over the early crops, as directed in May, from time to time ; breaking down a leaf or two over the flowers, to shade them from the sun ; and if the weather be dry, let these, and also the advancing crops, be largely supplied with water. Hoe, and earth up these, if needful.

About the end of the month, those sown in the last week of May, for the latest crop, will be fit to prick out, which let be done, on a bed of light earth, at three or four inches square; watering, and carefully shading them till they have struck root.

Of pricking out Celery.

Prick out, at the beginning of the month, a quantity of the April sowing, in the manner directed last month. These will be fit to plant into the trenches, for a full crop, about the middle of July. If the weather be hot and dry, observe to water and shade them for a few days, or till they have struck root.

Of planting out Celery.

The plants pricked out the beginning of May will be fit for planting into the trenches about the middle of the month. These are not to be depended on for a full crop, being apt to run for seed; therefore only plant a few, by way of having them early. As there is no difference, however, in the manner of planting, between the early and full crops, the situation or soil, I shall here give full directions.

The situation should be free and open; the soil dry, rather light than otherwise, deep, and rich*. If it have been manured for the preceding crop, and

* Celery does remarkably well in mossy earth, if rendered moderately dry; of which there is now (Nov. 1809) a striking instance in the Nursery Gardens of Messrs Dicksons and Company, Leith Walk.

be in pretty good heart, so much the better ; as, in that case, a little compost will now be sufficient. Mark off, with the line, trenches eight feet in width, with four feet spaces between them. Dig a single spit out of the trenches, which lay on the spaces, right and left. This serves, with the earth of said spaces, to blanch with, as afterwards to be directed.

Now point a moderate quantity of compost manure, or well-reduced dung, into the trenches thus formed ; and plant in lines across them, at eighteen inches apart, and three inches in line ; the ultimate distance, however, to be six inches. But the early crop should be planted at double thickness, as many will shoot for seed, and it is only the waste of a few plants, if they do not ; thinning them out after that matter is ascertained. Later crops, that are in no danger of shooting for seed, may be planted at seven or eight inches in line, and sixteen to twenty between the lines, according to the quality of the ground.

Previous to planting, let the plants be trimmed ; that is, pull away a few of the under leaves, prune the long points of any straggling fibres, and crop the tops ; thus rendering each plant about four inches in length, above the root. Be careful not to plant too deep ; water frequently, and shade them from the sun for a few days, if the plantation be not very extensive.

It may be necessary to observe, that if the soil be damp, and less than eighteen inches in depth, the plants should be planted on the surface, and not in trenches, as above directed ; making the spaces five

feet wide instead of four, in order to afford enough of earth to blanch with.

Of planting out pickling Cucumbers.

The plants sown, as directed last month, will be fit to plant out about the end of this. Choose a warm situation, and rich light earth. Plant in patches of three plants each, at a foot plant from plant; allowing a yard and a half square to each patch, from centre to centre. Or plant in one line, at two feet apart; and if more than one be necessary, allow five or six feet between the lines. Let the plants be frequently supplied with water, and carefully shade them from the sun for a few days, by turning down garden pots upon them; which remove by degrees, that is, first in the mornings and evenings, and then entirely.

Cucumbers require frequent and plentiful waterings in dry weather, and must be attended to in this respect as they advance in growth. See July.

Of sowing Endive.

Endive, for an early crop, may be sown about the middle of the month. It is both used in the kitchen and as a sallad. Choose the green curled for this crop, it being less apt to run for seed than the Batavia, or broad endive. Sow on a light, open spot, in every respect as lettuce, thinly, and cover lightly. Refresh with water often. The plants will be fit to plant out the middle of next month, which see.

Of sowing and earthing up French Beans.

More French beans, for successional crops, may again be planted or be sown. Choose good, lightish soil, and an open situation; and sow or plant, as directed in April. Any of the kinds will now succeed.

Let the advancing crops be cleared from weeds, and have a little earth drawn to their stems, which will strengthen them, and encourage their growth. The scarlet and white Dutch runners must be sticked, or must otherwise be supported, in the manner of peas, by stakes and lines of pack-thread or spun-yarn, as noticed of peas in April.

Of planting and sowing German Greens.

German Greens may be planted out any time in the month, for a full crop. Plant in good land, and in a free situation, at eighteen or twenty inches square: and water frequently till they have taken root, if the weather be not showery. A few might now also be sown for planting about the end of July or first of August, to come in as spring greens, or coleworts.

Of planting Leeks.

Leeks, for a full crop, may now be planted. They require a good soil, and can hardly be overdunged. Indeed, they do little good on poor land. If let stand till spring, they exhaust the ground much. Plant in lines twelve or fifteen inches asunder, and five or six in line, according to the quality of the

soil; using the dibble, and making the holes large, by a twitch of the hand, to receive their roots, which are fibry and bulky; previously trimming them a little, and cropping their tops.

If the ground have been newly dug, (which it should be,) they will not require water; as hardly any plant strikes root more freely than this. If their leaves were topped once a-month throughout the summer, they would grow to a large size in consequence; as such topping causes them to push new heart leaves, and so swell the stalk the larger.

Of thinning and weeding Onions.

If the full crops of onions have not been thinned out, as directed last month, let it now be done without delay; observing the directions there given; allowing the broadcast crops six or eight inches square, and those drilled four or five inches in line. Hoe or weed all the crops, according as they may stand in need of it, and never let them be over-run with weeds.

Of pulling the crops of Winter Onions.

The crops of winter onions will be fit for taking up about the end of the month or first of July. Spread them thin on the ground for a few days to dry, and then *house* them, as directed in September; which see. They will keep better, and longer than onions of any other sowing.

Of transplanting Onions.

Onions may be transplanted with success, and

this is the time for doing so, from the thinnings of the spring-sown crops, when pretty stout, and well furnished with fibres. I do not, however, recommend this as a practice being worthy of much attention, unless in cases of scarcity, when one can borrow the thinnings from a neighbour who is better furnished; as, if the season do not prove favourable, transplanted onions seldom ripen so completely as to keep through winter. The best way is to plant in lines at nine inches apart, and four inches in line; observing to dig and prepare the ground properly. Rich, and rather lightish soil, is that in which they may be expected to ripen best. It is presumed they are to be planted in showery weather, which is that most favourable for the thinning of onions, as noticed last month.

Of thinning the crops of Parsnip.

Now finally thin out these crops, if not yet done as directed in May. Hoe, and clean all the crops from weeds, and pull out any run plants of the early ones, as they appear; which are both useless, and much exhaust the soil.

Of sowing and earthing up Peas.

Peas, for a late crop, may be sown about the latter end of the month. Choose the Charlton for this sowing; and sow in a sheltered, and somewhat warm situation, as otherwise they may not fill well.

Earth up, and stick the advancing crops of peas that need; observing previously to clear them from weeds,

Of earthing up Potatoes.

Now finally earth up these crops, and clean them from weeds. They will require no further attention till fit for digging up for use.

Of planting and sowing Savoys.

Savoys, for a full crop, may now be planted, and a few for coleworts may also be sown. Plant, as directed above for German greens; and sow as directed in March.

Of sowing and thinning Turnip.

Turnip, for successional crops, may again be sown. Weed and thin the advancing crops, as directed last month, and water frequently in dry weather.

OF SALLADS.

Presuming that regular successional crops of all kinds of sallads have been sown and planted, as directed in March, and hinted at in April, I shall only remind the reader here, of the necessity of watering them, as they may require, according to the state of the weather; and of keeping them clean from weeds.

July.

KITCHEN VEGETABLES.

Of planting late Brocoli.

BROCOLI, for a late crop, may be planted about the middle or end of the month. See directions in May. Hoe, and earth up the early, and advancing crops, planted in May and June, according as they may require.

Of earthing up Cardoons.

Cardoons that were sown in May, should now be finally thinned out to eight or nine inches apart in the row; then hoe the ground among them, whether clean or foul of weeds, in order to stir the surface; and put a little earth to their stems, from that thrown out in forming the trenches. Never put too much at a time, and be sure not to bury their heart-leaves; observing always to earth up when the earth is in a dry state. Repeat this earthing every two or three weeks throughout the summer; for if the plants are allowed to grow long between the earthings, it is somewhat difficult to do it well, on account of their rapid growth.

Those sown in June, for a full crop, may be finally thinned out about the end of the month; observing to earth them up, as above directed, as they advance.

Of sowing Cardoons.

Cardoons, for a late crop, may yet be sown; and they may have a chance to succeed, if the winter prove favourable. Choose as dry a spot as possible, however, and sow as directed in May.

Of planting late Cauliflowers.

Cauliflowers that were sown as directed in May, for a late crop, and pricked out the end of June, will, about the latter end of the month, be fit for planting out for good. Plant in an open exposure, and only at eighteen or twenty inches square, as these will not grow to so large a size as the former crops of the season. Let them be planted in good land, however, that they may be had in as great perfection as possible, and plenty of them; as by being properly stored, as will be directed in October, excellent cauliflower may be had at Christmas, and even much later. If the weather be dry, let them be duly watered; and otherwise attend to them as directed for the other crops of cauliflower, in respect to hoeing and earthing.

Of planting Celery.

Celery, for a full crop, may be planted about the middle of the month. For full directions, see June.

The early crop, planted at double thickness, may now be thinned out, as there hinted at.

Of planting Coleworts.

About the latter end of the month, plant out the cabbages, German greens, or savoys, sown for this purpose, as directed in June. Being intended to come in as small winter and spring greens, they need not be planted on rich soil, nor be allowed much room. Nine or ten inches square is sufficient, or even seven or eight, in poor land.

Of pruning and training Cucumbers.

Cucumbers, planted as directed last month, will now be putting out vines; and these must be spread out and be trained as they advance. After they have shot a few joints, they may be shortened or topped, in order to make them push fruit branches, which must be trained as they shoot, in a regular manner, at the distance of eight or nine inches apart; shortening one now and then, alternately, as they advance, that enough may be obtained to fill the whole space allowed the plants. But never shorten for any other purpose, as the more they are pruned, if the soil be good, the more they will grow, and so occasion a useless profusion of shoots. Thin occasionally, and so as to keep the runners or vines at the above-mentioned distance from each other; but never prune much at a time, as the plants, by bleeding, might be weakened. If the sort or sorts be good, the fruit will begin to set in abundance, and the plants grow the less to vines. In order to pre-

vent the bad effects of the wind, if the situation be much exposed to it, the runners should be fixed down with hooked pegs as they advance.

Of watering Cucumbers.

Let the plants be regularly and plentifully watered in dry weather, else they will do little good. Few plants require more water than the cucumber, especially when loaded with fruit; and if it be withheld, these will fall greatly off, both in size and shape.

Of destroying Insects on Cucumbers.

The green-fly is often troublesome to cucumbers, and generally attacks the points of the young shoots. A fumigation of tobacco is the best and most effectual remedy I know for plants troubled with this insect; and I have given full directions for its destruction on currants and gooseberries, in the Fruit Garden for April; which, with a small variation, will answer here. If repeated fumigation, in a still morning or evening, does not extirpate them, cover closely with a large sheet or oil-cloth, and fumigate for fifteen or twenty minutes after it is quite full of smoke. But if taken in time, the above mentioned method will generally prove effectual.

Of sowing and planting Endive.

Endive, for a full crop, may be sown about the middle of the month. Any, or all of the kinds may be sown, according to fancy; but the green and white curled are the best, and of these the former is the most hardy.

The endive sown, as directed in June, will be fit to plant out about the middle of the month. Choose an open spot of light earth, moderately rich, which dig a full spit deep. Then form shallow trenches, either with the spade, or make large drills with the hoe, twelve or fifteen inches asunder; in which plant at nine or ten inches apart, and immediately give a moderate watering; which occasionally repeat, till the plants have taken new root.

Before planting, let the *tap-roots* be a little shortened, and also the points of the leaves. The reason of planting in deep drills, instead of on the plain surface, as often done, is, that the leaves may be blanched with little trouble.

Of blanching Endive.

Endive is frequently blanched, by being tied up with strands of matting, in the manner of early cabbages; but if carefully earthed up, the curled kinds may be better done so; as, in tying, they do not come together in the hearts well. The Batavia sorts do better by tying up, on account of their more upright manner of growth, than the curled kinds; but if planted in drills also, the blanching may be facilitated, and may be performed partly both ways.

Endive may also be blanched by setting up common roofing tiles, in a triangular form, over the plants; or in lieu of these, large slates. But a less troublesome method is, to place thin boards, nine or ten inches broad, and ten or more feet in length, over the rows, in a triangular form, as hinted above; the earth being laid up against their sides, so as to keep

them steady. A few boards would answer, as they might be shifted successively, on the same, or on different plantations of endive. By garden-pots, as directed for sea-cale in April, this vegetable may also be blanched with little trouble.

Of sowing French Beans.

French beans, for a late crop, may now be sown. The proper kinds are the scarlet and white runners, and they will continue to bear till destroyed by frost. Of the manner of sowing these kinds, see April.

Clean, and earth up the advancing crops of French beans, according as they may require it; and stick or support the scarlet runners, &c., as directed last month.

Of taking up Shallots.

The early crop of shallots will be fit for lifting about the middle of the month. This is best known by the leaves; and whenever they begin to fall down, and turn yellow, it is time to take up the roots. They should be lifted in a dry day, and carried to an open shed, or loft; or at least should be spread out, not in the full sun; as they are apt to shrivel if dried too suddenly. If they be anywise damp, part the heads to prevent them from moulding; and when sufficiently dried, hang them up in nets, in a cool airy place.

Of sowing winter Turnip.

Turnip, for the winter crop, may be sown the

last week of the month, or first week in August. The proper kind for this sowing is the Dutch Yellow, which should be sown on good land, and in a free, open situation. This is superior to any other kind for winter use, as no frost hurts it. It is, at the same time, the sweetest and most nutritive of any. They may either be sown broadcast, thinly, or in drills, as directed for the early crops in April. Hoe and thin the early crops that need, as directed in May; also water them, according to the state of the weather.

HERBS.

Of gathering Pot-Herbs to dry.

Many of these will now be ready for gathering to dry for winter use. The most proper time is just when they are full in flower, being then in their utmost strength and vigour. Such as grow in spikes, and continue growing and flowering, should be cut when the flowers on the under part of the spikes begin to decay. They should be gradually dried in the shade, being spread thin on clean gravel, or on mats, and frequently turned over. If there be the conveniency of an open shed, or airy loft, so much the better for the purpose, as they should not, in drying, be exposed to much wet, which would take very much from their strength and flavour. When they are dried so far as to be past danger of fermenting, they may be tied up in small bunches of a handful each, and may then be hung up in a dry, cool place.

Of propagating Herbs by Slips and Cuttings.

Many kinds of pot-herbs may now be propagated by cuttings or slips, which may be planted out to nurse on a shady border, for a few weeks, or till they have struck root, and may then be planted out where they are to remain. If made about the middle or end of the month, they will be ready for transplanting before the end of August, and in that case would be well established before winter.

The kinds are Marjoram, Mint, Sage, Savoury, Sorrel, Tansy, Tarragon, and Thyme. For the manner of planting, see March.

Of Medicinal Herbs.

Many of these will also now be fit for gathering to dry, and the rules above mentioned should be observed, in gathering and drying them. The flowers of Chamomile should be pulled from time to time, as they are produced; for the plants continue flowering in succession for several months. They should be gradually dried, partly in the sun, and partly in the shade, by being spread on a mat or sheet; lifted out of the sun in the heat of the day, and placed in it, mornings and evenings. Lavender flowers should be gathered and dried in the same manner; observing to cut the spikes when the flowers on the under part begin to drop their petals. The kinds mentioned in March may also now be raised by slips or cuttings, which see.

August.

KITCHEN VEGETABLES.

Of sowing Cabbages.

CABBAGE-SEED may be sown about the middle of the month, from which to raise plants for standing the winter, and to come in the earliest next spring. Sow of the earliest dwarf, or true early York, on a bed or border of light dry earth, moderately rich. Refresh duly with water in dry weather. Some of this sowing may be planted out in October, which see; and some may be allowed to remain where sown, in order to their standing over winter in different ways, and that they may have a chance of weathering it the better. At the same time may be sown a little red cabbage, to be planted in spring. Choose the dwarf, dark-red kind, which I think is the best.

Of sowing Cauliflower.

Cauliflower, for the early crops of next year, should be sown about the middle of the month. The plants will be ready to prick out in October, which see. Sow on a bed or border of light earth,

and give water, as may be necessary, according to the state of the weather.

Of planting and earthing up Celery.

Celery, for a late crop, may yet be planted, but the sooner in the month the better. See directions for planting in June.

That planted out in June, will now require to be earthed up. Let this be done in dry weather; previously hoeing the ground among the plants, whether it be clean or foul of weeds, in order to stir the earth about them. Be careful not to bury the heart leaves, otherwise the growth of the plants will be much retarded. Observe to pull out any plants that may have run for seed, as such are useless, and exhaust the soil.

This earthing must be repeated once in two or three weeks, according to the growth of the plants; but never earth too much at a time; rather repeat it the oftener, and always in a dry day. The crop planted in July will also require to be earthed up a little, about the end of the month. Observe the same rules for it, and for that now planted; and it will be unnecessary to say more of celery for the season.

Of planting Coleworts.

Coleworts may still be planted, if not done as directed last month; which see. If a succession be required, plant some more about the latter end of the month.

Of sowing, planting, and blanching Endive.

Endive, for a late crop, may be sown about the middle of the month. Also plant out, of that sown last month, a quantity for a full crop, in every respect as directed in July; which see. Hoe and clean the advancing crops; and if endive be required early, let the blanching be begun either by earthing, tying up, or otherwise, as there noticed. It will be fit for use in a few weeks.

Of sowing winter Onions.

The first or second week in the month is the proper time to sow a full crop of winter onions. They should be sown on dry, rich land. If sown on heavy or wet ground, they are apt to be thrown out by frost. It may safely be said, that this is the most proper time in the whole year to sow for a full crop, on light land; as in such the spring-sown crops are often attacked by maggots in the early summer months, and so go off, sometimes entirely. But this does not happen with onions sown at this time; as before the summer droughts set in, the crop is full grown, and past danger.

The Strasburgh or Deptford kinds are the fittest, preferring the former. The seed should be sown rather thickly, in order to afford a plentiful drawing in spring; green onions being then in general request. Sow in beds; and for full directions see February.

Of laying down the Crops of Onions.

The spring-sown crops will now be fast coming

to maturity; and in order to forward them, and promote the swelling of the bulbs, let them be carefully *laid*, as directed in May for the winter crop. Those most forward will be fit for taking up by the middle or end of the month, and may be treated, as will be noticed in September; which see.

Of taking up Shallots, Garlick, and Rocambole.

About the beginning or middle of the month, the full crops of shallots, garlick, and rocambole, will be fit for taking up. Of this see July.

Of sowing winter Spinage.

Spinage for winter and next spring crops, should be sown at the beginning, and also at the end of the month. Choose dry, lightish, rich land. If some be sown on a wall border in a south aspect, it will come very early in spring, and will be the more welcome on that account. The prickly spinage is the only kind that will stand a hard winter. Some sow broadcast, and others in drills; but I like the latter method best. It is no doubt the most troublesome in sowing; but that trouble is more than saved in the cleaning and gathering.

If you sow in drills, draw them at twelve inches apart, an inch deep, and sow moderately thick. If broadcast, sow in four-foot beds, also moderately thick, and cover pretty deep, that is, half an inch or so, from the alleys. Do not tread in either case. Rake all smooth and even.

Of sowing winter Turnip.

Turnip, for a full winter crop, may be sown about

the beginning of the month, if not done as directed in July. Some, however, choose to sow at both times, in order the better to secure a crop. About the end of the month, they may be partially thinned out, and finally in September, which see. As observed last month, the Dutch yellow is the best kind to sow for winter. It is superior to all others for hardiness and flavour; and it is, besides, the most nutritive.

SALLADS,

Of sowing American Cress,

Sow black American cress on a warm border, at the bottom of a wall or hedge, about the middle or end of the month; or on a bed, or beds of light, dry earth, in any situation exposed to the sun. It will stand the winter, and come in early in the spring. For the manner of sowing, see March.

Of sowing small Sallading.

Chervil may be sown, in every respect as above, and will stand over winter, if not very severe indeed.

Garden-cress may also be sown, as above, at the end of the month, and in the middle and the end of September. It will continue good till destroyed by frost. Sow the curled kind; it is the hardiest.

Mustard (white, or brown,) may also be sown once in ten days or a fortnight, while the weather continues open; but it will do no good after the frosts set in.

Of sowing winter Lettuce.

Sow in the first, and also in the last week of the month, in rich dry soil, and a warm situation, particularly the last sowing, of which a supply for next spring is to be planted out in October. The first sown will be ready to transplant in September, and will serve for autumn and winter use. Sow the brown Dutch, and hardy-green cabbage lettuce; and the green, and black-seeded coss kinds.

If a thin sprinkling were sown among the winter onions, or spinage, they might have a chance to stand. I have often seen lettuce weather severe winters in that way, if sown in dry soil.

Of sowing Radish.

About the end of the month, sow a few black Spanish, and also some red and white queen radish. They will serve for autumn and winter use. Choose a dry open exposure. They may either be sown thinly in shallow drills, at nine inches apart, or may be sown broadcast; or the queen kinds may be sown along with the winter spinage, but the black Spanish grows too rank in the leaves to be sown amongst other crops. Full crops, for spring use, should be sown next month, which see.

HERBS.

Of gathering Herbs to dry.

Continue to gather and dry all kinds of pot and medicinal herbs, as directed last month, according to the season, and the state of their growths.

Of planting Herbs.

If slips or cuttings of those were made, as directed in July, they will be fit to transplant for good, about the end of the month. For the manner of planting, see March. But if these slips or cuttings have not yet been made, they will still succeed very well, especially if planted before the middle of the month.

September.

KITCHEN VEGETABLES.

Of planting Endive.

PLANT out, for a late crop, a little of the endive sown in August, as soon as it is fit. This should be planted on a warm border, or in a sheltered situation, in light soil, that it may have a chance of standing over winter. Attend to the advancing crops as directed last month, and in July.

Of making up Mushroom Beds.

Now is a good time to prepare beds for producing mushrooms in winter.

Winter beds should always be under a cover of some kind, capable of defending the *sparen* from wet. It is easy to defend it from frost, by a suffi-

cient covering of straw and litter ; but much wet or damp is its destruction, though gentle showers and waterings put it in action and a state of vegetation. Light is not necessary to the production of this vegetable ; and it may be as successfully raised in a cellar as anywhere, provided it be not over damp. A shed, stable, or any out-house, will answer, where it can be defended from wet, and from frost.

Many have flued sheds, or what are called mushroom-houses, for the production of them in winter ; and in that way mushrooms may be cultivated with great success, on account that the temperature can be regularly kept up, and the spawn can be defended from many casualties, to which it is liable in more exposed situations. The mode of making up the beds, however, and the general culture, differ nothing from that in any other situation, excepting that in winter, the heat must be regularly kept at about 55 degrees, by aid of the flues.

When neither of these conveniencies can be had, and yet if you are anxious to have mushrooms in winter, a cover or frame, capable of defending the bed from rain, snow, or frost, may be made at a small expence, thus : First, make a frame of inch and half deal, nine or ten inches deep, six feet wide, and of any convenient length, from ten to twenty feet. Then fit a roof to it, three feet in the pitch, made of thin boards, imbricated, which lay over with two or three coats of pitch or paint. The roof part to be fixed down to the wooden frame by hooks and eyes, or by bolts, so as that

it may be removed at pleasure, and to have two moveable boards on each side, of about a foot square, to slip for the admission of air.

This sort of frame being placed in a dry warm situation, and being insulated by a drain or trench, would completely defend the bed from wet: and by being covered, in severe weather, with straw or mats, from frost. If the ground be not perfectly dry, a sole or floor must be formed of ashes, gravel, or stone-chips, for the bed; a thing necessary in any situation which is the least damp, either within, or out of doors.

Of the cultivation of Mushrooms.

The cultivation of mushrooms is a process in gardening perhaps the most singular and curious of any. In the culture of any other vegetable, we either sow or plant something material,—a seed, slip, or root, which we both see and handle; but in the culture of the mushroom, we neither sow nor plant any thing visible, at least to the naked eye. Yet it is certain, that mushrooms are produced by seeds, which *naturally* vegetate in the fields at certain seasons, and which may be made to vegetate *artificially* at any season, by a certain process, and by a composition in which the dungs of certain animals form the chief ingredient.

The droppings of horses are found to produce mushrooms more plentifully, and with greater certainty, than the dungs of other animals. Hence it would appear, that their stomachs have less power to hurt, or to destroy the vegetative quality of

these seeds, which being collected along with their food, must pass through their intestines, than the stomachs of other animals; or, that the dung of horses is a better nidus for the seeds than other dungs. The food of horses consisting mostly of corn and hay, may no doubt be more replete with the seeds of mushrooms than that of cows and other stock, which consists chiefly of green vegetables; but even the droppings of horses while at grass, or on tares, produce few or no mushrooms, as more particularly noticed below. This fact would seem to prove, either that the seeds are collected in greater numbers, and are better preserved by hay or the straw and chaff of oats, than by green food; or, that green food may have the effect of destroying them by its moistness, in the stomach, or after having passed through it.

It may be further observed, that animal matter seems necessary to the vegetation of the seeds, or the spawn of mushrooms. Hence we find them produced plentifully in old pastures, and in cattle sheds, whether these be frequented by horses, cows, or sheep, or by all of them; but the eatable kinds are never found in woods or fields from which cattle are completely excluded, though the herbage be ever so old. From the stubs of cut or decayed trees, and about such as have fallen and are rotten, many species of fungi spring; most of which are nauseous, poisonous, or unwholesome. The seeds, too, may lie concealed and dormant, in various other matter, till put into a state of active vegetation by a proper temperature, and a proper degree of moisture.

This vegetable may be produced by first making lumps, or what are sometimes called *cakes* of spawn, and afterwards placing them on a slight dung hot-bed, where the spawn vegetates into complete mushrooms; in which process of *making the spawn* (as it is termed,) different ingredients are used, but chiefly the dung of horses, as said above. This has so far become a branch of trade, as that mushroom-spawn may be had of most of the nursery and seedsmen about all the great towns in the kingdom.

I have formerly been in the practice of producing mushrooms, however, most successfully, without using spawn, and by a very simple process: I might rather say, without transplanting spawn in the common way, but by making the bed a whole mass of spawn at once, and never disturbing it till done bearing. Beds that are built in the common way, and spawned, seldom produce long; perhaps only for a few weeks or months. I have had them continue to yield large crops the year round, and sometimes for two years. But mushroom beds, in whatever way made, are subject to many misfortunes; and the spawn is of a nature so delicate, that it is quickly destroyed, either by too much wet or drought.

By making up a bed in the ordinary way, that is, of stable dung, moderately fermented, to the thickness of about a yard; spawning it over when the strong heat has subsided, and then covering it with light earth, mushrooms may be obtained *sooner* than by the process I shall recommend. But if this process be more slow, it has the advantage of being

more sure; and the time of reaping may be reckoned upon with equal certainty. The difference of time, from first proceeding to make the beds, to gathering mushrooms, will generally be three or four weeks. By the first method you may reap in six or eight weeks, and by the latter in ten or twelve.

Proceed thus :

After having laid a floor, as hinted at above, of ashes, stone-chips, gravel, or brick-bats, so as to keep the bed quite dry, and free from under damp; lay a course of horse-droppings, six inches thick. These should be new from the stable, and must not be broke; and the drier the better. They may be collected every day, until the whole floor or sole be covered to the above thickness; but they must not be allowed to ferment or heat.

In the whole process of making up, the bed should be as much exposed to the air as possible; and it should be carefully defended from wet, if out of doors. When this course is quite dry, and judged to be past a state of fermentation, cover it, to the thickness of two inches, with light dry earth; if sandy, so much the better. It is immaterial whether it be rich or not; the only use of earth here being for the spawn to run and mass in. Now lay another course of droppings, and earth them over, as above, when past a state of fermentation; then a third course, which in like manner earth over. This finishes the bed, which will be a very strong and productive one, if properly managed afterwards.

Observe, that in forming the bed, it should be a little rounded, in order that the centre may not be

more wet or moist than the sides. This may be done in forming the sole or floor at first, and the bed would then be of equal strength in all parts. If it be made up against a wall in a cellar, stable, or shed, it may have a slope of a few inches, from the back to the front, less or more, according to its breadth.

I have sometimes been contented with two courses, as above, instead of three; and often, when materials were scarce, have made them up slighter, thus: Three four-inch courses of droppings, with one inch of earth between each, and a two inch covering at top. Such a bed as this, I have had produce for ten or twelve months together; but very much depends on the state of the materials, and on the care taken in making it up, also on the after management.

The droppings of *hard-fed* horses only are useful. Those of horses on green food, will, of themselves, produce few or no mushrooms. This I have proved in more than one instance, much to my disappointment. And I have moreover found, that the richer the *keep* of the horses, the more productive are their droppings. I have made up beds from farm-horses, fed partly on hard, and partly on green food, and from carriage or saddle horses, fed entirely on corn and hay; treated them in the same way in every respect, and have found, not once, but always, those made from the latter most productive.

Droppings from corn-fed horses may be procured at the public stables in towns, or at inns in the country, any time in the year; and if the supply be

plentiful, a bed of considerable dimensions may be made and finished within five or six weeks. In as many more weeks, if in a stable or dry cellar, or a flued shed, it will begin to produce, and often sooner; but if the situation of the bed be cold, it will sometimes be two or three months of producing mushrooms.

Of watering the Mushroom Beds.

In any situation, the bed must have no water till the spawn begins to *run*. When you would know this, thrust in your hand a few inches deep, in different parts of the bed, and examine what you bring up. It ought to smell exactly of mushrooms, and have the appearance of small bits of thread. But generally you will be forewarned of the spawn's running, by a previous crop of spurious fungi, which rise more or less abundantly, according to the fineness or grossness of the materials of which the bed is composed. These fungi generally are either what are called *pipes* or *balls*; and sometimes a kind of mushroom, of a very bad sort, thin, flat, with white or pale yellow gills. They have all, however, a nauseous, sickly smell, and may readily be distinguished from the true mushroom, which is thick, hemispherical, with brown or reddish gills.

When you have thus ascertained that the spawn is fully formed, give the bed two or three hearty waterings, in order to set it a-growing; for otherwise, it will lie dormant, and shew no symptom of vegetation. Give just as much water (but by no

means at once) as will fairly reach to the bottom of all the materials, and afterwards keep the bed in a state neither wet nor dry, but rather inclining to the latter; this being the safe side to err on; as it is more easy to make it damp, than to dry it. If the bed be placed in a flued shed, the temperature, in winter, should be kept steadily to about 55 degrees, as noticed above.

When a bed has been, as it were tired of producing, I have sometimes desisted from watering for several months; then, by examination as above hinted, have found a new *net* of spawn formed all over the surface, the threads being deep-rooted, even to the bottom. By a hearty watering, as above, a most plentiful and lasting supply has been obtained. The idea of treating my beds so, arose by observation of the manner in which field mushrooms are often produced. We frequently see the crop suddenly disappear, and as suddenly appear again, according to the state of the weather, with respect to wet or drought; and that too, in the same field.

Of gathering Mushrooms.

In gathering mushrooms, they should always be cut, and never be pulled; as by pulling, many young ones might be destroyed. There are always a number of these forming or clustering about the roots of the old ones, which should not be disturbed. If the spawn be deeply situated in these beds, mushrooms will often form and come to full maturity, entirely under ground. They may easily be recognised, however, as they are generally large, and

push up small hills above their heads. They ought to be uncovered with care, that the spawn about them may be as little disturbed as possible.

Of lifting the crops of Onions.

Let the full crops of onions be now taken up. They will reap little advantage after the middle or end of the month. Spread them thin on the ground; but if the weather be wet, they had better be removed to a gravel walk, or a space purposely covered with sand or gravel, in the full sun. Turn them over once or twice a-day, until they are thoroughly dried, and then store them in a well-aired loft, &c. Here still turn them occasionally, if they lie anywise thick; or may string them up by the tails, or hang them in nets. If they are not intended to be strung, the tails and outer husks should be displaced before housing them, and the latter at all events; that is, just as much as comes easily off in rubbing.

The manner of stringing them is this: Take in your hand, three or four by the tails; tie them hard with a new strand of matting, or a bit of pack-thread; place on two or three more onions; lap the thread once or twice round their tails; place more onions, which also lap hard; and so on. In this manner may be made a string (as it is called) or bunch, of a yard in length, or more; which, by being hung up in a dry, well-aired place, free from frost, is an excellent way of keeping onions.

Of weeding the crops of winter Onions.

The winter crops, sown in August, will now be

well up, and should be duly cleared from weeds. If cleaned about the end of the month, perhaps they may not require weeding again this season; but that must depend on the state of the ground, and if need be, go over them a second time,

Of sowing and preserving Parsley.

Parsley to come in early in spring, may be sown the beginning of the month. But where there is plenty that was sown in spring, a store may better be provided, by reserving a quantity, from this time, uncut. Before winter, let a few larch or birch branches, or long broom, be laid over it, and above these a little dry bean haulm, fern branches, bent, or reeds; preferring the two latter articles, on account of their durability. Fine young parsley will here be found all winter, even under the snow, and will come rapidly in, in spring.

Of sowing, weeding, and thinning Spinage.

Spinage, for spring use, may be sown about the beginning or middle of the month. See directions in August. Along with this, if any, may also be sown a little lettuce. Hoe or weed the rising crops, according as they may need, and according to the manner in which they have been sown. If the seeds have risen very thick, the plants may be moderately thinned out; reserving the final thinning, however, till February, which see.

Of thinning winter Turnip.

Now finally thin out the crops of winter turnip,

and hoe the ground among them. Let the broadcast crops be thinned to eight or nine inches square, and those drilled to five or six in the lines.

Yellow turnip may still be sown, and if done at the beginning, or about the middle of the month, will succeed pretty well. For the manner of sowing, see July.

SALLADS.

Of sowing small Sallading.

Chervil, garden cress, and American cress, may still be sown for standing over winter, by being covered, as will be directed in November. See the manner of sowing all these last month.

Of sowing and planting Lettuce.

Lettuce may still be sown, but the sooner now the better. Some may also be sown along with spinage, which see above.

Plants of the early sown lettuce of last month, will be fit for planting out about the middle or latter end of this. They should be put out at the bottom of a wall or hedge exposed to the south, and may be planted in double or treble lines, at five or six inches apart, each way. Some prick them in at three or four inches apart, with the view of thinning them for use, or for transplanting one half in February. Do not plant over deep, and give a little water to settle the earth to their roots. If planted in this way, the coss kinds should be placed nearest to the wall or hedge, and the cabbage kinds outermost, being hardiest.

But if there is not the conveniency of a wall, hedge, or pale, plant in beds, in the next best situation; and if it be pretty well sheltered, the soil light, and freely exposed to the sun, there is no reason for despairing to keep lettuce over winter, if not very severe indeed. Being covered, as will be directed in November, there need be little fear of its standing.

Of sowing Radish.

About the beginning or middle of the month, sow a full crop of red and white queen radish, and also some black Spanish. They will stand over winter, and be very acceptable in spring. For the manner of sowing, see August.

October.

KITCHEN VEGETABLES.

Of planting Beans.

BEANS may be planted about the middle or latter end of the month; and if they survive the winter, will come in the earliest next season. The early Mazagan or Lisbon kinds are to be chosen, preferring the former. Sow, in every respect, as directed in January.

Of lifting and storing Beet.

About the end of the month, the crops of red beet should be taken up and be stored for winter use. Choose dry weather, if possible, for this business; and lift the roots carefully, as they will bleed at every hurt or wound. They should be stored among clean, dry sand, in a cellar, shed, or out-house, where they may be quite secure from frost or wet. If they are let remain in the ground, as some choose to do, they must be covered before winter with reeds, bean haulm, or the like; but in this way they are very apt to rot, and also to lose their colour, by being blanched with rain; and it is a better way to lift and store them, as above. In dressing off their tops, do not cut near to the crown of the roots, but at an inch away from it, as they are apt to bleed, if wounded, as noticed above.

Of earthing up Brocoli and Brussels Sprouts.

The crops of brocoli should now be cleared from weeds; and about the middle or latter end of the month, they should be finally moulded up for winter; observing to choose a dry day for the operation. Treat the crops of Brussels sprouts in like manner.

Of laying over the crops of early Brocoli, &c.

About the middle or latter end of the month, the most forward crops of brocoli, especially of the tall growing kinds, should be lifted, and be laid over on their sides, in the manner of *soughing* in plants;

observing to place the heads just clear of one another, and previously to trim off a few of the outer leaves, and the tops of those retained. By taking this trouble, the forward, and tall-growing crops of brocoli, Brussels sprouts, broad and red cabbages, &c. may be, in a great measure, secured from the bad effects of frost, in the severest winters; especially if *laid in*, in dry soil, and a free situation.

Of pricking and planting out Cabbages.

About the beginning or middle of the month, prick out a quantity of those sown in August. Choose a dry, lightish spot of ground, and divide it into four foot-beds, with twelve-inch alleys between them. Point over the surface, and break it fine; then prick them in, at three inches apart, and settle all with a little water. Observe to plant each sort separately; and do not plant too deep.

At the same time may be planted out, on a warm border, or other well exposed spot of good soil, being well digged and manured, a quantity for good; which, if they weather the winter (and that they will do, if not very severe indeed), will come in very early, and acceptably in spring. In order to have the better chance of obtaining a crop, and also a succession of spring greens, they may be planted at fifteen inches between the rows, and at eight or nine inches in line. In March or April, every second one in the lines may be cut out for use, and the others will then have sufficient room to come to full size.

There is another very good and simple method

of obtaining spring cabbages ; which is, to let the roots and stems of a quantity of the spring, or early summer planted ones, remain in the ground. At this time, clear them from leaves and other rubbish, and point over the ground ; burying in a little compost about their roots, if the soil be poor. If the winter be open, there will be a constant supply ; and, if not, a crop of fine hearted cabbages will come in about February or March, the size of one's fist, very delicate and acceptable. The best sorts to dress for this purpose, are the early dwarf, or early York ; as these cabbage better, and sooner, than any of the other kinds.

Of lifting and storing Carrot.

Carrot should now be lifted, and be stored for winter use. Choose a dry day for this business, and clean them from earth. Then pare off their tops, so as to prevent them from growing afterwards, to the depth of about half an inch ; as by this treatment they keep the better, and do not get soft in spring. They should be laid, or be built in walls, among dry, clean sand, in a cellar or shed, where they may be secured from frost, and from damp. They may be built very readily, by laying them heads and tails, and sprinkling a little sand between the layers ; drudging the wall *hard* with sand, when finished, by throwing it forcibly against its sides.

Of pricking out Cauliflower.

Now prick out a quantity of the plants sown in

August, under a wall or hedge, in light, rich earth. Point up, and form a border for them, close under the wall, &c. twenty inches or two feet broad, and prick them in at three inches apart. Previously beat the surface lightly with the back of the spade, and do not plant them deep. If the weather, and also the earth be dry, give a little water, but this will not need to be repeated.

Throughout the winter, let them be divested of dead or decaying leaves, as they appear; and clear the ground among them from litter, which in wet weather would tend to rot them. If the earth among them were covered half an inch with fine sand, they would stand bad weather the better, as it is generally just by the surface they go off, and not at the lower parts of the root.

Of storing Cauliflower for winter use.

About the middle or end of the month, according to the state of the weather, and state of their growth, is the time to lift and store the cauliflowers planted out in July, for a winter supply. Pick out all such as are fair, close, and well shaped; lift them carefully with the spade, and dress off the points of the leaves, just over above the flower; also reduce a few of the outside leaves, so as to make them take up little room. I used formerly to store cauliflower for winter use in my peach or grape-houses, by *soughing* them in the borders; carefully defending them from frost, by mats, &c. and from much wet, by shutting the sashes in the time of heavy rains. Whoever is provided with such a receptacle for them

need go no farther ; but there are other methods to be pursued, in order to keep them, if not over winter, to a very late period of the season.

This may be done in a common hot-bed frame or frames, under glasses, which might be well matted over in hard weather. If placed in such, they should be laid pretty upright, in the ordinary way of *soughing* ; closely together, but not touching ; and if placed in dry sandy earth, they will keep the better. They should be exposed to fresh air as much as possible, and on fine days the glasses should be entirely removed ; always putting them on at night, however, for fear of frost, and at all times, in rain. They should be cleared from dead leaves, and every species of litter that might occasion dampness. Or,

They might be kept, much as above, in a more rude kind of frame, formed with coarse boards, or with dry bricks, and filled with sandy earth ; to which a light frame of hoops or laths might be fitted, in order to support an oil-cloth cover, or tarpaulin. By such, they might be defended from rains, and from snow ; and with the addition of straw or mats, from frost. It would be necessary, however, to expose them to light, and fresh air, on all occasions ; as otherwise they would become yellow, and ill-flavoured ; which is generally the case with cauliflowers kept in sheds or cellars.

Of taking up and storing Parsnip.

Parsnip should be lifted, and be stored, about the latter end of the month ; either as directed above for carrot, or for want of room, may be pitted in

dry sandy earth, in the manner now generally practised for potatoes.

Of sowing Peas.

Peas may be sown about the end of the month, in every respect as directed in January, which see. They may have a chance of weathering the winter, and of escaping mice, or other vermin; but they will not come in many days earlier than those sown about the first of the year. I have often seen the crop sown in February beat all the preceding ones, both for quantity and earliness.

Those who have the conveniency of early forcing houses, may raise crops of peas at a very early period of the season, by planting some true early frame in the borders of a cherry-house, peach-house, or vinery, that are intended to be forced from the beginning of the year, or in February. If sown about the middle of this month, or first of November, as directed in January, they would be fit for transplanting by the time the forcing commenced. Some content themselves with sowing at this time, in the borders of these compartments, without transplanting at all; but peas are much more prolific by being transplanted, and run the less to straw, which is an advantage, in forcing of them.

Of lifting and storing Salsafy, Scorzonera, and Skirret.

These may all now be lifted, and be stored for winter use, in the manner directed above for carrot, or otherwise, as shall be thought most proper.

Of cleaning the crops of Spinage.

Hoe and weed the crops of winter spinage, according as they may require, and put them in proper condition before winter. See September for directions concerning this matter.

SALLADS.

Of sowing small Sallading.

Chervil and cresses may still be sown, as hinted at in the two last months. The sooner now, however, the better, that they may get a little established before the frosts set in.

Of planting Lettuce.

Plant out, as directed last month, some of the plants sown the latter end of August, in order to succeed those planted in September, which see.

Of sowing Radish.

Queen or turnip-rooted radishes may yet be sown, to succeed those sown last month, and in August. If a few of the London short-topped radish were now sown, they might, perhaps, come in about Christmas. These, however, should be sown under a wall, in a south aspect, or on a border in front of a pinery or early forcing-house.

November.

KITCHEN VEGETABLES.

Of covering up Artichokes.

THE roots of artichokes are liable to be injured, often quite killed, by severe frost. They should therefore be covered up, before the winter set in, with stable litter, in order to preserve them. First clear away the decayed stalks, and the bulk of the leaves; and then lay the litter along the rows, of a breadth sufficient to cover the extended roots, according to the age and size of the stools, and to the thickness of a foot, or more, if there be much straw in it; treading it, or beating it well down with the fork, in order to prevent it from blowing about.

Sea-weed is an excellent manure for artichokes; and to this covering may be added a quantity of it, as it comes ashore throughout the winter, if it can be obtained. Of this, see March.

Of covering up Asparagus.

Asparagus should now also be covered; not so much for the fear of frost, the roots being very

hardy, but for the purpose of manuring the ground about the plants. For this purpose, good dung should be laid on; and not mere litter, as frequently is done, in the idea that the roots would otherwise perish. Fresh stable-dung, to the thickness of six inches, should be laid on, to which may be added an equal quantity of sea-weed, if it can be had; but this may be put on at any time through winter, as it happens to be cast ashore. I do not know a better manure for asparagus; which the reader may see more particularly noticed, by turning to this article in March.

Previous to laying on the above covering, after having cut down the haulm, the ground should be cleared from weeds, and the surface should be well stirred in the raking; or it may be stirred with a small four-pronged fork, which is a better method, to the depth of two inches. This is advisable, in order that the juices of the dung may more readily find their way to the roots and fibres.

Of sowing Beans and Peas.

Beans, if not sown as hinted at last month, may now be sown or planted, on an early border, under a wall or hedge; choosing the Mazagan or Lisbon kinds, which answer best at this season. Sow also, if not done last month, a few early Frame, or Charlton peas. See full directions for both these articles in October and January. Be careful to entrap and destroy mice, which often attack the rows of beans and peas, in winter particularly.

Of covering up early Celery.

Some of the most forward celery, in the apprehension of severe weather, should be covered up with dry bean haulm, or with bents, which are preferable, that it may be readily come at, in the manner as directed for parsley last month. The later crops, intended for a spring supply, may be left to take their chance of the weather, as they might be injured by being too long excluded from the air.

Of covering up Sea-Cale.

Sea-cale should now be covered up, in all respects as advised above for asparagus; observing to use plenty of sea-weed, if it can be obtained; which is the best manure for this vegetable. Of forcing sea-cale, see the Forcing Garden for November.

SALLADS.

Care of winter Sallads, &c.

The crops of chervil, cresses, endive, lettuce, parsley, and of radishes, sown and planted as directed in the two last preceding months, should, in the prospect of severe weather, be covered with care; and in the manner as hinted at in September, under the head *parsley*; which see.

Of sowing small Sallading.

Cresses and mustard may be sown, in all respects as noticed in January, if a constant succession be required throughout the winter, either in the stove,

green-house, or any forcing-house, in boxes, pyramids, or in the borders. See January on this subject.

Of sowing Radish and Lettuce.

Short-top raddish, and the queen or turnip-rooted kinds may be sown on the border, close in front of a pinery or other stove; and if the winter be not very severe, they may have a chance of coming to perfection. If not, the trouble is little, and the expence next to nothing.

A little brown Dutch and green coss lettuce might be sown at the same time along with the raddish, which might also have a chance of succeeding. See January on this head.

Of trenching, or ridging up vacant Ground.

Now trench, dig over roughly, or ridge up all vacant pieces of ground, according as they may require, in order that the weather may meliorate them, by acting on the surface; which, for this purpose, should be enlarged as much as possible, by being left quite rough.

December.

KITCHEN VEGETABLES.

THERE is hardly any thing to be said on this head, further than to refer the reader to last month; and to advise the speedy fulfilment of the directions there given, respecting the care of the different vegetables mentioned, if care to preserve them throughout winter have not been taken. It is “the dead time of the year;” and if the articles advised to be sown in October and November have not been sown, they may as well now be delayed till next month; as in all probability the seeds might lie in the ground in a state of inactivity, and so would be the more liable to perish.

Of trenching and digging Ground.

Work, for the melioration of the soil, may go on, as directed last month, if the weather will permit. But it is by no means advisable, even for this purpose, to trench or dig ground in a wet state; nor to bury in it, much snow, in trenching or digging. It is wrong to trench or dig in manure so, though we see it done every day. The workmen had bet-

ter be paid their wages, and be sent to bed, than be thus employed.

There is another error I wish to point out, viz. The wheeling out of dung, and laying it in barrow-loads on the borders or quarters, where it is not intended, perhaps, to be digged in for months. The wheeling out of manure is certainly a very proper business in hard weather; and it is equally proper to lay the necessary quantity on each particular spot. But why lay it out to a certain waste and loss, when that waste can be saved with so little trouble, namely, the laying it in a compact heap, and covering it with a little earth? This trouble, and that of spreading it out at the time of cropping the ground, can by no means counterbalance the loss of the virtues of the manure; which are either exhaled by the action of the atmosphere, or bleached away by heavy rains. If these little heaps lie long, the spots under them are too much manured, and the intervening spaces too little; and so of course the crops rise unequally, and are often partly lost; some places being too scant of crop, and in other places the crop going off by scald.

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FRUIT GARDEN.

FRUIT GARDEN

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FRUIT GARDEN.

INTRODUCTION.

NEXT to the importance of cultivating culinary vegetables, is that of cultivating fruits. Most fruits, when well matured, are nutritive, and pleasant to the palate. No doubt we can better dispense with fruits, than with certain culinary vegetables ; and the lower classes are obliged to be contented with few, or with the kinds more common, and such as are easily obtained. But the wealthy are often at greater expence and trouble in procuring fruits, than in procuring kitchen esculents, and more cheerfully bestow such expence.

The charms of a handsome desert are great ; and pains have been taken to procure fruits from all parts of the world, to furnish, and set it the better out. The pleasure is greatly increased by the idea, and it is often with delight the guests are told, that “ these “ are the productions of my own garden.” In short, the anxiety attendant on the cultivation of exotic

fruits, in a climate so variable and precarious, can only be recompensed by such pleasure. Those who have no garden, partake of the fruits of another, perhaps with indifference; but he who has a garden, and much fruit at stake, can never be indifferent to it. He must in some measure live in fear, hope, and pleasure, as the year is bad, favourable, or bountiful.

By much the heaviest part of the expence incurred, in the laying out of a modern garden, goes to the account of obtaining fruits; for which, walls, rails, and various forcing houses are reared, in order that they may be had in the greater perfection, and at untimely seasons. The productions of all countries and climates are concentrated, and exhibited in high perfection, perhaps within the compass of a single acre. On the table of a British Peer, or other gentleman of ample fortune, in the months of August and September, a greater variety of fruit may be seen, than is to be met with on any other table in the world. From the humble strawberry, to the luscious pine-apple, the finest fruits of all quarters of the earth may here be found.

But the cultivation of exotic fruits is not confined to the gardens of the great, or the extensive land-proprietor. The merchant, the farmer, and even the mechanic, generally have their walled gardens, and often hot-houses, for this purpose;—a striking proof of the wealth of the country in the first place, and, in the next place, of the anxiety of all who can afford it, to obtain fruit. Indeed, the cot-

tager makes all the exertions he can, to obtain fruit of one kind or other, by planting a tree against his hut, or a bush or two in the corner of his cabbage-garden.

The cultivation of fruit has occupied the attention of the people in all ages, and in all countries; and in many parts of the world, it constitutes the chief employment of the inhabitants. The vineyard and the wine-press, the garden of figs and olives, and the orange-orchard, give employment to millions, and bring wealth to thousands. Even in these kingdoms, the cultivation of fruits for the public market, and for making cyder and perry, gives employment, and brings wealth to many. The quantity of these liquors drunk in some counties of England appears almost incredible. I may be allowed to add, that the manufacturers and mechanical labourers in all our great towns willingly spare their odd pennies for a pound of apples, or of plums. With a pint of gooseberries they please their children, and with a pear, perhaps, their wives. Fruits, in this case, may be supposed to bring peace: in many cases, they promote health; certain diseases being cured, and many being warded off by their use.

The cultivation of fruits, then, would appear to be no trivial matter. It engages the attention of many, in one way or other,—from the nurseryman who sows the pip and puts on the graft, to the rectifier, and the rich wine-merchant. It has engaged the attention of the writer for twenty-five years; who now cheerfully bestows this further labour, in

the hope of being able, in the following pages, to set forth methods of cultivating many kinds of fruits, that shall both be satisfactory and instructive.

SECT. I.

ON THE CONSTRUCTION OF GARDEN-WALLS, &c.

THE chief reason for rearing walls around a garden, is for the production of fruits. A kitchen-garden, considered merely as such, may be as completely fenced and sheltered by hedges, as by walls; as indeed they were, in former times, and examples of that mode of fencing are still to be met with. But in order to obtain the finer fruits, it becomes necessary to build walls, and to erect pales and railings; and the ground thus inclosed is generally occupied in the productions of esculents, and of flowers. Hence the fruit-garden is generally combined with the kitchen and the flower-gardens; and hence a simplicity and neatness in the construction of our walled gardens, unknown to former times. The forcing, or exotic garden is often added to these, and the whole becomes a scene of great interest and resort.

In designing and laying out a modern garden, then, a degree of taste, as well as of fitness or propriety, ought to be displayed; the basis of which is the right placing, proportioning, and constructing of the walls. If these be properly set down, so as

to answer the cast of the ground, and be raised to proper heights, according to its extent, the rest is easy, and follows as a matter of course.

In this particular branch of gardening, utility and simplicity ought to go hand in hand, otherwise true taste will be wanting. It is not in curves, circles, and ogees, we shall find satisfaction. The walls, if the ground will admit of it, should all run in direct lines. They may be built level, or they may be inclined, so as to suit the general cast of the ground; but the nearer to a level, the better they will please. The eye is distracted, and the idea totters, in beholding any building apparently unstable. We can look upon a mast placed oblique, or on a tree growing aslant, with firmness and satisfaction, because we know the one is supported by ropes, and the other by roots; but on a wall running much off the level, we look with a degree of distrust, or of fear.

It is necessary, then, in the first place, to select a piece of ground answerable for the purpose; of good aspect; sheltered, or that may be sheltered; lying on a comfortable substratum; level, or falling towards the south, one foot in thirty, or in twenty. If the north wall can be placed quite level, and also the south wall, on a lower level, and so as that the east and west walls shall fall from north to south, a foot in thirty, or in twenty-five; and if the ground be lengthened from east to west, in the proportion of three to two, the extent being two or three acres; on such a spot may be erected a garden that will not fail to please.

Next, on a spot of the above, or of similar dimen-

sions, sloping so to the south, and not level from east to west, but sloping a few feet (perhaps one in fifty) to the east. In this case the opposite walls should run directly parallel to each other, both with respect to latitude, and to inclination; otherwise the eye will be displeased by the distorted appearance of the coping, when at the full height.

Next, all as here described, and the ground sloping to the south, and to the west.

And next, a dead level spot. In which case particularly, the walls should be of different heights, as will be noticed below. But

Ground falling to the north, or much distorted, should be avoided; as being very unfit for erecting walls or other buildings upon; on which a complete modern garden cannot be formed, without considerable difficulty, and a great additional expence.

In all cases, the walls should be free and open, especially the south, east, and west walls, that they may be covered on both sides with fruit trees. They are erected at a very considerable expence, and why should a yard of their surfaces be lost. They should be sheltered by distant plantations, if the ground be not naturally sheltered, and may very properly be surrounded by shrubby or standard fruit trees, (as will be noticed below), provided these do not come too near them, or shade them from the sun. If a clear border and walk, the breadth of twenty or thirty feet, intervene between the walls and the shrubby, the trees planted against them will be sufficiently free and exposed.

With regard to the materials of which fruit-walls

should be constructed, brick is certainly the best ; that is, for the superstructure. Stone is best for the foundation and basement. Bricks give more warmth, and answer better for training trees to, than stone. South, east, and west aspects, should therefore be faced with brick, if the wall be not entirely built of it. If the wall be built entirely of stone, or be backed with stone and be faced with bricks, and if trees are to be trained against such backing, the stones should be run in regular courses of from four to seven or eight inches thick, and each fifteen or twenty inches in length, by which there may be a frequency of joints, and that the trees may be properly trained against the wall.

Dark-coloured whinstone * is the next best material to brick, (when properly squared and hammer-dressed), as it absorbs heat ; and next to that, a kind of bluish-grey stone †, that rises in natural flags, the thickness, or nearly the thickness, of bricks, and which require but little dressing, or trouble in building. The nearer the stone approaches to black, the more valuable it is for the purpose ; the preference being given to the darkest whinstone, merely because it absorbs and retains heat more than light-coloured stones, and by reason of its close texture or grain, repels moisture better, or retains less of it than other stones.

But good durable freestone, being properly squa-

* *Greenstone* and *Basalt* of mineralogists.

† *Sandstone-flag* ; or, in parts of the country consisting of primitive rocks, *Clay-slate*.

red hammer-dressed, and run in courses as above, makes a very good wall for training the more common kinds of fruits to ; such as apples, cherries, pears and plums ; and may answer very well for east, west, and north aspects. But the better aspects, as south, south-east, or south-west, on which are to be trained apricots, figs, nectarines, peaches, and the finer sorts of pears and plums, should, if at all convenient, be faced with brick, or be built of dark whinstone.

The basement, as above noticed, should universally be built of durable stone, if it can be obtained, in preference to brick ; whether the superstructure be of brick, or of stone in courses. In many cases, it is cheaper than brick ; in any case, more solid and durable. Supposing a ground-level line to be determined on, the foundation or basement should be sunk at least a yard below it. If for a stone superstructure, it should be thirty inches thick ; for a brick and half-brick thick wall, twenty inches ; and if for a wall faced with brick and backed with freestone, two feet, or twenty-six inches thick, according to the size of the stones. That is to say, the basement should generally be six inches thicker than the superstructure, there being a shelf or scarcement of three inches on either side of the wall. If the basement be built with bricks, in order to save materials, the scarcement need not be made more than two inches ; that is, the half breadth of a brick on either side ; so allowing four bricks to the basement, and three to the superstructure.

With respect to the height of fruit walls, if considered merely as such, the matter might easily be determined. I would say, twelve feet; that height being very convenient for the operations of pruning, watering, gathering the fruit, &c. and admitting of a sufficient expansion of the branches of most trees. But the height of garden-walls should be regulated by the extent, or by the apparent extent of the ground inclosed by them. I say, by the apparent extent, as well as by the real extent; because much depends on the form and cast of the ground, in how much the eye shall be pleased. If it be a square, it will seem less than it really is; and if a lengthened parallelogram, larger; and according to its flatness, or its elevation, the eye will be deceived.

A small spot, surrounded by high walls, has a bad effect, and gloomy appearance. The walls being built of different heights, gives relief. In a garden of an acre, being a parallelogram of the best proportion, and gently elevated, the north wall may be raised to the height of fourteen feet; the east and west walls, to twelve; and the south wall, to ten feet above the ground level. If the ground slope considerably, the breakings in the respective heights of the walls may be less; they may be only a foot; and the relief will be the same, or nearly the same, to the eye, in ranging along their surfaces. In a garden of greater extent, the walls may be raised to a greater height; but by no means in proportion, if it extend to several acres. The extreme height should not exceed eighteen feet, of the north wall

of any garden ; in which case, if it be situated as above described, and contain, suppose four acres, the east and west walls should be fifteen, and the south wall only twelve feet high, in order that it may give the necessary relief to the eye.

In a garden four hundred feet long, and three hundred feet broad, which forms a handsome parallelogram, and contains something above two English acres, if the ground lie on an easy slope, a very eligible height for the north wall is sixteen feet; for the east and west walls, fourteen; and for the south wall, twelve. But if the ground be quite level, or be nearly so, the north wall being the same height, the east and west walls should only be thirteen and a half feet, and the south wall, eleven feet in height ; or, the east and west walls may only be thirteen, and the south wall ten feet high, if it be a dead level.

With respect to the coping of garden-walls, much has been said, and opinions are at variance. Some insist, that the coping should not project beyond the face of the wall, and others, that it should project several inches, in order to throw the drip off the foliage. Others, again, give it a slope to the north, or to the west side, in order to throw all the water to the worst aspect, or to that not covered with trees.

It may be right to throw the whole of the water to the side not covered with fruit-trees ; but it is wrong to throw it all to the worst aspect, if that aspect be planted ; being doubly disadvantageous to the trees placed on it, if there be any disadvantage in the rains falling upon them ; which indeed

is questionable, except, perhaps, just when the fruit is ripening off.

The quantity of rain that falls on an ordinary wall is but trifling; and if even a light breeze of wind prevail at the time, it is generally dashed against the foliage in dripping, is scattered, and dissipated. In short, it is quite as well for the trees that there be no projection at all, if the coping be fixed. A temporary coping of boards, projecting, perhaps, a foot or eighteen inches, may be of service to the trees in spring, while in bloom, in repelling the perpendicular frosts, that are often injurious to them at that time, and to the tender fruit. But such frosts are less hurtful than baneful frosty winds, which fall not perpendicularly, and which are better warded off by certain screens, to be hereafter recommended for the purpose.

The coping, to a wall, is as the roof to a house. If a house be not well roofed, there can be little comfort inside: so neither can a wall be in good condition, or stand long, after water is allowed to penetrate. The object, then, after having built an expensive wall, ought to be, to place on it a neat and durable coping. It ought to be neat, because there the eye ranges, more than on any other part of the wall. It ought to be durable, that the expence of erecting it be not thrown away.

The most effectual cope is freestone. It may also be made the most handsome. The fewer joints in the coping the better. They should be neat, small, and should be filled with white, or with brown

lead, according to the colour of the stone, instead of lime, or at least with lead and putty lime in mixture *. The stones, if such can be procured, should be a yard, or a yard and a half in length, that there may be the fewer joints. They should be three and a half or four inches thick at the centre, when finished, and two at the plinth, being bevelled off to either edge on the upper surface, either from a point at the centre, or from a point on each side of it, so leaving a few inches flat on the top. The edge should project an inch and a half, or two inches at most, over either surface of the wall, having groves underneath the plinth, in order to collect and to throw off the drip. Thus the coping will look exceedingly neat and linear; and if the plinth be painted of a uniform and chaste colour, will not fail to please.

Of Wooden Walls.

Fruits may be produced in as high perfection on wooden walls as on those of brick. They are no doubt less durable, especially if constructed in the common way, and carried to a great height, the posts and supports being generally unguarded from the effects of damp, and the winds having great power over them.

I have lately constructed several ranges of wood-

* It is wrong to check the joints of any stone-coping, though frequently done, as the water, if once it gets entrance, lodges in the check, and loosens the lime or other cement.

en walls, extending to many hundred lineal feet, in a manner, I believe, entirely new. They are not perpendicular, but recline considerably towards the north, presenting a surface at a better angle with the sun than if they were upright. They are placed on sloping ground, and range in five ranges or lines due east and west, at the distance of seven yards from each other, the southmost being five feet high, and the northmost seven, forming a kind of amphitheatre, that has a very pleasing effect. They are composed of imbricated boarding, and are laid over with pitch, to give them durability. The supports are set on (not set in) blocks of stone, which are sunk in the earth, and firmly laid on solid foundations, three feet deep, under the ground level.

On these walls are planted the best of fruits, the aspects being all south. The trees, of course, are trained horizontally, in the manner of espaliers, and promise exceedingly well. It is thought the flavour of the fruit will be very much enhanced by the great influence of the sun, on account of the sloping position of the walls, and their being black. Their north sides are covered with currants, to come in late.

Of Espaliers.

Espaliers, if well managed, are both ornamental and useful in the garden, affording a deal of fruit, yet taking up little room. The railing ought to be plain and neat, four or five feet high, and the upright spars to which the trees are trained, nine

inches apart. The posts should be set in blocks of stone, and should be run in with pitch, or, which is a better way, set on blocks of stone, in an iron hoze batted into the stone. These blocks, in either case, should be sunk under the surface of the ground.

The proper situation for an espalier-rail is in the border, by the principal walks, and at three or four feet distant from the walk. They may be placed on each side of the cross walks, if the garden be not very small; but in that case, they would both confine and overshadow the kitchen crops too much.

Some think dwarf standards, or buzelars, have a better effect than espaliers. This is a mere matter of taste; but, if equally well managed, they are equally useful. They ought to be kept within due bounds, however, and should not be suffered to rise too high, nor spread too widely. Generally speaking, the apples and pears for this purpose should be *dwarfed*, that is, the apples should be grafted on paradise stocks, and the pears on quince stocks, as will be further noticed.

SECT. II.

ON THE FORMATION OF FRUIT-TREE BORDERS.

MANY vegetables will do very well in fifteen or eighteen inches of soil; but fruit-trees will not thrive long in a soil less than two feet in depth. If

a yard, so much the better. The borders for wall-trees should not be less than twelve feet in breadth ; but fifteen or eighteen feet is not too much. That is to say, the soil should be prepared to these breadths and depths, if it be not naturally good, and perfectly answerable for the different kinds of trees to be planted ; for different fruits require different soils, as will be more particularly noticed below.

But it is not enough that the upper soil only be improved. The subsoil must also be attended to, and be laid comfortably dry ; otherwise success in the rearing of fruits will be precarious and doubtful. Draining, as before observed, is the basis of every improvement in horticulture ; being, in the first place, the basis of improvement in the soil. In this particular case, of preparing fruit-tree borders, it is indispensable.

But further, it is also necessary that the roots of the trees be kept out of the subsoil, if it be of a cankering quality, as till, or corroding sand. This matter has appeared evident to many, and various means have been taken to prevent them from getting down to a bad substratum, at much trouble and expence. I shall here submit a method, perhaps the least expensive and most effectual of any ; which has been successfully practised for several years.

If the subsoil be wet and cankering, let the border be cleared out its whole length, to the depth and breadth before mentioned. Lay the bottom in a sloping manner from the wall to the walk, giving

it a fall of six or eight inches. Run a drain along by the conjunction of the border and walk, a few inches lower than the bottom thus formed, which shall be capable of completely draining off both under and surface water. It may be a rubble drain, or a box-drain, according to necessity.

Now lay over the bottom thus formed and smoothed, two inches of good earth, if clayey, so much the better; which pulverize, and pass the roller over; then an inch of clean pit or river gravel, which also pass the roller over; another inch of earth, as above, which also roll; and, lastly, an inch of gravel, also as above. This should be done with the materials rather in a dry state; but now moisten the whole moderately with a watering-pot, and roll until the surface acquires a hard, shining consistency. Keep rolling and watering alternately, till the whole becomes firm, glazed, and till the earth and gravel be intimately mixed and incorporated.

Thus may a bed be formed for the roots of fruit-trees, much superior to one of stone or brick, and at an expence infinitely less; of a nature more kindly, and which no root will penetrate.

The compost earth should now be thrown in, having been previously prepared and laid up in a ridge along the outer edge of the border, before the floor thus made get damaged by wet, or other accidents; and care must be taken, that at no future period it be disturbed in digging or trenching the border.

A fit composition for apples, apricots, cherries

and figs, is, three fourths hale, lightish earth, and one-fourth strong loam ; being properly composed, and moderately enriched with cow-dung, or a mixture of cow and hog dung, or of cow and stable dung ; avoiding the latter, however, if the two former can be obtained, for the cooler dungs answer best for fruit-trees. The average depth of the borders for these kinds should be thirty inches.

Peaches, pears, and plums, require a stronger body of earth. A very fit soil for them, is, three-fourths loam, and one-fourth sandy earth ; being well mixed, and moderately enriched, as above. The depth for peaches and nectarines may be thirty inches, as above ; but for pears and plums, it should not be less than three feet on the average ; that is, two feet nine inches at the walk, and three feet three inches at the wall, or thereby.

Although I have here classed the above fruits, and specified two distinct and particular soils for them, yet, generally speaking, they will all thrive in hale, loamy earth, of a middling texture. But, if it be necessary to prepare a bed or floor for the roots of the trees, as above directed, it will rarely happen that it will not also be necessary to add *depth* to the borders, and a quantity of fresh earth ; in doing of which, such compositions as the above may be imitated, or, in better judgment, may be improved. The compost, however, of whatever sort, should be duly prepared before planting the trees, and should be rendered, by frequently trenching and turning it, perfectly homogeneous.

SECT. III.

ON SITUATIONS AND SOILS FOR ORCHARDS.

BEFORE proceeding to plant an orchard, it becomes necessary to think well of its situation and soil, and what prospect there is of ultimate success.

With respect to private orchards, it is often necessary, and always proper, provided there be scope, and the soil be answerable, to connect them with the kitchen-garden. In this case, if the ground be not naturally sheltered, care must be taken to do so, in as effectual a manner as possible, by plantations of forest trees or hardy shrubs, placed so as to screen the fruit-trees from heavy, and from prevailing winds. The orchard may be placed on any side of the kitchen-garden most suitable to the cast of the ground, and according to conveniency; or it may lie all round the garden, either simply as an orchard, or as an orchard combined with the shrubbery.

The latter method is a very good way of obtaining fruit, without lessening the pleasure-garden, in cases where ground is scarce or valuable, or where economy is an object. Indeed, by growing fruit-trees among shrubbery, the value and beauty of the pleasure-garden is greatly enhanced. In spring, the blossoms of fruit-trees charm us; and in autumn, the fruit delight us. I have planted several orchards in this way, which have given general satisfaction.

In bleak situations, and yet where it is wished to rear an orchard; and in cases where ground cannot be obtained, on which to plant distant screen plantations; it is an excellent method to intermix hardy shrubs and forest-trees among the fruit-trees, which act as nurses to them, and defend them from the bad effects of the weather. But in this case, care must be taken to thin away the shrubs in proper time, especially from the interior of the orchard; reserving, however, a screen of hardy trees or shrubs all round the margins, or on the sides most exposed.

In less bleak situations, it may be proper to plant an outer row, or a double row, of hardy trees, shrubs, or fruits, (as hazel, walnut, chesnut, &c.), when it may be thought improper to intermix the whole orchard with shrubs, but when the fruit-trees are to be planted at double thickness, as hinted at below. These would act as an outer screen, and be very useful. Indeed, few situations occur, where it is not necessary to be at less or more pains in rearing screens for the orchard; which never can be too well sheltered, if it be not shaded from the sun.

With respect to the situations of public orchards, more latitude is to be taken. They are often spread over large districts of country, and are sometimes to be found in solitary situations; yet not always on account of the superior quality of the soil, or the excellence of exposure. These orchard tracks, no doubt, have arisen out of small beginnings, and in many instances have spread themselves out of hamlet-gardens, where fruit-trees have been planted by the cottagers, and have, by their care and attention,

thriven in a singular manner. In other cases, an orchard has been planted by a proprietor, or perhaps by a peasant, in a chance corner of good soil, which, by having prospered in a superlative degree, has enticed others in its vicinity to plant; and hence have orchards been spread over large districts of country, variously situated, and of various soil.

Many of our orchards have risen out of another circumstance, namely, they have originally been planted by the religious, in the days when too many of a certain class of men were idle, and otherwise were drones in the hive. Wherever the cloister has stood, may be found the remains of the apple and the pear; and to the Monks we are indebted for the introduction of the best fruits in the country. These men were generally good gardeners, and displayed great judgment in the choice of the situation and soil of their orchards. Indeed, this choice often regulated the situation of the cathedral. They seldom established themselves in situations unfavourable for the rearing of orchards; the cultivation of fruits and flowers being their favourite amusement.

Hence we find, that many of the antient orchards, probably often by the direction of the Monks, have been admirably situated on sloping banks, in good soil, and where they have been completely sheltered by the cast of the ground, or by woods. A better example cannot be followed by the public or by the private orchardist. Let him who intends planting an orchard, by which he expects to gain his bread, study the choice exhibited by the Monks,

whether of situation or of soil. Let him cast about the old monasteries, and learn their histories;—where stands the finest old pear tree? what kinds prevail in the neighbourhood? &c.

Many of the Clydesdale orchards, (which are very productive), are admirably situated in this manner:—either on sloping banks, exposed to the south, east, or west sun, which are naturally sheltered by the windings of the river bank, or artificially, by plantations; or in flat or hollow ground, lying between the banks and the river, where they are completely sheltered, and where the soil is excellent. Such situations are worthy of imitation; and many rivers in the country, in better climates, afford opportunities equally good, to those who may have it in contemplation to plant.

Most fruit trees, as observed in the preceding section, will thrive in loamy earth, of a middling texture, provided it lie on a wholesome substratum, and be of a competent depth. Large tracks of such soil are to be found, and often, also, in good situations. But we frequently meet with an excellent situation for an orchard, where the soil is various; where some is good, and some very indifferent. In such a case, it becomes necessary to improve the bad soil; and in planting, to suit the kinds of fruits to the nature of the different soils contained in the intended orchard.

It would be in vain to plant where the bottom is not naturally dry, or is capable of being rendered so by draining. Therefore the wet or spouty spots should be carefully drained in the first place, and

pains should be taken to prepare a proper bottom for the roots, as directed in the preceding section; otherwise little good may ultimately be expected of the trees, planted on such spots.

Care should also be taken to form a soil of a competent depth for the respective kinds to be planted; by trenching, if the soil be naturally deep enough, and by the addition of fit manures; or by the addition of other soil, if it be too shallow, and also of fit manures. See Section III. of the Culinary Garden, on the application of manures to different soils.

In the preceding section, I have specified particular soils for apples, cherries, pears, and plums, and also the depth of soil respectively required by these fruits, which need not be repeated. It is not to be expected, however, in planting an extensive orchard, that equal pains are to be taken in preparing the soil, as for wall-trees; but it is necessary to go a certain length, in order to be successful, and the farther the better. The soil should be trenched and prepared to the depth of two feet at least; and for further observations on the improvement of soils, see Section II. of the Culinary Garden.

SECT. IV.

OF THE KINDS OF FRUITS FOR WALLS AND ES-
PALIERS, THE PROPER ASPECTS FOR THEM,
AND THE DISTANCE AT WHICH THEY SHOULD
BE PLANTED.

VARIETIES of the different kinds of fruits have been multiplied exceedingly of late years, indeed to an extent, with regard to some, out of all ordinary bounds. It is the fate of humanity to fall into errors, and of mankind often to overshoot the mark, when anxious in the pursuit of certain objects. That of obtaining a variety of fruits, out of which might be selected the best, was a laudable pursuit of the horticulturist; and we are certainly much indebted to several eminent persons for their exertions in this way, and for the pains taken to introduce many valuable sorts. To this point the object should have been confined. But the matter has been much over done, and very many kinds of fruits have been spread over the country, that are not worth the trouble of planting, to the evident loss and disappointment of thousands.

In the sowing or planting of culinary vegetables, of bad or indifferent sorts, the loss is not great, as it can be remedied perhaps the same season, and at any rate the following; but in planting worthless kinds of fruit-trees, there is a certain loss of labour,

and much loss of time, as the error, from the nature of the thing, can seldom be detected for several years. It is then with much regret and disappointment they are stubbed up, or that other sorts are engrafted upon them.

I have long made it my business to persuade my employers, in the planting of new gardens and orchards, to limit the varieties of fruits, in the firm conviction that I was acting for their interest; for certainly the rage for multiplying them, and of having a numerous collection, has too much prevailed of late. It were better to be contented with a few good kinds, that produce well in most seasons, than to plant many sorts, (even of those reckoned the finer), for the sake of variety, of which a crop is obtained, perhaps once in three, or in seven years.

It is no doubt of very much importance to select and adapt the kinds to the climate, soil, and aspect; and in some cases, a greater variety may be planted, with propriety, than in others. This matter must be determined by existing circumstances, by the fancy of the proprietor, and by the discretion of the operator. The following lists exhibit a collection, in my opinion, ample enough in any case; though, perhaps, according to better judgment, certain kinds may be substituted for some here named, that may be equally valuable. Certain kinds may also be placed differently, with respect to aspect, as may be thought proper, according to the climate and local situation.

Those marked with an asterisk (*), I consider the most valuable kinds, and such as should be pre-

ferred in the planting of small gardens, where the walls are of little extent.

Of the kinds of Fruits for Walls.

NAMES.	ASPECT.
<i>Apples.</i>	
* Golden Pippin,	South, S. E. or S. W.
* Oslin Pippin,	East or West.
* Ribston Pippin,	ditto.
* Golden Russet,	ditto.
Royal Russet,	East, West, N. E. or N. W.
* Nonpareil,	South, S. E. or S. W.
* Hawthorndean,	East, West, or North.
Yorkshire Greening,	ditto.

Apricots.

* More-Park,	South, S. E. or S. W.
Orange,	ditto.
* Breda,	ditto.
* Brussels,	ditto.
Roman,	ditto.
Masculine,	South, East, West.

Cherries.

* May-Duke,	All aspects.
Arch-Duke,	South, East, West.
* Black Heart,	ditto.
White Heart,	ditto.
Harrison's Heart,	ditto.
* Morella,	East, West, and North.

Figs.

* Blue or Black Ischia,	S. E. South, or S. W.
* White or Brown Ischia,	ditto.
Black Genoa,	ditto.
White Genoa,	ditto.

NAMES.	ASPECT.
<i>Nectarines.</i>	
* Elruge,	S. E. South, or S. W.
* Duc de Tello,	ditto.
* Fairchild's early,	ditto.
* Murray,	ditto.
Scarlet,	ditto.
Temple,	ditto.

<i>Peaches.</i>	
* Red Magdalen,	S. E. South, or S. W.
White Magdalen,	ditto.
* Noblesse,	ditto.
* Royal George,	ditto.
* Montauban,	ditto.
* Admirable,	ditto.
Teton de Venus,	ditto.
* Late Purple,	ditto.

<i>Pears.</i>	
* Jargonelle,	South, East, West.
* Cressane,	S. E. South, or S. W.
Colmar,	ditto.
* Beurré de Roy,	South, East, West.
Gansell's Bergamot,	East or West.
* Autumn Bergamot,	ditto.
Swiss Bergamot,	ditto.
* Achan,	ditto.
Yair,	ditto.
* St Germain's,	ditto.
Summer Boncretien,	ditto.
Chaumontelle,	South.

<i>Plums.</i>	
* Green Gage,	S. E. South, or S. W.
* Yellow Gage,	ditto.

NAMES.	ASPECT.
* Blue Gage,	East or West.
* Fotheringham,	ditto.
* La Royale,	South, East, or West.
* White Magnum Bonum,	East or West.

Of the kinds of Fruits for Espaliers, &c.

The following are kinds for espaliers, dwarf-standards, or buzelars; and these, particularly for small gardens, ought to be grafted, viz. the apples on paradise stocks, and the pears on quince stocks.

Apples.

- * Royal Codling.
- Kentish ditto.
- * Carlisle ditto.
- * Grey Leadington.
- Royal Pearmain,
- * Ribston Pippin.
- Gogar Pippin.
- * Oslin Pippin.
- Golden Rennet.
- * Royal Russet.

Cherries.

- * May-Duke.
- Holman's Duke.
- * Black Heart.
- White Heart.
- * Morella.
- * Kentish.

Pears.

- * Jargonelle.
- * Summer Bergamot.
- * Grey Achan.
- * Swan Egg.
- * Moorfowl Egg.
- Yair.
- * Carnock.
- * Warden.
- Scots Bergamot.
- Longueville.

Plums.

- * Green Gage.
- Orleans.
- * Fotheringham.
- * White Magnum Bonum.
- Blue Perdrigon.
- * Bullace.

Kinds of Fruits described.

I shall give a short description of the kinds here enumerated, taking them as they stand in the lists.

APPLES.

1. *Golden Pippin*.—This apple is universally known, and generally esteemed the king of pippins. It is a good keeper, when fully ripened, and amongst the best of our table-fruits. It is small, rather long than round, and very beautiful. The tree grows freely in good, lightish soil; but in stiff, or wet land, it languishes*.

2. *Oslin Pippin*; by some, *Original Pippin*; by others, *Arbroath Pippin*.—This is an excellent apple. As to flavour, it is outdone by none but the nonpareil, over which it has this advantage, that it will ripen both in a worse climate, and a worse aspect. It is larger than the golden pippin, and more round; earlier, but not so good a keeper. The tree grows freely, even in tolerably good soil, and is a good

* By Mr Knight's Treatise on the apple and pear, we learn, that this kind in particular, and several others are going fast to decay in the Herefordshire orchards, and that durable trees cannot be procured from old ones by grafting; with many other curious facts concerning the apple and the pear. We have an apple in Scotland, called the Balgon Pippin, which inherits every virtue and property of the golden pippin, grows larger, and the tree is more healthy and luxuriant. It has probably been brought from England, when the trees he mentions were in their middle age.

bearer. This kind, in the opinion of some, has obtained the name of the *original pippin* *, from the circumstance of its growing freely by the branches, when stuck into the ground, in the manner of a willow. It is properly, in my opinion, called the *Arbroath Pippin*, from the circumstance of its having been brought to that place from France, by the Monks, at the time, or after that celebrated abbey was built. Most of our standard fruits have been introduced from the Continent in the same manner.

3. *Ribston Pippin*.—This may be called an universal apple for these kingdoms. It will thrive, and even ripen at John-o'Groats, while it deserves a place at Exeter, or at Cork. It is much larger than either of the preceding fruits; greenish yellow, with red or brown streaks next the sun; but to these, inferior in flavour. It is not so early as the *Oslin*, but a better keeper; as it will keep till apples come again, quite good. If well ripened, it is very fit for the table; for the kitchen it is unrivalled. The tree is a free grower in almost any situation, if the soil be tolerably good, and is among the best bearers.

4. *Golden Russet*.—A very good handsome apple, of a middle size, and well flavoured, as are all the russets. The tree, if well managed, is a free grower, and tolerably good bearer.

5. *Royal Russet, or leathercoat*.—Much the same

* Supposed to be the *aurea mala*, or the original golden apple.

as the former; larger, but not so handsome; a better bearer and keeper.

6. *Nonpareil*.—This is chief of the russets, and indeed, in respect of flavour, when well ripened, chief of the apple kind. It is smaller than either of the two last named, and more greenish. It can hardly be matured in Scotland without the aid of a wall, and south aspect. When fully ripened, it is an excellent keeper. In a good soil and situation, it may rather be termed a great bearer. It likes a sound hale earth, or what is called a hazely loam; and it very well deserves our best attention.

7. *Hawthorndean*. By some, *the White Apple*; or, *the White Apple of Hawthorndean*.—It is said to have been introduced by the celebrated Drummond of Hawthorndean, and takes the name of that very romantic retreat, on the river Esk, near Roslin, in the neighbourhood of Edinburgh. It is an excellent early apple, large and beautiful; and is a great acquisition to the market gardeners and fruit growers of Scotland. It is a hardy, free grower; begins to produce the second year after planting, and bears most plentifully. Were it a good keeper, it might be termed the best kitchen apple we have. It thrives in any situation, and will do better in a north aspect than any other apple at present known.

8. *Yorkshire Greening*.—Inferior to the last named in many respects, though a better keeper. Yet it is a good, middle-sized fruit, and bears well. Its name denotes its colour. It is a baking apple.

9. *Royal Codling*.—A good kitchen apple, large, a free grower, and good bearer.

10. *Kentish Codling*.—Equally good.

11. *Carlisle Codling*.—Better than either. Hardy, free growing, and a great bearer. None of the codlings are keepers.

12. *Grey Leadington*.—This is a good apple, and the best of the Leadington kind, though the smallest. It is a free grower, a good bearer, and a good keeper.

13. *Royal Pearmain*.—The pearmains are all good late apples, and tolerably good bearers, of which this is the best. It is large and beautiful.

14. *Gogar Pippin*.—A very good, middle-sized fruit; hardy, free growing tree, good bearer, and very late keeper. Fit for the table, when well ripened. It takes its name from Gogar, an antient seat near Edinburgh.

15. *Golden Rennet*.—A pretty summer apple, of a middle size; a free grower, good bearer, but not a good keeper.

APRICOTS.

1. *More-Park*.—This is a large, handsome apricot, and when well ripened on a south wall, is thought by many the richest of the stone fruit kinds. Unless it be planted in very good soil, the tree does not grow so freely, nor does it bear so plentifully as some of the other sorts; but then, one fruit of it is worth three of any other apricot. It is sometimes called the Peach Apricot.

2. *Orange*.—Pretty large, and beautiful; but not

near so high-flavoured as the preceding; excellent for preserving; a free growing tree, and a good bearer.

3. *Breda*.—Better than the last named, insomuch that it is generally a more plentiful bearer, larger, and more juicy.

4. *Brussels*.—The fruit is middle-sized; red next the sun, and greenish-yellow on the other side; juicy, and high-flavoured. The tree is more hardy than any of the preceding, and is a good bearer.

5. *Roman*.—This is a good apricot, of a moderate size: round, and of a deep yellow, when fully ripened. It is not, however, very juicy. The tree is generally a good bearer.

6. *Masculine*.—This is the earliest apricot we have, and is chiefly planted on that account; for although the tree be a good bearer, it is not esteemed a very good fruit. It is small, round, red towards the sun, and yellow on the other side, when full ripe; the flavour sharp and tartish.

CHERRIES.

1. *May-Duke*.—We have no cherry equal to this. It thrives in all soils, climates, and situations; and even in a north aspect, becomes fit for the table. When well ripened on a good wall, and southern aspect, it is delicious.

2. *Arch-Duke*.—This is an excellent cherry, when well ripened on a good wall; but it is not so good a bearer, nor fit for so many different situations as the *May-Duke*.

3. *Black Heart*.—A good cherry, larger than the

May-Duke, but with less flavour, except in the full sun, and not so good a bearer.

4. *White Heart*.—Much the same as the preceding, pale coloured, and a more shy bearer. Both these *hearts* require a wall in Scotland, in order to have them in perfection.

5. *Harrison's Heart*.—This is a very good, large cherry, and by many is esteemed equal to any of the hearts. It is a better bearer in general than the white heart.

6. *Morella*.—This is an excellent fruit, and next to the May-Duke, is the best cherry we have. When ripened on a wall, in the full sun, it acquires a size and richness of flavour, superior to any other. This is a fact not generally known. Being a free grower, and good bearer, in any situation, the worst is generally allotted to it.

7. *Holman's Duke*.—Just the May-Duke, said to be improved. I have sometimes known it grow to a very large size, and almost black, when in the full sun; but have just seen the same thing happen with the May-Duke in good soil, and in a good season.

8. *Kentish*.—Fit only for tarts; a great bearer, and planted very frequently in orchards. It is sometimes called the *Red Morella*.

FIGS.

See a description of Figs in Section III. of the Forcing Garden.

NECTARINES.

1. *Ebruge*.—This is decidedly the best nectarine we have for the open air. The fruit is large and handsome; and when well ripened, attains to a dark red colour next the sun. The tree is a free grower, even in a middling soil.

2. *Scarlet*.—Very good, but more delicate than the *ebruge*, and less fit for a bad climate.

3. *Murray*.—A very good, middle-sized fruit; red towards the sun, and greenish next the wall. The tree is a free grower, and pretty good bearer.

4. *Duc de Tello*.—This is an excellent, large, high-flavoured fruit, when well ripened; but it requires the full south sun, and a good climate. It is a dark-red, or purple, next the sun, and a bright red on the under side, according to the colour of the soil in which it grows*. The tree grows freely, and is a good bearer.

5. *Fairchild's early*.—This is among the earliest nectarines we have. The tree is hardy, and a good

* It is a fact known to most gardeners of observation, that the colour, and also the quality of soils, have an effect on the colour and flavour of fruits,—even on the colour of many flowers. The effects of the colour of soils, on that of fruits, is most perceptible on the delicate kinds, such as Grapes, Peaches, &c.; but to a nice observer, it extends in a greater or less degree, to all fruits. For instance, if two black Hamburgh grapes, made from cuttings of the same plant, shall be planted, the one in a dry hazely loam, and the other in a moist black earth, the fruit of the one will be brown, or of a grizzly colour, and of the other, very dark red, or black; and the grape will be more juicy, though flatter in flavour, than the other grown in a drier soil.

bearer. The fruit is small, round, red, and high-flavoured when well ripened.

6. *Temple's Nectarine*.—This is a middle-sized fruit, light-red next the sun, and pale yellow on the other side. When well ripened, it shrivels, and in that case is very high-flavoured. The tree grows freely, and is a good bearer in general.

All these nectarines are *free-stones*. The *cling-stones* are not fit for culture in these kingdoms, at least in the open air, for want of climate.

PEACHES.

1. *Red Magdalen*.—This is a beautiful, middle-sized fruit, of a dark-red colour next the sun. Its flavour is equalled by none of the peach kind. The tree is a free grower, and a great bearer; and it is, upon the whole, the best peach we have, either for the open air, or the hot-house.

2. *Noblesse*.—An excellent peach; larger than the above, and not so high-coloured. More juicy, but not so high-flavoured. Also a free grower, and a good bearer.

2. *Montauban*.—Very good; but inferior to either of the above. The fruit is large, and dark-red, or purplish, next the sun.

4. *Admirable*.—A handsome large fruit, but more delicate than the Red Magdalen; nor is it so good a bearer, or so high-flavoured.

5. *White Magdalen*.—This peach is middle-sized, and of a pale colour; juicy, and pretty high-flavoured, if well ripened. The tree is a tolerably good

bearer; but on the whole, this sort is much inferior to the Red Magdalen.

6. *Royal George*.—This is a good peach, but the tree is rather a shy bearer, especially if not placed in a very good soil and aspect. The fruit is large, dark-red towards the sun, juicy, and high-flavoured.

7. *Teton de Venus*.—This is a large, rather longish fruit, of a pale colour, juicy, and melting; but it is not very high-flavoured. The tree is a good bearer.

8. *Late Purple*.—This is an excellent, large peach, of a very dark-red, or purple next the sun, juicy, and high-flavoured. In different situations, however, and in cold soils, it sometimes does not ripen perfectly. The tree is a free grower, and pretty good bearer.

The above peaches are all *free-stones*. It is said, that in America they give their *free-stone* peaches to the pigs, on account of their mealiness; being, as it were, over-ripened, and not worth eating; and that they only use the *cling-stone* kinds. Now, we have not climate sufficient to make these eatable in tolerable perfection.

PEARS.

1. *Jargonelle*.—This pear is universally known and admired in this country, and deservedly so. It is by much the best summer pear we have, and of these, the only one worthy of a wall. The fruit is long and large; greenish, with russet or brown

streaks on the side next the sun. When well ripened, it is high-flavoured, and very juicy. The tree grows freely in ordinary garden soils, and will thrive and bear better in light land than most other pears.

2. *Cressane*.—This is an excellent fruit, and esteemed the best of the bergamots. It is very high-flavoured when fully ripened; of a roundish, moderate size, and greyish colour, and full of small brown specks. Of the bergamots, it is the best keeper, though none of them keep long. In order to have it in perfection, it requires a good wall, the full sun, and a good loamy soil.

3. *Colmar*.—This is a long, large fruit, of a rich flavour, when fully matured; but for that purpose it requires the very best soils and situations, particularly in the northern parts of Britain; and it is even but in the best of seasons that it attains to perfection. Its colour is then a greenish yellow. Generally speaking, it cannot be called a great bearer, but it is a good keeper.

4. *Beurré de Roy; Brown Beurré; or, Red Beurré*,—(denominations which perhaps depend on the colour of the soil in which the tree may grow.) It is an excellent fruit; high-flavoured, large, and rather longish than round. The tree is a pretty free grower, but requires both a good soil and climate, and likewise a good wall.

5. *Swan Egg*.—A good fruit, and in tolerably good soil, a great bearer. It is a late pear, and a pretty good keeper. Egg-shaped, and greenish.

6. *Autumn Bergamot*.—A very good, high-flavour-

ed, middle-sized pear; a free grower, and great bearer.

7. *Swiss Bergamot*.—This is also a good wall-pear. It is of a middle size, striped red and green, juicy, and high-flavoured. The tree is likewise a very ample bearer, if planted in tolerably good soil.

8. *Achan*; *Grey Achan*; or, *Red Achan*.—It is the same thing. There is also a kind called the *Black* or *Winter Achan*, esteemed excellent, though somewhat smaller. Indeed, this may certainly be termed a winter pear, on account of its keeping well, and its lateness in ripening. It is middle-sized, of a sweetish, and rather particular flavour. The tree is a free grower, even in light soil, and a very plentiful bearer. There is a kind called the *Summer Achan*, a trifling, greenish fruit, not worth planting.

9. *Yair*; or, *Green Pear of the Yair*.—Said to be indigenous at that beautiful seat on the Tweed, about thirty miles from Edinburgh. It is green, smallish, sweet, and juicy. Early, and does not keep many days. It should be eaten off the tree. A free grower, and very great bearer.

10. *St Germain's*.—An excellent pear, large, and long, of a russet-green colour, and high flavour. A middling good bearer, and a good keeper. It requires a good soil and climate.

11. *Summer Boncretien*.—This is a large, beautiful fruit, juicy, and high-flavoured. The tree is not a very good bearer in general.

12. *Chaumontelle*.—This is an excellent middle-sized late pear, of a rich perfumed flavour, and when well ripened, it is very juicy. It requires a good

climate, a good soil, and a south aspect, in order to have it in perfection. The tree, if not planted in very good soil, and particularly if the season be but indifferent, often produces unshapely fruit, or a mixture of differently shaped pears; some being longish, some roundish, and some having the bottom of the stalk turned so as to resemble a horn.

13. *Gansell's Bergamot*.—Differing little from the autumn bergamot; but said to be the same thing, improved by culture. It is a very high-flavoured fruit, when well ripened.

14. *Moorfowl Egg*.—A very good high-flavoured, rather large pear, and a very good bearer. It is said to be originally Scotch. It is somewhat egg-shaped. A good standard fruit, and a pretty good keeper.

15. *Carnock*; or *Drummond*.—An excellent, high-flavoured pear, when well ripened, but not very juicy; brownish, longish, and rather small; and will keep a few weeks. It is a common standard pear in the Clydesdale orchards, and is a great bearer. It should be eaten before it gets mealy.

16. *Warden*.—There are several sorts of Wardens, of which Parkinson's is the best. They are late winter pears, good bearers and keepers, but only fit for baking.

17. *Scots Bergamot*.—This is a very good large pear, a great bearer, and very proper for a standard.

18. *Longueville*.—This is a longer, and, upon the whole, a better fruit than the one last named, inasmuch that it keeps better; but it is not so good a bearer.

PLUMS.

1. *Green Gage*.—The best, the most generally known, and most highly esteemed of the plum kind. It is round, small, and greenish, but when highly ripened on a wall, becomes brownish next the sun. It is a good bearer, when well managed, and requires both a good soil and climate. In Scotland, it requires the aid of a wall in the full sun, in order to have it in perfection.

2. *Yellow Gage*.—Very much the same as the preceding, only of a lighter, or more yellow colour, and russet towards the sun. I have only known two trees of it in Scotland, in a full bearing state; the one on a south, and the other on a south-west wall; which uniformly produced large crops of fruit, in high perfection. They were not in the same garden, though in the same county, (Fife); and both grew in strong soil; the one a rider, and the other a dwarf-tree.

3. *Blue Gage*.—Inferior to either of the above, in every respect, yet a good plum, and a good bearer.

4. *Fotheringham*.—This is a beautiful fruit, red, large, and rather longish. It is very high-flavoured, a good bearer, and hardly inferior to any plum we have.

5. *La Royale*.—This is an excellent, high-flavoured fruit; round, dark-red, and pretty large. It deserves a good soil, a good climate, and a good wall. It is not, however, a very great bearer.

6. *White Magnum Bonum*.—Egg-sized, and egg-shaped; the largest plum we have, and by no means the worst. When well ripened, on a good

wall, it is absolutely a rich fruit. Being a free grower and good bearer, like the morella cherry, it is thrust into the worst soils and situations, often very undeservedly. It cuts a good figure in a well set out desert, and makes an excellent preserve.

7. *Orleans*.—A pretty good, middle-sized, reddish plum; a free grower, and a great bearer.

8. *Blue Perdrigon*.—A very good, middle-sized, high-flavoured fruit; but not a very great bearer, unless in a loamy soil.

9. *Bullace*.—Of this there are two sorts, the white and the black; the latter is most esteemed. It is a standard or espalier plum, very fit for baking, and a great bearer.

Of the distances at which to plant Wall and Espalier Trees.

The following are the distances at which the different kinds of fruit-trees may be planted on garden-walls; taking the medium height at twelve feet, and varying the distance accordingly; that is, for a low wall, the more distant; and for a high wall, the less:

Apples, eighteen or twenty feet; apricots, twenty to twenty-four; figs, fifteen or eighteen; cherries, twelve or fifteen; nectarines and peaches, twelve or fifteen; pears, twenty-four to thirty; and plums, eighteen or twenty feet.

For espaliers, or low walls of five or six feet:—Apples, thirty; cherries, twenty; pears, thirty to thirty-five; and plums, twenty to twenty-four feet.

On walls ten feet in height, or upwards, *riders* should be planted between the dwarf or principal trees, in order the sooner to furnish the wall; but for low walls it is not worth the while, as gooseberries, currants, or raspberries, answer better, and produce fruit more immediately. Riders of all or most of the kinds in the foregoing lists can be had in the nurseries; but they should consist chiefly of apricots, cherries, nectarines, peaches, and plums; as few kinds of apples or pears would begin to produce crops, before it would be necessary to root them out, in order to give place to the dwarfs.

Buzelars, or dwarf standards, that are substituted for espaliers, may be planted at any distance from fifteen to thirty feet, according to the size it may be intended they shall grow to.

SECT. V.

OF THE KINDS OF FRUITS FOR ORCHARDS, AND THE DISTANCE AT WHICH THEY SHOULD BE PLANTED.

WHAT is stated in the preceding Section, with respect to the multiplicity of the kinds of fruits, and the propriety of limiting the varieties to be planted, will equally apply here. I shall therefore only enumerate a few kinds, marking those to be preferred with an asterisk, as before.

Apples.

- * Ribston Pippin.
- * Oslin ditto.
- * Gogar ditto.
- * Kentish ditto.
- * Royal Codling.
- * Kentish ditto.
- * Carlisle ditto.
- * Royal Russet.
- Wheeler's ditto.
- * Royal Pearmain.
- * Loan's ditto, (good).
- * Golden Rennet.

Cherries.

- * May-Duke.
- * Holman's Duke.
- * Black Heart.

Pears.

- * Jargonelle.
- Crawford or Lammas.
- * Carnock or Drummond.
- * Grey Achan.
- * Swan Egg.
- * Moorfowl Egg.
- * Yair.
- * Golden Knap, (good).
- Longueville.

Plums.

- * Orleans.
- * Damask, (black, good).
- * Damson, (black, do).
- White Perdrigon.
- * Blue ditto.
- Blue Gage.

Apples.

- * Kentish Rennet, (good).
- * Grey Leadington.
- Scarlet ditto.
- Summer Queening.
- Winter ditto.
- * Yorkshire Greening.
- * Margill, (very good).
- Margaret Apple, (good).
- * White Hawthorndean.
- * Norfolk Beafing, (good).
- Strawberry.
- * Pursemouth, (very good.)

Cherries.

- * Morella.
- * Kentish.
- * Large Gean.

Pears.

- * Summer Bergamot.
- * Autumn ditto.
- * Scots ditto.
- * Musk Robin, (good).
- Saffron.
- * Hanging Leaf, (very good).
- The Pound Pear. } for baking.
- Cadillac }
- Warden,

Plums.

- * White Magnum Bonum.
- Red ditto, or Imperial.
- White Bullace.
- * Black ditto.
- * Drap d'or, (yellow, good).
- * Queen Claude, (do. do.)

Most of the above sorts marked with an asterisk, as being preferred, have been described in the last Section. The others are generally known, and being of less importance, it is thought a particular description of them is not necessary, farther than as above included in parenthesis.

Of the Distance at which Orchard Trees should be planted.

Maiden plants, or such as are only two years from the bud or graft, of all the above kinds, are to be preferred to older trees: having boles or stems of three or four feet in length; the apples being worked on crab, and the pears on free stocks.

The ultimate distance at which apple and pear trees should stand, in a properly planted, and close orchard, is, from thirty to forty feet; less or more, according to the quality of the soil; taking, as the medium, thirty-six feet. In a poor soil and a bleak exposure, where the trees may not be expected to grow very freely, thirty feet is sufficient; whereas in good soil, and a sheltered situation, forty may not be too much.

Cherries and plums may be planted at from twenty-four to thirty-six feet, according to soil and situation, as above; taking, as a medium, thirty feet for the ultimate distance at which they are to stand clear of one another.

But it would be advisable, in the first instance, to plant four trees for one that is intended ultimately to remain; planting the proper kinds at the above

distances first, and then temporary plants between them each way; which temporary plants should be of the free growing sorts, that begin to bear early, such as the Nonsuch and Hawthorndean Apples, the May-Duke Cherry; and the Crawford and Yair Pears; or any others better known to produce fruit soon after planting. These should be considered, and be treated as temporary plants from the beginning, and must give place to the principal trees as they advance in growth, by being pruned away bit and bit, and at last stubbed up entirely.

If orchard trees be planted among shrubbry, &c. as hinted at in Section III., they may be planted at any distance, exceeding forty feet, that may be thought proper; but they should not be planted nearer, otherwise they will too much confine the shrubs. In this case, it will not be necessary to plant temporary trees, as the principals will be nursed by the shrubs.

In bleak situations, if forest and other hardy trees be planted among the fruit-trees, as also hinted at in Section III., it may not be necessary to plant so many (if any) temporary fruit-trees; or these may chiefly consist of the hardier sorts, such as the Hawthorndean Apple, the May-Duke and Morella Cherries, and the Scotch Geans, which produce fruit the soonest.

SECT. VI.

OF THE KINDS OF SMALL FRUITS, AND THE
MANNER OF PLANTING THEM.*Gooseberries.*

WITH respect to gooseberries, they have been multiplied out of all measure; and it may safely be said there is not one in twenty of the kinds enumerated in many of the catalogues worth planting. I shall here only name a few; marking those to be preferred, as in the other lists above.

Early Green.	* Ironmonger, (red.)
* Green Gascoigne,	* Nutmeg, (red.)
* Green Walnut.	* Large rough red.
Green Goliah.	* Champagne, (red.)
* Golden Drop.	* Ditto, (yellow.)
Upright Yellow.	* Smooth red,
* Honeycomb, (yellow.)	* Royal George, (white.)
* Sulphur, (yellow.)	White Orleans.
* Conqueror, (yellow.)	* Golden Knap, (yellow.)
* Globe Amber.	* Red Walnut.
* Crystal, (white.)	* Captain, (red.)
Green Globe.	Admirable, (red.)

Currants.

All the kinds of currants are good, viz. :
The Red, White Dutch, Black, and the Champagne or Grizzly.

Raspberries.

Common Red.	White Antwerp.
Common White.	Red Cane.
Red Antwerp.	Twice bearing.

These are all good sorts; and there are a few other varieties to be met with in some catalogues.

Strawberries.

* Virginia, or Scarlet.	* White Wood.
* Chili, (red.)	Red Wood.
* Hautboy, (grey.)	* Red Alpine.
Pine Apple, (green.)	White ditto.
* Bath, (white, and red.)	Carolina, (red.)

Those marked * are to be preferred, though all the kinds here named are good.

Of the manner of planting small Fruits.

Currants and gooseberries are often planted in lines, by the sides of the walks or alleys of the garden; but in that way, especially if not well managed, they are generally more cumbersome than useful. It is a better method to plant them in quarters by themselves, and to make new plantations every sixth or seventh year; as young plants are found to produce more handsome fruit, and also more plentifully, than old ones.

The same thing may be said of raspberries; which produce the finest fruit when young; that is, about the third or fourth year after planting, if properly managed.

It is proper to plant some of all the above fruits

on a north border, or other shaded situation, in order to prolong the season of them, if that be an object, besides planting them out in quarters, as hinted at above.

From four to six feet square, according to the quality of the soil, may be deemed a proper distance at which to plant the above fruits; that is, in good land, six feet; in middling land, five; and in poor land, four feet. Some may also very properly be planted against vacant places on any of the walls, pales, or espaliers. The Antwerp raspberry, in particular, and some of the kinds of gooseberries, are highly improved in size and flavour, if trained to a south wall.

Strawberries are often planted in beds; but a better method is to plant them in rows, about two feet asunder, and fifteen or eighteen inches in the row; or, in single rows, as edgings to the walks or alleys; in which way they generally produce very abundantly.

January.

OF PLANTING FRUIT-TREES.

IN dry, light soils, fruit-trees may now be planted, provided the weather be fresh, and not over rainy. If the soil be heavy, and if the weather be wet, the operation had better be delayed till next month, or till March. In absorbent soils, perhaps November is the best time to plant; but in heavy or wet land, March is a better season. Medium soils may very properly be planted in February; in which month full directions for planting all kinds of fruit-trees will be found.

If a plantation of these trees, either on walls, or in the orchard be in contemplation, it will be very proper to set about preparing the borders, &c. at this time, if the state of the weather will permit. To this particular, however, many people do not pay the attention it deserves, but plant without being at sufficient trouble in the previous preparation of the soil. On this subject I have been particular in Sections II. and III.; that is, in so far as relates to the formation of a proper sole or floor for the roots of the trees, and the composition of a fit body

of earth for their nourishment. These are works that require much time, and which ought to be done in the summer or autumn before planting, in order to do full justice to the trees. But the kind of preparation I here mean, is that of properly making ready the pits or holes for the plants, by throwing them out, and partly filling them again with fine compost, in which to bed the roots.

The pits should be made fully large according to the size of the trees to be planted, in order that their roots may be completely surrounded with light earth, made moderately rich with rotten dung, and rendered into fine homogeneous compost, by having been frequently turned and exposed to the action of the weather. Let them be made so deep and wide, therefore, as that a few inches of this compost may be placed under, and beyond the extreme roots, when planted; into which they will strike fibres freely, and which will very much promote their growth the first season. As much of the compost should be laid ready in a heap, at one side, as will be sufficient for covering the roots at planting. If pains be thus taken to prepare for planting, and if the directions given in February be followed, together with those for mulching and watering in the following months, every reasonable hope of success may be entertained. But owing to carelessness in the previous preparation of the soil, and by performing the operation of planting in a superficial manner, many disappointments follow,

Of pruning Fruit-Trees.

The operation of pruning many kinds of fruit-trees may go forward in this month, if the weather be moderate; that is, if it be so moderate as that a man can stand to prune; for, in that case, if we except the fig and the vine, as will be more particularly noticed below, few kinds will sustain injury. Indeed, if we except these, we may safely prune most fruit-trees at any time in the year.

Of pruning Apples and Pears on Walls and Espaliers.

Apples and pears being similar in their manner of bearing, that is, producing their fruit on short stubs or spurs, which issue chiefly from the sides, though sometimes from the ends of the branches, one mode of treatment, in respect to pruning and training, will answer for both. On walls of more than six feet in height, *fan-training* is to be preferred to *horizontal training*; that is, spreading the branches out like a fan, or like the hand fully opened and extended, instead of carrying a principal stem upright, and laying the branches from it, in a horizontal direction on either side. My reason for giving this preference is, that, by the first method, a tree can be made to fill its allotted place sooner by half the time, and the loss of a branch can be supplied with greater facility, at any period of its age, than by the last method. But for trees on very low walls and espaliers, the horizontal method may be practised with greater propriety; as they can,

not be trained so handsomely on such, in the fan manner, as on higher walls.

Mr Knight, in his communication to the London Horticultural Society, on *a new method of training fruit-trees*, observes, "That when trees are by any means deprived of the motion which their branches naturally receive from the winds, the forms in which they are trained operate more powerfully on their permanent health and vigour, than is generally imagined." In this sentiment I perfectly agree; and I may be allowed to add, that I have been engaged in the training of fruit-trees these twenty-five years, and have trained them in a great variety of forms. Some in the Dutch style, running out two branches first, perfectly horizontal, right and left, to the extent of three or four yards each way, and from these training shoots perfectly upright, at nine inches apart, to the top of the wall; some with screwed stems, and horizontal branches; some with upright stems and horizontal branches; some with stems six feet high, with pendant, upright, and horizontal branches, so as to appear like a star; and others in the fan manner; which last, I confess, I prefer to all other methods of training wall-trees. I have altered many from the above forms to this, both on walls and espaliers.

The distance at which the principal branches should be laid in, is from nine to twelve inches, according to the strength and nature of the tree, some growing more gross, both in wood and leaves, than others. Trees that have arrived at a full bearing state, and have filled the spaces allotted to them, require nothing farther in respect to pruning, than to

regulate their spurs, if much clustered, and to prune away the superfluous breast shoots made in summer, if this have not already been done.

Most kinds of pears make longer spurs than apples do, and they are also apt to grow more clustered, particularly in old trees. These should therefore be carefully thinned out; cutting away all the fore-right stubs, on which there are none but wood-buds; retaining the fruit-buds only, more especially such as lie nearest to the wall.

Apples often show fruit-buds on the bottom part of the breast-shoots shortened in summer; in which case, if the tree be thin of fruit-spurs, they are to be retained, the better to ensure a crop.

Some kinds of pears also produce fruit-buds in this manner, particularly in good seasons, and, of course, under similar circumstances, they ought to be retained; but otherwise, let them be cut clean off, that a profusion of useless breast-shoots may be prevented from rising next summer.

Trees that are still in training, and have not yet filled their spaces; require a different treatment. Their principal and leading shoots require to be shortened, in order to make them put out others to fill the wall or rail. This shortening must be in proportion to the strength of the shoots; that is, strong shoots may be shortened one-third of their lengths; weak shoots, one-half, or two-thirds; and very weak ones should be cut in to the second or third bud. This chastisement will cause them to put out plenty of branches in spring; out of which a necessary number may be retained, whereof to

form the tree ; of which see farther in July and August.

But the side branches of horizontally-trained trees, must on no account be shortened, except in the case of accidental bruises, or other misfortunes ; but must be extended at full length, until the tree have filled its place. The upright or leading shoot only is to be shortened, and that in order to make it put out lateral branches. If this leading shoot be strong, it may be headed back to eighteen or twenty inches ; but if weak, to nine or ten only. The necessity for this precision is, that a weak stem will only put out one pair of laterals, and a new leader ; and that a strong one will seldom push more than two pairs, and a leader. Hence the reason why a tree trained in this manner is so much longer in filling its place, than one trained in the fan-manner, as noticed above.

Some kinds of pears, no doubt, if in very rich soil, will, while in a young and vigorous state, push three pairs of laterals ; and if this be expected, from the apparent strength of the tree, the stem may be headed at thirty or thirty-six inches, instead of eighteen or twenty, as above directed.

Of pruning Apricots, Cherries and Plums.

Apricots, Cherries and Plums, produce their fruit both on spurs, and on the young shoots of last summer ; and under the head *pruning*, may very properly be classed, in order to prevent unnecessary repetitions. *Fan-training*, for all these kinds, is to be preferred to *horizontal training*, even on low

walls and espaliers ; though in the latter way they are seldom planted, particularly apricots ; and cherries and plums are found to do better as standards or buzelars. I shall therefore consider these trees as being trained in the former manner.

The principal branches may be arranged at the distance of eight or nine inches on a medium, according to their strength ; taking as the extremes, six and ten. Aged trees of all these kinds * are apt to form their spurs in large clusters, which in this case ought to be neatly thinned out ; chiefly cutting away the parts farthest from the wall, and retaining those placed nearest to it, that the fruit produced on them may be benefited by its influence. Spurs of apricots in particular, and some of the finer sorts of plums, that are placed at a distance from the wall, although they may blossom very well, and even set their fruit, yet seldom ripen them ; especially in a bad climate, or a bad season.

If, therefore, the tree be in a healthy state, and if there be an appearance of plenty fruit-buds on the shoots and branches of last and the former year, the extended spurs may be very much thinned away ; as the fruit produced on such shoots as can be laid close to the wall, will be much superior, both as to

* I might here except the More-Park apricot, and the morella cherry, which bear chiefly on the young shoots of last year, and on close buds or spurs, formed on the two year old wood. These, particularly the latter, should be trained much in the manner of Peaches, which see, farther onwards.

size and flavour. Along with the superfluous part of these clustered spurs, let the fore-right shoots and other spray of last summer be cleared away, if that have not been done in autumn; observing always to cut close back to the old wood, and to make clean wounds, not ragging the edges of the bark. This latter precaution is more necessary in the pruning of stone than other fruits, on account of their aptness to gum and canker at every bruise.

If the use of the saw be necessary, from the strength of any branch to be lopped, or cut out, let the wound made by it be smoothed with the knife; and if, from the position of any such wound, it be apprehended that water may lodge, to the detriment of the tree, let it be laid over with a little tar, or any mild paint, preferring the former; observing to preserve the coating in a sound state, so as to exclude air and moisture, till the wound be perfectly healed and covered with fresh bark. To exclude air and moisture, simply, is the use of any plaster thus applied. The quackery and false pretensions concerning the *charms* of Forsyth's plaster have long been detected.

The leading shoots and branches of such trees as have not filled their spaces, and which are to be considered as yet in training, must be shortened, and otherwise be treated much as directed above for apples and pears. But small shoots that abound with fruit-buds, and are well ripened to their extremities, may be laid in at full length. These may frequently be laid in between the leading and other branches, there to remain as temporary, and only till they

have ripened off their fruit. If any such were laid in last season, and still remain, let them now be cleared away.

Of pruning Figs.

Figs may now also be pruned with propriety, provided their shoots have been well ripened last summer. If otherwise, the work had better be deferred till next month, or even till March or April, lest the points of the shoots be yet hurt by frost; in which case they might be pruned to improper lengths, and would require to be gone over again. But supposing the shoots have been well ripened, and that they may be pruned with propriety, I shall state the method, as formerly practised by myself, and which, I believe, differs materially from the common way of pruning and training this plant.

“The chief art in training the fig is, to keep every part of the wall full of young shoots; the plant naturally running into naked and unsightly branches in the middle. Shoots, however, may be produced with facility, by *shortening*. They also rise abundantly from the root, round the stem of the plant. Producing its fruit on the shoots of the preceding year, these, if well ripened and hardened by the sun, should not be shortened, but should be laid in at full length, at the distance of twelve or fourteen inches from each other.

“When the tree arrives at a bearing state, the knife should be used with caution; for the more its branches are lopped, the greater a profusion of shoots will follow in consequence; nor will such

generally be fruitful, but soft and spongy. The most fruitful shoots of the fig are short-jointed, round, and of little length in proportion to their thickness *."

Of pruning Nectarines and Peaches.

Nectarines and peaches may also now be pruned. It is wrong to suppose, as has been advanced by some, that frost will induce canker at the wounds of these, or indeed any fruit-trees, at this period of the season. Their juices are now in a dormant state, the unripened points of the shoots will now be evident, if such there be on the tree; and it cannot be wrong to prune under these circumstances. But generally speaking, it is not wrong to prune any kind of fruit-tree, if we except the fig and the vine, at any day of the year.

These trees ought to be trained in the *fan* manner only. It is not practicable to train them to any considerable extent *horizontally*, as they produce their fruit entirely on the shoots of last year; and because these often require to be shortened, and the older branches to be cut entirely away, in order to obtain a supply of young bearing wood. A peach-tree, therefore, may be said to be always in training, inasmuch as there must be a constant cutting out of old, and encouragement of young wood, in every part of the tree, even after it has filled the full space allotted to it. How near the older branches may be placed to each other, is not very important.

* Forcing Gardener, article Fig-house.

They may sometimes be pretty close, and sometimes more distant, according to the number and position of young shoots upon them. These, in a tolerably healthy, and well-regulated tree, should lie at the distance of five or six inches from each other. It is the regular arrangement of the young shoots, more than of the older shoots and branches, that produces health and beauty in a peach or nectarine tree; and which, in summer, exhibits a regularity of foliage, and in autumn, a display of handsome fruit, in every part of the tree, highly pleasing.

As said above, the young shoots of these trees often require to be shortened. This is to be understood of such as are hurt by frost, (not being fully ripened to their extremities), bruised by accident, cankered, or mildewed; and more particularly of those from which it is wished to produce a supply of other shoots, either to fill a vacancy, or for extension of the tree. Such as are strong and vigorous may generally be headed back one-third of their lengths; those less strong, one-half; and those very weak, back to two or three buds; observing always to cut at a *wood-bud*, which may be distinguished from a *fruit-bud*, by its being long and flatish, the latter being short and turgid. On strong shoots, a wood-bud is frequently placed between two fruit-buds, and it is very proper to cut at such; generally cutting at half an inch above it.

In a tree extended to its full size, shortening of the young shoots is less necessary at or near to its extremities, unless hurt by frost, mildew, or canker, than in the lower parts; because, the more we cut,

the more the tree will grow ; and as all trees naturally grow strongest at their extremities, it follows that we should cut least there, and exercise the knife more freely in the lower and middle parts, in order to counteract this propensity, and obtain a regular supply of bearing shoots.

Unless for these reasons, the middle-sized, hard, and well ripened shoots that abound in fruit-buds, and have a bold wood-bud at their extremities, need not be shortened, but may be laid in at full length. It often happens, on such, that there will be a wood-bud at the point, and only one or two at the lower end ; the intermediate ones being all fruit-buds. It requires some care, therefore, to discriminate these, and some practice to know where to cut, if it were necessary to shorten such. To cut in the middle of the shoot would be useless, as no bud would push except that at the bottom ; and although the fruit-buds might bloom and the fruit might set, yet they would not ripen, for want of nourishment, occasioned by the want of a leading shoot.

Since writing the above, I have perused Mr Knight's new method of training fruit-trees, as communicated by him to the London Horticultural Society, which I think, upon the whole, very ingenious, but by no means such as to induce me to alter one word of what I had written on the subject. His method of training the Peach, as exhibited by the plate, evidently tends to produce a very ugly tree, without gaining any advantage ; since the Peach must continually be pruned, as said above, in order to obtain a supply of bearing wood. Neither can it

well be accounted a *new* method ; as it very nearly approaches to what has long been termed, in this country, the *sad* method of training.

I have more than once trained the branches of a peach-tree downwards, and to either side, as occasion required, but could never discover better fruit on the pendant, or horizontal shoots, than on those trained upright, or fanwise. If there be a just reason for training the shoots of any fruit-tree horizontally, in my apprehension it is the pear, and that chiefly on account of its natural luxuriance in good soils.

But it might be asked, what fruit-tree grows naturally in a horizontal manner? All, except the vine perhaps, grow upright, or, more properly speaking, in the fan manner ; spreading out their branches on all sides. Surely none grow like the larch, or the spruce ; and it has been a universal maxim of the best horticulturists, to direct the cutting out of cross wood, and to keep the tree moderately thin of branches in the middle.

Mr Knight, in speaking of training peaches, says, " These shoots, our gardeners, from Langley to Forsyth, have directed to be shortened in summer, or cut out in the succeeding spring ; but I have found great advantage in leaving them wholly unshortened," &c. I have to regret, that Mr Knight does not appear to have met with a book which I first published in 1797, under the title of " The Scots Forcing Gardener," in which, in treating of the training of peaches, I say, " Observe this practice (i. e. shortening the shoots), till the trees have filled their

places ; and afterwards shorten none, unless to fill any casual vacancy." First edit. p. 86.

" It is a common practice to shorten every shoot less or more. This may be proper in many instances, on peaches growing in the open air, as when the extremities of the shoots have not been fully ripened, and are injured by frost ; but it can only be so far proper in the peach-house, as to cause the plant push shoots to fill a vacancy, or to keep the bottom part of the trellis furnished with a supply of young wood." Fourth edit. p. 135. Now, without such shortening, and indeed without training the peach truly in the fan manner, by which only there can be a regular distribution of young shoots in all parts of the plant, what sort of looking trees shall we have ? truly, very unsightly ones. Whatever theory may suggest, good practice proves, that where healthy shoots can be produced, *there* can also plump, fair, and wholesome fruit be produced ; and that *there* will always be a regular flow of the sap.

Of destroying Insects on Fruit-Trees.

The business of pruning being over, I shall now give directions for a very important operation in the management of fruit-trees, which is, *washing* or *anointing* the branches, for the destruction, and to prevent the breeding of insects.

With respect to many of the insects that infest wall-trees, it is in vain we attempt their destruction in spring and summer. They are then in such vigour, and commit their ravages in a manner so sum-

mary, as often to baffle our best skill and endeavours for their suppression. At that season, also, the mean that might work their destruction, often works that of the foliage and fruit, on account of its powerful effects on the juices, which are then in an active state, circulating through every part of the plant. Winter is therefore the proper season to apply the following solution, when the juices are determined to the root, viz.

Soft soap, two pounds; flowers of sulphur, two pounds; leaf, or roll tobacco, two pounds; nux vomica, four ounces; and turpentine, an English gill; boiled in eight English gallons of soft or river water to six. It is to be used milk-warm.

Unnail or untie all the branches from the wall or trellis; brush every part of the tree clean with a soft brush, such as is used for painting; then with a sponge, carefully anoint every branch, shoot and bud; being sure to rub it well into every joint, hole, and angle, as it is there the eggs or larvæ of the insects are chiefly lodged. The rails, spars, &c. of the espalier or trellis, should also be anointed as above.

To insinuate that a wall should also be thus anointed or washed, may be thought going too far, though there cannot be a doubt of its efficacy, in that case, in eradicating all or most insects that infest our fruits. At any rate, none will hesitate to anoint a plastered wall, which may very easily be done, on account of its smoothness; and such walls frequently occur, not only in hot-houses, but out of doors, against which trees are trained.

This operation should be repeated every winter, some time between the fall of the leaf and the first of March, as may be found most convenient. The solution is effectually destructive of all kinds of insects, their eggs or larvæ.

If there be any specific for the cure of the canker other than the preparation of a good and kindly soil, lying on a comfortable bottom, (see the section on Soils), it is this unction, as it contains the two ingredients thought most efficacious for its destruction, viz. soap and sulphur. And if these have any effect, I think this a preferable season for their application, to summer; as, by dusting the foliage merely over with sulphur, the blood of the tree is not purged. In order to be effectual, the sulphur must be rubbed into the pores of the wood, and must be detained there some length of time. Now, this glutinous liquor, if properly applied, will continue to act upon the pores and juices of the tree for many weeks, or even months; whereas sulphur alone, applied to the foliage, is dissipated by the wind, or washed off by rains, perhaps in a day.

For the mildew, which is a minute parasitical fungus, and is greatly encouraged by the sickliness of trees, when their juices are corroded, or contaminated by improper treatment, nothing is so effectual a remedy, if we except the preparation of a fit soil, as this liquor; with which the shoots of trees affected with this disease should be carefully washed, as above directed.

Of dressing in the branches of Wall-Trees.

Now dress the trees neatly to the wall or trellis again, but use none of the old shreds. The old nails should also be new pointed, and previous to using, should be soaked in the liquor. Observe to allow sufficient room in the shreds or ties; that is, as much as would admit another shoot of equal size along with that laid in, provided it be one or two years old, vigorous and healthy; and for the large branches, generally as much room as will admit the finger easily, besides the branch.

In driving the nail also, (which should never be broad-headed), observe to lay its head in a position sloping from the shoot or branch, in order that these may not grow over it; which if they did, canker would most probably ensue in consequence; particularly if the tree be of any of the stone-fruit kinds. Observe further, to use no more nails, shreds or ties, than may be just requisite to keep the shoots and branches in a proper position. All others are cumbersome; nor should the shreds ever be broader than just to be sufficiently strong.

Of pruning Orchard and other standard Fruits.

These may now very properly be pruned, if not already done; and let it be here observed, that both the health of these trees, and the production of beautiful and well-sized fruit, depend much on judicious pruning. This matter is too little attended to in general, orchard and other standard fruits

being frequently let grow in a state perfectly wild ; and that too by those whose interests would be very materially served by a contrary conduct, namely, the market gardeners and fruit growers.

On young trees, the knife should not be used too freely ; but chiefly in order to cause them push shoots, of which to form a proper head. Generally speaking, the shoots may be shortened in proportion to their lengths, much as already directed for apples and pears trained against walls ; cutting clean away such as cross one another ; and *fanning* the tree out towards the extremities on all sides ; thereby keeping it equally poised, and fit to resist the effects of high winds.

When it is wished to throw a young tree into a bearing state, which should not be thought of, however, sooner than the third or fourth year after planting, the leading branches should be very little shortened, and the lower, or side branches, not at all ; nor should the knife be used, unless to cut out such shoots as cross one another, as above hinted.

But on aged trees, that have run into a confusion of shoots and branches, and whose spurs have become clustered and crowded, the saw and the knife may be exercised with freedom ; observing to cut clean away all useless spray, rotten stumps, or the like, as already directed. Thin out the spurs to a moderate consistency, so as to let the air circulate freely among the leaves and fruit next summer, and to let in the rays of the sun, which will give both colour and flavour to the latter.

Of clearing Orchard Trees of Moss.

Orchard trees often, particularly in humid situations, become stunted, and get covered with lichens or mosses. This stuntedness sometimes proceeds from a bad soil, and it is also frequently occasioned by stagnation of air among the branches and foliage; but from whatever cause it may proceed, it is of very pernicious consequences, both to the tree and its fruit. Thinning out the head, as above directed, will, in a great measure prove a remedy; which may be considerably aided by scraping and cleaning off the moss, and washing or anointing the branches with the liquor, as directed above for wall and espalier trees. This would be attended by another beneficial effect; that of destroying the eggs or larvæ of insects, which in most summers are no small annoyance to these trees. This clearing of the trees from moss, need not be repeated every year; once in two, three, or four years may be enough, according to circumstances; but it should never be suffered to overgrow too far, as in that case it would both be tedious and expensive to overcome.

Of planting Currants, Gooseberries, and Raspberries.

If plantations of these be required, this is a proper season for planting, provided the ground be pretty dry, and the weather be not frosty. In the section on the kinds of fruits, I have specified the distances at which these should be planted, according to the quality of the soil; directions which need

not be repeated here. I shall add, however, that the ground for these plantations should be trenched, or be dug to its full depth, previous to planting; and that although these fruits will generally do very well in ordinary garden land, well manured, yet currants, gooseberries and raspberries, thrive best, and are most prolific in sub-humid soils, in which there is a considerable proportion of moss. In strong loams, or in clayey soils, they will produce fruit abundantly; but will be less early than in sandy earth. In hungry gravels they do little good; in tills, they sicken.

Of pruning Currants and Gooseberries.

Currants and gooseberries may be pruned with propriety, either in this, or the next month, as may be most convenient. It is, however, very fit business at this time. These plants produce their fruit both on spurs, and on the shoots of last summer; but the fruit produced on the latter is always largest. The shoots to be retained, therefore, should be left at full length.

It is a very general practice to shorten all the shoots of these plants, less or more; and some leave hardly any thing else than the spurs formed on the old branches; both which modes are very wrong. The spurs on the under parts, and indeed on most parts of the old branches, may be left; only thinning them out a little, when very thick. The plant ought to be well thinned out in the middle, cutting clean out the *water-shoots* of last season, and all such as cross one another; generally leaving

the leading shoots and branches at the distance of nine or ten inches from each other: Thus keeping the plant free and open in the heart, and *fanning* it out regularly, on all sides. Suckers often rise from the roots of these plants, which should all be cleared away.

Of pruning Raspberries.

Raspberries may now also be pruned. They produce their fruit entirely on the shoots of last year, a supply of which rise from the roots of the plant, each summer, in great abundance. The old shoots being now of no further use, are to be removed, and three or four of the best of those produced last season should be retained in their places; at the same time clearing away all the rest of the young shoots; never leaving more than three or four of the strongest, otherwise the plant would become quite a bush next summer, and get out of all kind of order.

The most simple method, and perhaps the best, of supporting them, is, to twist or plait the shoots loosely together, and tie them at top with matting, pack-thread, or spun-yarn. If the shoots be pretty strong they will require no stake, unless the situation be very much exposed to the wind. Previous to tying, the shoots may generally be shortened a few inches.

A fanciful, and indeed a very sensible method of dressing raspberries, also, is to tie or plait the points of one-half of the shoots on the stools, respectively with each other, so as that each line may form a row of festoons, or arches; by which means they are per-

fectly secured from the effects of the wind, though ever so much exposed.

February.

Of planting Wall-Trees.

It is presumed that the borders have been prepared, as directed in Section II. and in January; that the kinds, and the distance at which to plant have been determined on, as specified in Section IV. and that the weather is fresh, and the ground in good condition for planting.

With respect to the age of the plants, maiden, or one year trained trees are to be preferred, especially of apples and pears. Even of the stone-fruits, such will succeed best; though two or three years trained trees are often planted. I here allude to the dwarfs. Riders of greater age than dwarfs may be planted, in any case, with propriety; they being considered temporary, and it being desirable to obtain fruit of them as soon as possible.

The roots of each plant should be trimmed, previous to being planted, by pruning off the points of those bruised in the taking up, and moderately thinning them out, if thought too thick, or too much

crowded. This is seldom necessary for maiden trees, but it is often so with respect to plants that have stood several years in the nursery, or that have been trained against walls or pales, and have made strong roots.

The roots should be, in some measure, rendered proportionate to the tops; and as the shoots and branches are to be headed down, or to be well shortened and thinned out, it follows that the roots should also be moderately thinned and pruned. In doing this, however, be careful to retain those most promising, and best furnished with fibres.

The surface level being determined on, prepare the pit so as that the plant may be placed just as deep in the ground as it was before, and not deeper; spreading out the roots and fibres, and carefully bedding them in the compost prepared for that purpose, as hinted at last month. Fill in the common earth, gently tread it round the stem, keeping it a few inches clear of the foundation, and secure the plant from the bad effects of high winds, by tacking it to the wall. Proceed thus, tree by tree, till all be planted. They require no further care till March, when it will be proper to head them down; for which operation, directions will then be given.

It is hardly necessary to observe, that espalier trees should be treated in every respect as above; and that buzelars, or dwarf standards, planted instead of espaliers, as now often done, should be treated in the manner of orchard-trees, as under.

Of planting Orchard Trees.

It is presumed that the ground has been trenched, and the pits prepared, as directed in Section III. and in January; and that the kinds, and the distance at which to plant have been determined on, as specified in Section V. Also, that the weather is favourable for the operation of planting. Maiden trees are unquestionably to be preferred to older plants; and next, those but two years from the bud or graft, that are clean and well rooted.

The roots having been trimmed in the manner noticed above for wall-trees, if fine compost have also been provided, in which to bed the roots, the process is the same. But if this be not the case, care must be taken to break the common earth as fine as possible with the spade, and to spread out, and carefully cover the roots with the finest of it; treading all gently round the stem of the plant, and observing that it be covered just as high as it formerly was in the earth. If the situation be much exposed to the wind, and particularly if the plants be large, they should be staked, in order to prevent them from being *wind-waved*; than which, nothing is more prejudicial to new-planted trees. They should be headed down, or be shortened next month; and directions will then be given on that subject.

If the orchard be not completely fenced, every care should be taken to guard the plants from hares, by properly bushing them round with thorns; which I think is the most effectual method, and that least

injurious to the trees. By wrapping the stems round with hay-bands, the air is too much excluded from them, which it is not, though they be ever so closely surrounded by thorns, and so as effectually to prevent the hares from coming at them. Those who besmear the stems of trees with oil, and with certain dungs, in order to save them from the depredations of hares and rabbits, prove themselves to be little acquainted with the economy of vegetation. By closing up the pores of the bark, they do the plants an equal, if not a greater injury, than the hares do by peeling them.

*Of cropping the ground among young Orchard
Trees.*

It is very proper to crop the ground among new planted orchard trees for a few years, in order to defray the expence of hoeing and cultivating it; which should be done until the temporary plants are removed, and the whole be sown down in grass. But it is by no means advisable to carry the system of cropping with vegetables to such an excess as is frequently done. If the bare expence of cultivating the ground, and the rent be paid by such cropping, it should be considered enough. As the trees begin to produce fruit, begin also to relinquish cropping. When by their productions they defray all expences, crop no longer. I consider these as being wholesome rules, both for the trees and their owners; of which the reader may see further, by turning to the same subject in November.

Of pruning Fruit-Trees.

The pruning of all kinds of fruit-trees may now go forward, with propriety. Even figs, nectarines, and peaches, may now safely be pruned. The effects of the winter-frosts on the points of the shoots will have made it manifest where to cut, and how much to shorten. By turning to this subject in January, the reader will find full directions; and also, for anointing fruit-trees for the destruction of insects, clearing orchard-trees from moss, &c.

Of planting Currants, Gooseberries, and Raspberries.

Whatever plantations of these fruits may be requisite, should be finished this month, if at all convenient; as, if the season be favourable, they will be in a state of vegetation before the end of it. See full directions on this subject last month.

Of pruning Currants, Gooseberries, and Raspberries.

Now also finish the pruning of these fruits without delay, as the buds will begin to swell, and may be rubbed off in the operation. See full directions last month.

Of digging the ground among Currants, Gooseberries, and Raspberries.

The pruning of these plants being finished, let the ground among them be digged over; adding dung or other manure, if necessary. Dig carefully,

and so as not to injure the roots; and observe to bury most of the dung in the centre of the intervals, in order to feed the fibres as they advance; that is, in cases where they have been planted in quarters. If planted in single lines, in the borders, &c. the same rule ought to be so far observed, as not to disturb other plants; but it may here be noted, that all roots are *best* fed at their extremities.

If the plantations be young, that is, under three years, a row of cabbages, beans, &c. may *now* be planted between the rows of bushes; or at the proper season, a couple of rows of carrot, turnip, or potatoes may be drilled in between them. But it is by no means advisable to *crop* between the rows of these plants, if above three years planted, and if their roots have met. The injury done the bushes might be more than equal to the benefit reaped in cropping with other vegetables.

March.

Of planting Wall, Espalier, and Standard-Trees.

ANY, or all of these may still be planted with success; but the sooner in the month the better, espe-

cially if the season be forward, and if the plants be in a state of vegetation. In cold situations, and in humid soils, trees may succeed very well if planted any time in the month; but in better situations and light soils, the work should be expedited as early as possible. See full directions on this subject in January and February.

Of pruning Fruit-Trees.

These trees may also still be pruned, but the sooner now the better; particularly apricots, cherries, figs, plums, and the early kind of pears, now probably fast coming into flower. Orchard-trees, and standards of all kinds may also now be pruned, if not done in the former months. But when it is necessary to wash or anoint the branches of any kind of fruit-tree, the pruning should not be delayed past the first week in the month, otherwise the buds are liable to be hurt, or to be rubbed off in the operation. See full directions on both these subjects in January.

Of heading down new planted Fruit-Trees.

Maiden trees that have been planted just now, or any time since October, should, about the end of the month, be *headed down*; that is, shortened back to a few buds, or a few inches, in the following manner: Trees that are intended to be trained *horizontally*, and have but one shoot or stem from the graft, should be headed down to four or five buds, out of which, if three spring, it is sufficient; one to be trained upright, and one on each side, horizontally.

If a plant have *two* shoots, cut away the weakest, and treat the strongest as above. But if the plant be furnished with *three* shoots, (and such are always to be preferred for this mode of training,) head down the middle one *only*, as above, if moderately strong; but to ten or twelve inches, if very stout; and lay in the other two, right and left, perfectly level. If these be quite entire, and ripened to the extremities, they must not be shortened.

Plants that are intended to be trained in the *fan* manner, and have but one shoot, may be headed down to four or five buds, if strong, and to three or four, if weak, in order that they may fill the wall or rail from the bottom. Such as have two or three shoots may each be headed to four or five buds, as above; out of which, if they all spring, are to be reserved a proper number to form the tree. Maiden trees intended for standards, or buzelars, should also be headed down; each shoot to form three to six buds, according to their strengths, in order to cause them push vigorous shoots, whereof to form the tree in a handsome manner.

New planted trees, that are not *maiden*, but two or three years from the bud or graft, should, generally speaking, *be well cut in*; that is, the last year's shoots should be shortened back to a few buds on each, in order to cause them push the stronger, and produce shoots to fill the wall or rail from the bottom. See *Pruning* in January, and *Training* in the summer months.

Standard trees also, two or more years from the bud or graft, should be well shortened, and the shoots should be moderately thinned out; leaving only

three or four of the best branches, and shortening the last year's shoots on each, back to three or four buds.

Of heading down stinted Fruit-Trees.

When trees become diseased and stunted through age, or by improper treatment, and produce bad fruit, few, and irregularly, it is often more proper to head them quite down to the graft, or bud, than to spend time in trying to recover them by a better mode of culture; that is to say, *trees of a good kind*; for otherwise, it would be more advisable to stub them up, and plant better sorts in their places. If their roots be examined, and be pruned and dressed, as noticed below, the success attending such *heading down* would be the greater. Under proper management afterwards, a fruitful, healthy tree, might suddenly fill the space occupied by disease and barrenness.

This operation, however, must be carefully performed; observing to cut to within a few inches of the graft or bud; making clean wounds, in a sloping manner, so as to shoot off wet; covering the wounds with a little tar or mild paint, in order to keep out rain and exclude air, until they be cicatrized.

The training of the new shoots differs in no respect from that of training the shoots of strong, healthy, young trees of the same sorts; the rules for *shortening*, for the purpose of filling the wall, &c. according to their strengths, next winter pruning, and so forth, being carefully observed.

This heading down may be practised on any kind of fruit-tree, with equal propriety; but in the treatment of *stone-fruits*, most care is necessary, with regard to making clean wounds, and in excluding air and moisture from them afterwards. Likewise cutting, if possible, in the heading down of peaches, &c. just above shoots or buds of some promise, that *will* spring.

Orchard, or other standard-trees that are very much stunted, and produce bad crops on account of ill-treatment, ungenial soil, or the like, may be *headed down*, as above directed for wall-trees, if any other mode of treatment be deemed insufficient for their recovery; at the same time improving the soil about them, as noticed below.

Some endeavour to recover stunted trees by other means, such as ripping the bark of the branches or stem longitudinally, in different places, through to the wood; paring off a slice of the bark, &c. But certainly there is no method equal to that of heading, or partially heading them down, and then dressing their roots, as now to be directed.

Of dressing and pruning the roots of stunted Fruit-Trees.

Besides the above operation of heading down stunted trees, for their recovery, it is necessary at the same time to be at some trouble with their roots, and to improve or renovate the soil for their encouragement afterwards. The ground should therefore be opened; their roots should be examined, and if necessary, should be pruned of all parts diseased

or cankered. They should also be considerably shortened, and the tap-roots in particular should be cut, or such as are pushing downwards into bad soil. Observe to make clean wounds, and to dress the ends of the larger roots with a little tar or paint.

If the soil be wet, and if the bottom be a till or cankering gravel, proper measures must be taken to drain it; and a healthy floor or sole should be formed for the roots, as directed in Section II. If the soil be naturally poor, and if the border be too shallow, let them be improved, as also there particularly noticed; being careful to dress the new pruned roots with fine compost, which will make them push many young fibres, and of course shoots, that will suddenly fill the wall again.

Standard-trees of all kinds that are stunted may be treated in like manner, after being headed down, as above directed. If not altogether old or worn out, it is astonishing how soon they will recover, how well they will bear fruit, and how long continue to flourish.

Of grafting the branches of Fruit-Trees.

It often happens that fruit-trees turn out to be of other sorts than those they were planted for; which in some kinds, particularly pears, cannot be discovered for many years, until they begin to bear fruit. This is a misfortune; and it is often with regret that the tree is rooted out, and another planted in its place. On the branches and stems of such, however, proper kinds may be engrafted with success. No doubt, the younger the tree or branches to be

grafted, the better; but those expert in grafting have wonderful success, even with very old apples, apricots, pears, &c.

Cleft, or crown grafting, are the methods most generally practised by those who thus renovate old trees, or, for fancy and amusement, engraft many different varieties on the same tree. If it be intended to renovate a tree entirely, all the branches should be headed and grafted; whether it have been *fanned*, or have been trained *horizontally*. They need not, however, be all cut to equal lengths; but indeed should be cut at different lengths, in order to have new wood issue, not all at one part, in a crowded manner, but at various heights, and so as that there may be room to train it properly. Two, three, or four grafts should be put on each branch, according to its size, in order to insure the taking of one; which is generally enough to leave ultimately, unless it be thought right to leave two on the larger branches, or on the stems of such trees as have been trained horizontally, and have been headed entirely down.

In grafting such, on branches more than two inches diameter, crown-grafting is the method to be advised; for smaller stems or branches, cleft-grafting;—methods known to every one proficient in the science of grafting, and which need not here be explained; particularly as it is not supposed a perfect novice would attempt a branch of the business so difficult, on such trees as are now under consideration.

When it is intended to have a variety of fruits produced on the same tree, branches of different sizes, and in various parts of the tree, may be grafted, in either of the above-mentioned ways, as may be most applicable to their sizes and situations. Small shoots, or branches less than an inch in diameter, may be done by whip-grafting. In all cases, care should be taken to secure the grafts from accidents, and to encourage their growth afterwards, by properly improving the soil in which the stock may happen to be placed; as, particularly if it be a wall-tree, it is much to be wished to have it fill its space quickly, that the wall may again be furnished.

From the middle of March to the middle of April, according to the forwardness of the buds and state of the weather, is the season for performing the above operations.

Of defending Fruit-Tree Blossoms.

The opening blossoms of the early kinds of wall-trees should be defended from frost, and the bad effects of frosty winds, that now generally prevail, particularly along the eastern coasts of these kingdoms. The early kinds only, however, and those placed in the best situations, will as yet require attention in this respect. The reader is therefore referred to next month, for full directions on the subject of screening the blossoms of all kinds of wall-trees, however situated.

Of planting Currants, Gooseberries, and Raspberries.

Any of these may still both be *planted* and be *pruned*, but certainly the sooner now the better; and likewise, that the ground among them be digged and be put in order. See directions on these subjects in January and February.

Of planting Strawberries.

Strawberries may be successfully planted about the middle or end of the month. In the section on Fruits, I have enumerated the kinds, and also mentioned the distances at which they should be planted. I need only further add here, that the soil should be put in good heart, by being properly manured, trenched, or deeply dug, previous to planting; and that, if the weather be dry, the plants should have a plentiful watering, to settle the earth about their roots, which should be occasionally repeated.

April.

Of watering new planted Fruit-Trees.

IF any of these, being new planted, have not been headed down, as directed last month, let it now be

done as soon in this as may be convenient. They must also be attended to, with respect to watering; which must be repeated the oftener as the season advances, and according to the heat of the weather. What is called by the gardeners *mulching*, is a very proper method of detaining the moisture about the roots, and in a great measure saves, or abridges the labour of watering. Let a small bason or hollow be made round the stem of each tree, a foot or eighteen inches in diameter, and two or three inches deep, according to the extent of its roots. Fill this bason with littery dung, to the thickness of five or six inches, over which sprinkle a little earth, just enough to keep it from being blown about. If the dung be short, and much reduced, earth need not be put over it. This both nourishes the young fibres, and keeps the ground about them moist in hot weather, if wetted freely once a-week.

Of screening the Blossoms of Fruit-Trees.

Many of the early kinds of wall-trees will now be coming into flower; and the choice sorts, such as apricots, nectarines, peaches, and the finer kinds of plums, should be defended from the bad effects of frost, and of frosty winds, that prevail at this season, particularly along the eastern coasts of these kingdoms.

It is a common practice to *screen the blossoms of wall-trees*, by sticking twigs of larch, or of evergreens, as firs, or laurels, between the branches and the wall, in such a manner as to overhang the blossoms, where thickest; and some, instead of these,

use the leaves of strong fern. These last are certainly fitter for the purpose than the former mentioned, as being lighter, and less liable to hurt the blossoms, when dashed by the wind against them. But all these are objectionable, on account of their shading the bloom too much, and too constantly, from the sun and light, by which they are rendered weak, and the fruit they produce often drop away, before arriving to any considerable size; so that all this trouble taken goes for nothing, as there would probably have been as good a crop, had the trees been left to take their chance.

But a better method is, to defend these blossoms from the bad effects of the wind, by nets, fixed so as to break its violence, ere it reach the tree. The bad effects of frosts in still weather, which may be said to fall perpendicularly, may be guarded against by fixing a temporary coping of boards to the top of the wall, so as to project a foot or eighteen inches over the trees; but these perpendicular frosts are much less hurtful than scourging, keen, frosty winds, that blast every species of vegetation, to a certain degree, while they prevail.

The most effectual guard against these are *canvas screens*, of a thin fabric, which are capable of breaking the force of the winds, and of admitting a considerable degree of light, and of sunshine; for it is often necessary to keep them over the trees for many days together, in a continued storm. The cloth for this purpose should be wove very thin, something resembling gauze, or buntine; and in order to make it lasting, and that it may the better admit light,

(which is of very great importance to the welfare of the tree, and for insurance of a crop of fruit,) it should be *oiled*.

The *screens* may either be fixed in frames, or may be in single sheets, and made to answer for one or for several trees, as they shall happen to be placed on the wall. In either case, they should be placed *clear* of the tree; that is, about the distance of a foot at top, and of eighteen inches at bottom. If placed so as that the wind can at any time dash them against it, the consequence is obvious. If in frames, they may be fitted to move in the manner of a common sash, between rafters, and may be double, as in a window, to go either up or down, in order to admit air. The rafters being made moveable, by being fixed with hooks to stretchers at top and bottom, the whole could easily be removed, or be replaced at pleasure.

Thus, a frame might be made of ten, fifteen, twenty, or more feet in length, to answer for one or more trees, as may be required; and if the whole be packed and laid up in a dry loft, garret, or shed, each season after using, it may last for many years.

If the *screens* be made in sheets, to hoist up and lower with pullies and cords, (which pullies may be fixed to the coping, as above mentioned, or to a beam or stretcher fixed at the top of the wall,) they should be suspended over small rafters or spars, of an inch and a half to two inches square, according to their lengths, placed so closely as to prevent the canvas from dashing against the trees, as above hinted. Sheets of this kind may be of any conve-

nient size, and made to cover one or more trees, as may be required.

I have had one sheet 200 feet in length, which I could join or unjoin at two or three different places, and could unclaw and hoist, or lower and claw up, in fifteen or twenty minutes. I first contrived it to claw at the top of the wall, but afterwards found it safer to do it at bottom, as a gust of wind had once nearly torn it away altogether. In the claw, it was hung by loops to the bottom part of the upright spars, (which were placed at four feet asunder,) so as to be a few inches clear of the ground. These rafters were fastened with hooks and eyes, to the coping at top; and at bottom, to stakes drove fast into the earth, eighteen inches clear of the wall.

In using these *screens*, in either of the above mentioned forms, the trees are always to be exposed to the free air and light, in good weather, through the day; screening only at night, and on bad days; applying them from the time the buds begin to open, till the fruit is fairly set; or till any fear of further danger from the effects of frost be past.

Some apply *screens* of mats, sewed together, or bound in frames, in manner as above; and they are sometimes hung singly over the trees, on hooks or pegs. But in no way are they so good, effectual, or *ultimately so cheap screens*, as those of canvas.

Nets make very good permanent *screens*, if properly constructed and put on. The ordinary way of applying these, is to hang them over the trees, without any seeming consideration of *why*; as they are generally hung over, close to the branches; the flower-

buds and spurs often sticking out *beyond* the net ; which of course might as well be at sea a-fishing. Instead of being hung on in so unmeaning a manner, they should be placed *out*, at the distance of fifteen or eighteen inches from the tree ; being kept off by hooked sticks, with their butts placed against the wall, and at the distance of about a yard from each other. In order to make these stand firmly, the net should be first stretched tightly on, and be fastened on all sides. By farther stretching it, to the extent of fifteen or eighteen inches, over the hooked ends of the sticks, it will be rendered so firm, that no wind will displace it ; and the sticks will also be made quite fast at the same time. If the nets were doubled, or trebled, and put on in this way, they would be the more effectual a *screen*, as the meshes or openings would, in that case, be rendered very small.

I shall here mention a sort of net, made on purpose for screening their brother's wall-trees, by two Ladies in Perthshire, which, both for invention and execution, does them great credit. They had read my *Fruit Gardener*, in which notice is taken of the above method of doubling the nets, and setting them out with sticks ; on which they at once improved, and imitated a substitute for the kind of thin canvas mentioned above.

The net was made of coarse woollen yarn, and wove very thick ; the meshes not being larger than would admit the point of the finger, even when fully stretched out. The propriety of this choice of wool, instead of flax, is evident ; as every mesh, made thus small, was in effect rendered much small-

er, both by the bristliness of the material, and its constant tendency to contract. Further, by its attracting moisture, such as cold dews, and hoar-frost, the bloom was wonderfully safe, and very snug indeed, through means of so simple a contrivance.

At the time I saw this net, (I think in April or May 1805), these industrious ladies had wove as much as covered a wall above a hundred yards in length, and twelve feet high, and intended weaving three times as much, for the other walls of their brother's garden. The net was set out with hooked sticks, exactly as directed above; and the bloom on the different trees was strong, healthy, and beautiful, though the weather at the time was very cold and frosty.

In *screening* with nets of any kind, they are always to be let remain on, night and day, till all danger be over; the trouble of putting them *properly* on being considerable, and there being no necessity for repeating such trouble; as they will in nowise injure the health of the trees, being incapable of shading them *very* much.

Of destroying Insects on Fruit-Trees and Bushes.

Destroying insects that infest fruit-trees, and now begin to make their appearance, is a very urgent and necessary duty.

The *aphides*, or *green flies*, are very destructive insects, and very much annoy apricots, cherries, peaches, plums, currants, gooseberries, and other fruits. The aphis begins his depredations very early, often attacking the leaves while yet unexpanded,

and preys very much about the points of the young shoots, which, in vain, endeavour to make head against this daring little enemy. He is, however, more easily routed than many others of these tribes; and may not only be put to flight, but may completely be destroyed by a fumigation with tobacco; which operation should be performed, on wall-trees, in the following manner :

Suspend a wax or oil cloth over the tree, or over the part affected, and nail its edges as closely to the wall as can be done without injury to the tree; then fumigate with the bellows till the cloth be quite full of strong smoke, or even longer, to fifteen or twenty minutes; choosing a still morning or evening, and previously damping the tree and wall with the garden-engine, if there have not very recently been a shower. It is material that the wall and tree be damp, as, in that case, the smoke will hover longer about them, than it otherwise would. By the time the smoke has entirely disappeared, the insects will either be dead, or very sick, and, upon removing the cloth, will be found lying on the ground in multitudes. The tree should now be heartily washed with the force-pump, first right, then left, in order to bring down any that may be lodging among the branches or leaves. Then dig over the ground at bottom, thus burying the dead, and destroying the stunned.

If there be not the conveniency of wax, or oil-cloth, as above hinted, a *canvas*, a large sheet, or mats, may be used; only observe to fumigate longer, and to choose a still day.

Currant and gooseberry bushes may be fumigated as above, by throwing over them a sheet or blanket, and laying a few stones or bricks on its edges, to keep it close down. I have even fumigated these, and also wall and standard trees, without using any cover at all; and that very effectually, by doing it early, in a still dewy morning, going from tree to tree, or from bush to bush, and returning again and again, giving them the other puff, till the insects became quite sick; then dashed them off with the engine, and had the ground about the roots of the plants dug over, in order to bury them. Sick they most certainly were, and, dead or alive, I never could discover a resurrection.

The *thrips* is a small destructive insect, hardly visible to the naked eye. When viewed through a glass, the larvæ appear of a high brown, or reddish colour. The complete insect has four wings, and walks with the lower part of its body turned upwards. They are very mischievous, and chiefly attack the extremities of tender shoots, or young leaves. They may be destroyed by a fumigation of tobacco, in the same manner as the green fly. The shoots and leaves they attack become shrivelled, brown, and rub to dust easily between the thumb and finger. When any leaves or shoots are perceived to be so, if you do not recognize the green fly, expect the thrips.

By this simple and expeditious method, fumigation, these insects, and several others, may be effectually destroyed at any time they happen to appear. The mode recommended by the late Mr Forsyth,

for the destruction of the aphid, is so tedious and troublesome, that few attempt it. I have tried it, and many other methods, but have found none so effectual and easy as the above.

Several other insects will begin to make their appearance, and to attack the foliage of wall-trees, currants, and gooseberries; such as the caterpillar, grub, red spider, and others.

The *caterpillar* is pretty generally known, and more easily recognised, from its size, than the grub. It is from half an inch to an inch or more in length, and of a light, or a dark green, according to the colour of the leaves on which it may be feeding. It feeds generally on the back of the leaves.

The *grub* here meant, and which is also of the caterpillar kind, is more subtle and mischievous. It is from a quarter to half an inch in length; active, small, and wiry, with a black head; and is generally of a darkish-green colour. It always rolls itself up, amongst a sort of down, in the leaf it attacks; and seldom quits it till the tender part of the leaf be quite eaten up. It preys most on apples, apricots, cherries, and pears, and is a most galling annoyance wherever it comes; devastating so fast, as that I have often seen a beautiful tree, nay even all the trees on a wall two hundred yards in length, completely eaten bare of foliage in ten or twelve days from its first appearance. There is this misfortune always attending it too, namely, that before one can be aware of its coming, it has played half its mischief; for it is only in the rolled-up leaves we need look for it, which are generally half destroyed, and

irrecoverable, before it be perceived. It often attacks the flowers of fruit-trees, as well as the leaves; and is very destructive to roses and other shrubs.

In the first edition of my Villa Garden Directory, I stated (in a note) a method of destroying caterpillars by sea-water, as communicated by a person who assured me that it never failed. In that note, I mentioned my determination of having fair trials made, of the efficacy of sea-water in destroying the caterpillar; and accordingly I engaged several friends to make trial of it, in different ways. The most satisfactory experiments were made by Mr Edward Sang, nurseryman at Kirkcaldy, which have led to a discovery, I think, of the highest importance, in the method of destroying caterpillars. Having his permission, I shall here state the process in his own words, as communicated to me, in a letter dated the 29th November 1809.

“ I was duly favoured with your letter of the 26th instant, and now copy the result of my experiments for the destruction of the caterpillar, as an answer to it.

“ This season, when my apple, pear, and cherry trees began to expand their leaves, I discovered my old enemies, the caterpillars of *phalæna asperana*, &c. in great numbers. Agreeably to your hint, I got a quantity of sea-water, some of which I mixed with two-thirds fresh-water, with which I syringed twelve apple-trees; and a like number with a mixture of equal quantities of sea, and of fresh water. This operation I performed in the evening; and in about an hour afterwards, I perceived the leaves to be-

come quite *vamp* and pendulous. Surprised at so sudden a change in their appearances, I had all the trees, except four, washed with pure water the same evening. Nevertheless, they suffered very much; the outer edges of the leaves contracted so as to form a sort of cup, and the extremities became brown. In short, they decreased both in number and in size. The four trees which I did not wash again with pure water, within eight days had hardly a leaf left upon them: yet so tenacious of life were these insect enemies, that they lived even when vegetation had seemingly ceased.

“ For these reasons, I gave over all expectation of success in their destruction by sea-water; having ascertained by experiments, that even the smallest portion of it is pernicious to vegetation, when applied to the leaves of plants; and when applied to the soil, it will be found to be incapable of promoting the growth of plants in any degree, excepting in so far as the aqueous part, divested of its salt, is capable of so doing.

“ I now had recourse to the use of tobacco liquor, as I had it from the tobacconist, which I diluted with eight or nine times the quantity of pure water. This had the power of destroying the caterpillars, whenever it could get at them; but they are naturally so impervious to water, that I found only a very small progress made in destroying them, by four washings with the engine, in eight days. I then began to use the liquor of a much stronger quality, which I found to answer better; and I think, that if I had begun, and had used it just as I got it

from the tobacconist, I should have had complete success, with much less trouble. But after I had discovered the proper use, and good effects of this liquor, and had determined to persevere in the application of it, we unfortunately had a heavy fall of snow (in the end of May 1809), which lay frozen on the trees the whole of the night; and knowing that this would strip the trees of their fruit, I discontinued any further applications of the liquor on my fruit-trees for the season.

“ By this time the gooseberry caterpillar had attacked my bushes in a most unmerciful manner. Indeed I never saw them more terribly annoyed. I had instant recourse to the tobacco-liquor, in its strongest state, and soon had the satisfaction of seeing millions of caterpillars lying upon the ground, so sick, that few of them could make an effort to get up again; but in order to make sure work, I gave my bushes a second washing over with the liquor, and they were completely cleaned.

“ By these applications of tobacco-liquor, my trees and bushes acquired a freshness of verdure, quite uncommon. I consequently deem it, not only a safe, but a wholesome liquor, with which to wash fruit-trees of all kinds, even in the strength of their growth. I need hardly say to you, who saw them, that this season, my gooseberries were both very good in quality, and exceedingly abundant in quantity.

“ I beg leave to mention here, that the caterpillars on my gooseberries were of a quite different species from those on my fruit-trees. The caterpillar

(or grub as you call it) which attacks apple, cherry, and other fruit-trees, is produced from the eggs of a moth, which are deposited upon, or into the buds, in August and September. The moth is not unlike the common house-moth. Now, the gooseberry-caterpillar is produced by a fly, about the size of the common house-fly, but longer in the body, having gold-tinged wings, with a yellow belly and thighs. The females, by instinct, crawl along the backs of the leaves, and lay their eggs upon the veins. These begin to live in about five or six weeks, sooner or later, according to the warmth of the weather. The leaf then appears perforated, and its destruction increases as the caterpillars increase in size. In short, if not destroyed as above, or in some other way, they suddenly strip the whole plant of its foliage.

“ In the manufacturing of roll-tobacco, there is a liquor expressed, which is absorbed by the brown paper in which the rolls are, when put to the press. One pound of this paper, so saturated, contains as much of the strength of the tobacco, as two pounds of the leaves do. A pound of this paper being put into a glazed earthen vessel, and six English pints of water, nearly boiling, being poured upon it, will make a liquor sufficiently strong for the destruction of any caterpillar.

“ The mode of applying it is by a small force-pump, which should be firmly fixed into a wooden trough or tub. With the one hand work the pump, and apply the thumb of the other hand to the point of the emitting-pipe, which should not be wider than a large quill. A dexterous application of the

thumb, when the pump is worked with as much force as possible, will divide the liquor into exceedingly small particles, and the smaller the better. Six English pints of the liquor, judiciously applied, will serve for watering, once over, six ordinary-sized bushes."

The *red spider* makes its appearance in hot, dry weather, and is always found on the under sides of the leaves; generally on roughish leaves, but not always so. It preys on the apple, cherry, fig, peach, pear, and plum; seldom on the apricot. It is among the smallest of the acari, and is sometimes not distinguishable without a microscope. If the back of the leaf be viewed through one, it appears full of its webs; and if many abound on it, the leaf appears full of punctures, becomes discoloured and brown on the upper surface, fades, and falls off.

This insect is more troublesome in dry seasons than in moist ones, and is wonderfully encouraged by heat; insomuch, that hot-houses of every description are sadly infested with it. Water, and water only, is its bane; and the syringe, or the force-pump, the engine of its destruction. It is not a mere sprinkling that will do. It requires a forcible dashing to and fro, and that often repeated, to be effectual*.

* Some have recommended waterings with lime water, &c. for the destruction of acari, and have fancied them effectual. I have tried these, and many other kinds of water, on certain trees, and compared the effects of pure water on other trees at the same time; but could never find any difference in the reduction of the enemy, though I have on the health and appearance of the foliage.

The force-pump engine is a most useful instrument in the garden, as it can be applied to so many purposes; but to none can it be applied better in the summer months than frequently washing with it the leaves of wall-trees; which both keeps them clear of this and other insects, and to a very great degree promotes their health, by thus refreshing them, and keeping them clear of dust. The evening, a few hours before sunset, is the most proper time to perform this work, as, if done in the morning, the effect soon goes off, the moisture being suddenly exhaled by the sun's heat. In the early months, however, if the air be frosty, and if there be a necessity for watering the foliage, let it be done about eight or nine in the morning; as, if done in the evening, the frost would take the harder on the trees, by their being moist.

The *coccus*, or scaly insect, and *chermes* of many species, are troublesome to wall and other fruit-trees. The time for their destruction, however, is not now, but in winter; of which, see January, on the head *destroying insects*.

Snails and *slugs* are often very troublesome to wall-fruits, especially if the walls be old and ragged, and eagerly devour young setting apricots, peaches, and plums. They should, therefore, be carefully looked for, mornings and evenings, and be destroyed. Those that harbour about the holes in the wall, may often be surprised in their lurking-places; and others, that lodge about the ground, may be decoyed, by placing bits of tile, slate, or small boards, in such a way as that they may take shelter under them,

as they return down from the tree in the morning: for all these are evening depredators, and flee the light, but may be caught by an active police, in this and in other ways; of which see more in July.

Of watering new planted Bushes.

New planted currants, gooseberries, and raspberries, should be attended to, and occasionally be watered in dry weather. If *mulched*, as directed above for wall-trees, fewer waterings would be requisite.

Of destroying Insects on Bushes.

Look frequently over the bushes, and destroy caterpillars, green flies, &c. as they appear, in any of the ways mentioned above, most applicable to the case in point.

Ducks are excellent *vermin pickers*, whether of caterpillars, (such as are within their reach), slugs, snails, and others; and ought to be turned into the garden one or two days every week, throughout the season. Never keep them longer in than two or three days at a time, else they tire of their food, and become indolent. While here, they should be offered no food; but may have a little water set down to them, if there be no pond or stream in the garden.

They are very fond of ripe strawberries and gooseberries; and while they can get at these, will seek little after snails, or other insects; but they are most useful before these come into season for them. There are some kinds of vegetables they have a

liking to, and on which they will fall, if vermin be anywise scarce; therefore, whenever this is perceived, they should be turned out. Never turn them into the garden in the time of heavy rains, or in continued wet weather; as, in that case, and particularly if the soil be stiff, they patten and harden the surface, to the great injury of small crops and rising seeds.

Of planting Strawberries.

Strawberries may be planted any time in this month, with good success. See March. Those planted last month, and those now planted, if any, should be frequently watered in dry weather. The rows or beds of old strawberries should also be cleared of weeds; and such as are in rows should have the runners cut away from the stools, about the end of the month; the operation to be repeated in May, which see, with reasons given for it. It is not in general practice, but is a great improvement in the culture of this delicious fruit.

May.

General care of Wall-Trees.

On screening wall-trees from the bad effects of frosty winds; on destroying insects that infest them;

on *mulching* and watering those new planted; and on *watering* and scourging all of them with the garden-engine; I have been fully explicit last month. I need only here add, therefore, that these several duties must be followed up, according to necessity, if it be wished to have the trees flourish, and to have their fruits produced in perfection.

Of disbudding, or finger-pruning of Wall-Trees.

Disbudding of several kinds of wall and espalier trees, is an operation *now* easily performed, and which saves a deal of trouble in *pruning* afterwards. What is here meant by disbudding, is, rubbing off, with the thumb, the buds, or newly sprung shoots, when an inch or two in length, instead of allowing them to grow many inches and then being obliged to prune them off with the knife. The disposition of the shoots are thus better regulated, and the strength of the tree thrown into those necessary to be retained *only*, instead of being wasted in nourishing a profusion of useless shoots, afterwards to be destroyed.

It must be carefully observed, however, in performing this operation, that *wood-buds only* are to be displaced; and this care is most necessary in disbudding the kinds that produce *fruit-spurs* on the one year old shoots, as well as *wood-buds*. These are apples, apricots, cherries, pears, and plums, which should not be disbudded till the *infant shoots* have sprung two or three joints; as they will then be easily distinguished from the *spurs*, that only

form a knot of two or three leaves, and show no leading shoot, or symptom of pushing farther.

Nectarines and peaches seldom produce spurs, and may be disbudded sooner than any of the above named kinds; that is, as soon as the buds have fairly broke and show leaf. But the buds of any of the kinds are easily displaced by the finger or thumb previous to their having sprung three inches. In thus displacing older buds, however, the bark of the year old shoot is apt to be ruffled or torn, which is very prejudicial to all kinds of stone-fruits, as frequently inducing canker.

In disbudding of nectarines and peaches, every part of the tree is to be gone over; rubbing off the fore-right buds chiefly, *on each shoot*; retaining the uppermost, undermost, and one or two on each side, according to the length of the shoot; leaving the side ones in an alternate manner, that they may have room to be laid in, after having sprung a few more inches, without being crowded. The best time for disbudding these kinds is, after the fruit is fairly set. It often happens, that a bud will be placed between twin fruit, and sometimes by the side of single fruit. In displacing the bud, be careful not also to displace the fruit in either case.

The year old, or *leading shoots* of apricots, cherries and plums, yet in training, are the parts of the tree chiefly to be disbudded; which may be done much as above directed for the shoots of peaches: seldom, however, leaving more than the uppermost, the undermost, and one on each side of the shoot; and that only in order to retain enough, in case of

accidents, till they be farther advanced, as all these will not need to be laid in. From the established spurs of these trees, wood-buds will often shoot, and whenever they are ascertained to be such, by having sprung a few joints, they should be displaced; being cumbersome and unprofitable.

Apples and pears, *trained in the fan manner*, may be treated very much as above; always observing to leave more shoots than may ultimately be necessary to lay in, for fear of accidents; that is, of trees in training. Trees that have filled the spaces allotted to them, and are in a full bearing state, may be disbudded of most wood-buds that appear, except in places too thin, or the leading shoots of inferior branches. Wood-buds on the old spurs are always to be displaced, as only tending to enlarge them unnecessarily. See Pruning, in January.

Apple and pear trees *trained horizontally*, must be treated in a different manner from the above. The leading stem of trees, yet in training, is the object of most particular care. The buds on the last year's shoot, shortened as directed in January, must all be retained for fear of accidents, except those placed fore-right, till they have sprung a few inches, and it be seen whether enough will spring, for laying in right and left, of which to form the tree. Generally speaking, on the last year's shoot of the leading stem, the upmost bud, the uppermost pair, the undermost pair, and *two* intervening pairs of buds should be retained, if the stem push so many; otherwise, *one* intervening pair. All wood-buds on the horizontal branches of trees thus trained, except the

leading one, should be displaced. If any branch, however, have accidentally lost its leader, the best-looking wood-bud, next to it, is of course to be retained, in order to supply its place.

What has here been said, will equally apply to trees trained against espaliers, pales, or the like; and for the final thinning out of the shoots thus directed to be *partially* thinned, in order to save trouble, as observed above, dressing them to the wall, &c. see June and July.

Of thinning Stone-Fruits.

Thinning the over-abundantly set fruit on apricot, nectarine, peach, and plum-trees, is a necessary duty; as many of these, in good seasons, set more than they can nourish or bring near to perfection. This thinning, however, must be cautiously performed, and by degrees. If the trees have set their fruit very thick in particular parts only, such parts should be moderately thinned out now, and the other parts not yet. But if the fruit be very thickly set all over the tree, let it be generally thinned off to half its extent at this time; referring the final thinning till the *stoning* be over; that is, till the shells be quite hard, and the kernel be formed. For most trees, especially those anywise unhealthy, drop many of their fruit in the time of stoning; so that the thinning had better be performed at two or three different times; always observing to reserve the fullest, brownish, and best formed fruit. For further directions respecting the thinning of these, and of other fruits, see June and July.

General care of small Fruits.

Continue the care of new planted bushes of all kinds, as directed last month, with regard to mulching and watering, according to the state of the weather; also, to destroy insects or vermine that may annoy them, as far as practicable, and as fully noticed in April.

Of summer pruning Currants, Gooseberries, and Raspberries.

It is not a very common practice to summer-prune currants and gooseberries, but it is essential to their welfare, and to the production of fine fruit, if judiciously performed. It also, in a great measure, tends to prevent the ravages of the caterpillar. No doubt, a moderate degree of shade is aiding to the swelling of the fruit to a full size; but if, by too much, it be excluded from the sun and air, it will be wanting in flavour; therefore the hearts of the plants should be regularly thinned of the *cross* and *water* shoots; and all suckers rising about the roots ought to be carefully twisted off, as they appear. If part of the shoots that rise about the stools of raspberries were twisted off, or otherwise destroyed, at this time also, it would let in the air about them; the shoots left for bearing next year would increase in strength, and the fruit now upon the plants, in size.

Of summer dressing and watering Strawberries.

Strawberries, planted in rows, (which is a better

way than in beds,) should now have the runners cut from them, and be completely cleared from weeds. By carefully divesting the plants of runners, the fruit will be considerably increased in size. If the plants have been planted in lines about two feet asunder, and eighteen inches in line, every stool should be rendered quite distinct from another, and the earth between them should be stirred up with the hoe. This is the practice of the best strawberry farmers about Edinburgh; who drive a good trade by the culture of this fruit, and are perhaps, the most extensive growers of it to be found in any part of our island; as high and low, rich and poor, in Edinburgh, feast on strawberries in their season.

If the weather be very dry, strawberries in flower should be occasionally, and those having set their fruit, frequently refreshed with water. The garden engine should be employed in this business, if the plantations be anywise extensive, as using the watering-pot would, in that case, be too tedious a method. Some of the strawberry growers above mentioned, go over extensive fields with the water-cart, and water them when the fruit are swelling off; desisting, however, as they begin to colour, that the flavour may not be deteriorated.

June.

Of training in the summer shoots of Wall-Trees.

LET the advancing shoots of wall and espalier trees that were singled out, as directed last month, be trained in as they advance, that is, those necessary to be laid in for forming or extending trees yet in training; cutting clean away such others as were left for fear of accidents, and which may not now be necessary.

The shoots on the leading stem of trees *training horizontally*, must be carefully laid in, right and left, one, two, or three pairs, according to the strength of the tree, and at the distance of eight or nine inches apart; carrying the uppermost shoot, if the best, upright, for a leader. All shoots, except the leader, on the side branches, may now be cut clean off. Thus throwing the whole strength of the tree into the shoots to be extended for its enlargement.

The shoots of nectarines and peaches may generally be laid in at the distance of five or six inches from one another, allowing each a run of from

twelve to eighteen inches, according to their strength ; that is, shoots of full grown trees, in a bearing state. The shoots of trees, young and vigorous, pushing wood to fill their spaces, will require more room each way, particularly as to length.

In order the better to enable the reader to lay in the shoots of figs, and all kinds of these trees, at their proper distances, he is requested to turn to the subject of *Pruning* last month ; also in March, and in January.

Of thinning Stone-Fruits.

Now again go over the apricots, nectarines and peaches, and thin off a few more of the fruit, where too thick ; reserving the final thinning, however, till the stoning be over, as directed last month ; and of which see more in July.

Some of the large kinds of plums may also now be thinned, if the trees be much loaded, and the fruit hang in clusters. I here mean the best of table plums, that they may be rendered both fair and large, by being moderately thinned out.

Of destroying Insects.

Continue to destroy insects on these trees as they appear ; that is, the green fly, the red spider, snails, &c. as directed in the two last months. Also frequently exercise the garden-engine upon them, in order to refresh them, and to keep them clean of dust.

Of preserving Cherries from Birds.

Cherries, on walls, will now begin to ripen, and

should be netted over to preserve them from birds. Let this be done carefully, and as directed in April for screening wall-trees from frost; that is, in so far as regards *setting the nets properly out* with hooked sticks. Cherries on espaliers, and also on standards, may be preserved from birds, by properly suspending large nets over the trees; keeping them close fastened down to the ground with pegs, or by laying stones or bricks on their edges.

SMALL FRUITS.

If the summer pruning of these, as directed last month, has not yet been performed, let it be done without any delay, as the plants will now be running into confusion. If you have any currants, gooseberries or raspberries, on the walls or espaliers, let them also be gone over, be thinned moderately of their summer shoots, and let those left be trained in. Continue the waterings of newly-planted bushes of all these; and of strawberries that are swelling off their fruit, as directed particularly in May.

July.

Final thinning of Wall-Fruits.

THE stoning of apricots, nectarines, peaches and plums will now be over, and the crops of fruit on

these trees should finally be thinned. This should be done, at all events, previously to their beginning to swell off for ripening, that the full strength of the tree may be thrown into the fruit left upon it; in order to augment their size, and increase their flavour.

With respect to the quantity or number proper to be left on a tree, much must depend on its size and strength, and whether it be full grown, or be yet in training. A full grown tree, in a healthy state, may be allowed to produce considerably more than one in a weak condition. And if a tree yet in training, that is, one not having filled the space allotted to it, be allowed to ripen all the fruit it may set, its extension will be much retarded in consequence. On the More-Park apricot, and the larger kinds of peaches, in a healthy full-bearing state, a fruit to every foot square of the superficial content, or surface of the tree, may be taken as a good medium; that is to say, a tree covering a space fifteen feet by twelve, may be allowed to ripen about two hundred fruit. The smaller kinds of apricots and peaches, and of nectarines in general, may be allowed to produce a third part more, if in a healthy state. The larger and better sorts of plums may be thinned in proportion, and according to their sizes; and may be thinned out to from three to six inches apart, if on the shoots of last year, or so as to hang quite free of one another, if on spurs.

I am aware that many will think thinning to this extent an extraordinary measure; but I would have such be convinced of the propriety of doing

so, by comparison. If they have two trees of a kind, both healthy and well loaded, let the one be thinned as above, and allow the other to produce as it have been wont; or thin it even to half the extent. It will be found, that the tree fully thinned will produce an equal, if not a greater weight of fruit, and these incomparably more beautiful, and higher in flavour. Observe, the comparison must be made the same season, else it would not be fair; as the size and flavour of the fruit might be very different, according to the goodness or badness of the weather in different years.

Apples and pears should also be moderately thinned, and good account would be found in the practice. This should be done when the fruit is about half grown, or when all apprehension of its dropping is over. Nothing tends more to keep fruit-trees in good health, than regularly to thin their over-abundant crops, and that always before they begin to swell off for ripening; for if this be delayed till they are nearly full grown, the mischief is, in a great measure, already done, both to the tree and to the fruit left.

Of training the Summer-shoots of Wall-Trees.

Continue to train in the shoots of all kinds of wall and espalier trees, as directed last month. Do not shorten them on any account, unless they have arrived at their goal; as that would make them push a parcel of weak spray, which would not ripen; and so would require to be pruned away in winter, or next spring. Many kinds push lateral

twigs on their summer-shoots, and generally begin to do so after midsummer. These should always be pinched off as they appear; and likewise any water-shoots that rise from the old wood or spurs, about this time; which would save a deal of trouble in the winter prunings.

The shoots of figs should be extended at full length, and should be laid in at the distance of about twelve or fourteen inches from each other, more or less according to the size of the foliage of the different kinds, some growing more gross than others. See more particularly of this, on pruning the fig in January.

Some advise shortening the summer-shoots of figs, to cause them put out laterals for bearing next season. This may be right, if the plants are in a hot-house; but it is wrong if they grow in the open air; as these laterals will not ripen sufficiently to endure the winter frosts, and so would be of no use whatever.

Of watering Wall-Trees.

Continue the operations of the garden-engine on all kinds of wall-trees, except cherries, and scourge them heartily for the destruction of the red spider, before the fruit begin to ripen; as, after that, it will be proper to desist, for the sake of the fruit, both on account of its flavour and beauty.

Of destroying Insects on Fruit-Trees.

Wasps will now begin to swarm about the early fruits; and for their destruction, phials should be

hung about the branches, half filled with honey and water, or with sugar and small-beer. These should be emptied and replaced once in two or three days, otherwise they do not take so well, these little animals being extremely sagacious, and disliking the appearance of their own dead.

Wasps and flies may be killed very fast, by dipping a feather in a little sweet oil, and touching their backs with it. They will instantly die. When intent on the fruit, and half buried in the excavations they have made, they are easily come at, and are not apt to fly about. Insects of different kinds are easily killed by oil. It closes up the lateral pores by which they breathe.

The *earwig* and *wood-louse* also begin to prey on fruits as they ripen. There is a very simple way of ensnaring them, and by which they may be taken alive in great quantities. Place four-inch cuts of reeds, bean-haulm, or strong wheat straw, among the branches, and also lay a number on the ground at the bottom of the wall. In these the insects take refuge at day-break, as they depredate chiefly in the night, and any time through the day they may be blown into a bottle with a little water in it, and so be drowned.

Snails may be destroyed as directed in April, and must now be carefully looked after.

August.

Of closely training in the summer shoots of Wall-Trees.

APRICOTS, nectarines, peaches and plums, will now be fast approaching to maturity. In order that the fruit may be exposed to the full sun, let the shoots in training be carefully dressed to the wall or rail. This is a matter too little attended to; but it is of much importance in the production of high-flavoured fruit.

To what purpose do we plant these trees against walls, if we suffer the fruit to be shaded, in ripening, by the whole summer foliage, a thing not at all uncommon? Might they not as well be standing in the open ground? My practice has been, not only to dress the shoots in training *closely to the walls*, but to prune off *all superfluous growth*; and as the fruit begin to colour, to *pick off every leaf that may overhang them*. Thus very much enhancing their beauty and flavour.

But it is necessary, on another account, to dress all shoots of these trees *closely* to the wall at this time, and to continue doing so while they continue growing, even to the latest, and after all the fruit is

gathered, namely, in order that their shoots, which are to produce the next year's crop, may be perfectly ripened and matured. If otherwise, the flowers will be weak, few, and the fruit in consequence will be scanty.

Of gathering Stone-Fruits.

It is a common thing to let these fruits drop of their own accord, when ripe; and that they may sustain little injury in falling, the borders at the bottom of the wall are covered with moss, or nets are suspended so as to catch them. But it is a better practice to pull, than to let them drop, not only to save them from all blemish, but that they may be eaten in higher perfection. Let any one pull and eat an apricot, or a peach, from a shoot on which there is another equally ripe, one or two days before it would have dropped; allow the other to drop off, eat it, and make the comparison. In fine, all kinds of stone-fruit fall off in flavour, if suffered to fall off from the tree.

In arguing thus, I have been asked, how I knew *when* to pull? as it is improper to handle or feel them, especially the finer apricots and peaches. It no doubt requires some practice, and a knowledge of the kinds, to be able to judge at sight. But there is a simple method, which I would advise even the best judges to practise, on which I stumbled by accident. The instrument I first used was more rude than the one I shall recommend, being no other than a tin watering funnel, used for watering stage plants.

But I would have made a funnel, or trumpet-mouthed instrument, about six inches diameter at the mouth; and three or four deep; the edge thin, rounded off, and the whole lined with velvet. Its handle also of tin, two feet or a yard in length, and made to take in a light staff, about two yards long. With this you may reap the fruit of any ordinary-sized wall-tree; and the method is, to slip the edge of the funnel gently underneath the fruit you think ripe, and give it a small shake. If it fall not in, pass it till next day, or the next time you come a-gathering, which, in fine weather, should be twice a-day. By this simple method, the fruit is preserved fair and unblemished, and may be gathered in the highest possible perfection, with little trouble.

Of destroying Insects on Fruit-Trees.

Continue to ensnare and destroy all insects that infest these fruits, as directed last month; and desist from watering, as the fruit approach to maturity, as there also hinted at.

Of netting and matting up Currants and Gooseberries.

Currants and gooseberries, on north walls or pales, that are intended to be kept to the latest, should be netted over, to preserve them from birds. These are sometimes kept back in the open ground, by being matted up, which should be done as soon as they are fully ripe. Currants keep good a long while in this way; but gooseberries or raspberries

hang so short time, that it is hardly worth the trouble.

Of planting Strawberries.

Strawberries may now be successfully planted. The strongest runners are to be chosen, and if planted any time in the month, will be well rooted before winter. For soil, distance, and the manner of planting, see Sect. I. March, and April.

September.

Of training in the summer shoots of Wall-Trees.

CONTINUE to train all shoots closely to the wall or espalier, whether the crop of fruit be gathered or not from the tree, and that for the reasons given on this head last month. Also pick off such leaves as overhang the fruit, not only of late peaches and nectarines, but of the choice wall pears and apples. Even this thinning of leaves should be extended to the espaliers, and done to a certain degree; at the same time thinning away all superfluous spray from the spurs, and cutting clean off the lateral twigs.

Of gathering Wall-Pears and Apples.

The Jargonelle, Yair, Bergamots, and some other

kinds of pears, should be eaten from the tree, or within a few days after they are pulled; they should never be allowed to drop, and they lose much of their flavour by keeping. The other kinds of pears and apples in general, should not be pulled till their seeds are of a dark brown or blackish colour. In gathering and storing these fruits, great care should be taken not to bruise them. They should be laid singly on shelves, in a dry well-aired room. Do not lay them on moss or hay, (a thing often done), as they thereby contract a very disagreeable flavour. If they are placed on any thing else than a clean shelf, it should be on fine paper. Brown paper gives them a flavour of pitch. The finer large kinds of pears should not be allowed even to touch one another, but should be laid quite single and distinct. Apples, and all other pears, should be laid thin; never tier above tier.

Free air should be admitted to the fruit-room always in good weather, for several hours every day; and in damp weather a fire should be kept in it. Be careful at all times to exclude frost from the fruit, and occasionally to turn it when very mellow.

Of destroying Insects on Fruit-Trees.

Never lose sight of this object, even when the crop is gathered. Therefore resume the watering and scourging with the engine, all apricots, peaches, plums, &c. that are disloaded of their fruits, for the suppression of the red spider; for, from the respite this little enemy has had, he will now have become very formidable again. This is not only necessary

to the conquering of his thousands at this time, but will tend to prevent his millions from coming forth in spring. Continue to ensnare and destroy all other enemies of the insect tribes, as already fully directed. Every art and mean is allowable in war, which they have provoked.

Of digging the ground among Currants and Gooseberries.

The borders and quarters among these plants, may be dug as soon as convenient, after the crops are gathered; and if ground be scarce, a little spinage or turnip may be sown, or coleworts may be planted among them. But otherwise, let the ground be laid up in a rough manner, that the weather may act the better on its surface.

Of digging the rows of Strawberries.

Now let the spaces between the rows of strawberries be dug, and if necessary, also be dunged. The common way of doing this, is to *rut* off the rows from the intervals, and to dig them, without singling the plants in the row. If the plants be old, and have never been dressed in summer (see May,) it is no doubt a very difficult thing to single them out properly. But strawberries should always be dressed twice a-year, and each plant should be kept distinct. I do not mean that the spaces between the plants in the row are to be deeply dug, but only pointed or stirred up with the hoe, the manure being buried in the intervals. The surface may be

left rough in order that the weather may act the better upon it. This work may be done at convenience.

October.

Of Wall and Espalier Fruits.

THERE need be little added on this head, to what has been said last month; to which the reader is referred for directions respecting the training in of the summer-made shoots, in order to their being fully ripened and matured; also for the gathering of fruits, and the suppression of insects.

Of brushing off the leaves of Wall-Trees.

In late seasons, and if the leaves of wall-trees hang longer than usual, they may be brushed off, in order to let in the sun and air the better to ripen the wood. This brushing, however, should be cautiously performed, never brushing much at a time. The leaves should not be forced off violently. Some use a common stable broom for this purpose; but a better instrument is a hazel, or strong willow withe, or a small smooth cane. The shoots from which the leaves are to be displaced, should be gently stroked upwards, and outwards; but never the

reverse way, else there is danger of hurting the buds.

Trees exposed to the wind seldom require this care; but sometimes espaliers may, and if so, the same course is to be pursued as above.

Of gathering and storing Orchard Fruits.

Most orchard apples and pears will be fit for being taken down and stored about the middle of this month. In good seasons, some may be ready the end of September, and in bad years, not perhaps till the end of October. Under the head, Gathering Wall Pears and Apples, last month, I noticed, that they should not be pulled till their seeds be of a dark brown or blackish colour; and this is the best criterion by which to judge of their fitness.

They should never be allowed to drop of themselves, nor should they be shaken down, but should be pulled by the hand. This may be thought too troublesome a method; but every body knows, that bruised fruit will not keep, nor will it bring a full price. The expence of gathering, therefore, may be more than defrayed, if carefully done, by saving the fruit from blemish.

I consider it an error to sweat apples, as it is termed, previous to storing them, either in the common way, with straw or hay, or as recommended by the late Mr Forsyth, by the use of short grass. The Fruit ever after retains a bad flavour. It should never be laid in heaps at all; but if quite dry when gathered, should be immediately carried to the fruit-room, and be laid, if not singly, at least

thin on the shelves; the room being properly fitted up with shallow shelves on purpose, being well aired, and having a stove in it, that damp may be dried off when necessary. See further remarks on this subject in September.

Of planting Fruit-Trees.

If a plantation of fruit-trees be intended next or the succeeding months, it will be proper to begin preparing the borders for that purpose; and for directions, the reader is referred to the Section on Soils, and to January. If it have been a good season, fruit-trees may be fully ready for lifting about the end of the month, and so of course for planting.

SMALL FRUITS.

Plantations of these may now be made, that is, of currants, gooseberries, and raspberries; but I prefer planting strawberries in March or April, or in August; which see. Respecting the others, the reader will find directions in the Sections on Soils, and on Fruits, and in January and February.

The ground among currants and gooseberries, and the rows of strawberries, may still be digged, as directed last month; but that work should now be got forward, in order that the soil may be well meliorated by the action of the weather.

November.

Of planting Fruit-Trees.

ALL kinds of fruit-trees may now be planted, if the weather be fresh and tolerably dry. It is by no means advisable, however, to plant at this season, in heavy or wet lands. The middle or latter end of March is a better season for planting in such soils. In light absorbent soils, this is a very proper time to plant; and in those of a middling texture, February. But, generally speaking, if the ground have been properly prepared, and laid comfortably dry, which it is supposed would be done in the intention of planting fruit-trees in any situation, the business of planting may go on from the first of this month till the first of April, provided it be only done in fresh and moderately dry weather, as above observed. The reader is requested to turn to January and February, where full directions on this subject will be found.

Of pruning Fruit-Trees.

Fruit-trees of all kinds, except figs, vines, and peaches whose shoots have not been fully ripened, may now be pruned. But if the shoots of these have been perfectly matured by the sun, there is nothing to hinder them from being pruned also. The idea, that none of the kinds of stone-fruits should be

pruned till after winter, and if they be, that canker will be the consequence, is erroneous, which I have repeatedly proved. In an extensive concern, however, where there is a deal of walling, and many standard trees to go over, it is proper to prune the apples and pears on the walls, espaliers, and in the orchard, first; and the stone-fruits, particularly nectarines and peaches, (whose late shoots are not ripened), in February, or as soon as they can afterwards be overtaken.

For full directions on pruning all kinds of wall and orchard trees, and on washing or anointing their branches for the destruction of insects or their eggs, see January.

Of planting Currants, Gooseberries, and Raspberries.

Plantations of any, or of all of these fruits, may now be made; and indeed, in dry soils, this is the season most to be preferred. Let the ground be properly prepared, by trenching, digging and manuring it, according to necessity; and observe the directions given on this subject in Section VI., and in January.

Of pruning Currants and Gooseberries.

These may also now be pruned, or indeed any time most convenient through winter. See directions in January.

Of digging the Ground among Currants and Gooseberries, and the Rows of Strawberries.

After the pruning of currants and gooseberries is finished, if pruned at this season, and if the ground

among them was not digged last month, let it be turned over, and be laid up in a rough manner, as formerly noticed, that it may be the better meliorated by the action of the weather.

The rows of strawberries may likewise now be digged, and, if necessary, may be manured, if that have not been done as directed in September.

Of digging the Ground among young Orchard-Trees.

If the cultivation of orchard-fruits be industriously followed, the ground among the trees should be digged and kept with the hoe, for the first seven or eight years after planting. In order to defray the expence incurred in doing so, it is very proper to crop the ground with vegetables to a certain extent; but by no means to such an extent as to injure the trees; which, however, is too frequently the case, and is very erroneous. If the following rule with respect to this matter were followed, the expence of keeping the ground, and the rent would be fully paid; and the trees would not be injured, but, on the contrary, be benefited: Crop to within two feet of the trees the first year; a yard the second; four feet the third; and so on until finally relinquished; which of course would be against the eighth year, provided the trees were planted at the distances, and as directed in Section V.

By this time, if the kinds have been well chosen, the temporary trees will be in full bearing, and will forthwith defray every necessary expence while they remain, or until the principal trees come into a bearing state, and it become necessary to remove

them; after which, the ground should be sown down in grass. But until then, the ground should be properly cultivated, though not cropped, close to the trees; and a moderate quantity of manure should be digged in every second or third season.

This is a very proper time for doing so, whether the intervals be under crop or not. If they be under crop, pay respect to the spaces next the trees only; but if not, the whole ground may be digged. It should be laid up in a rough manner, giving it as much surface as possible, in order that the weather may fully act upon and meliorate the soil; thus fallowing it, as far as the case will admit. Observe to dig carefully near to the trees, and so as not to hurt their roots and fibres. If the soil be shallow, and if these lie near to the surface, it would be advisable to dig with a three or four-pronged fork, instead of a spade.

December.

IN the Fruit Garden for this month, whatever is directed to be done in November, or in January, may go forward; provided the weather be favourable for the purpose. The state of the weather, however, is generally such at this season, that except pruning, little can be done to good purpose. To plant, when the ground is in a wet state, is wrong; nor is it right to dig or trench unless it be dry, and somewhat friable.

THE

FORCING GARDEN,

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PROCEEDINGS OF THE

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THE

FORCING GARDEN.

INTRODUCTION.

THE forcing of fruits, flowers, and some kinds of culinary vegetables, constitutes one of the principal branches of modern gardening. Since the first introduction of hot-houses into this country, this branch has made regular progress, and has uniformly extended to all parts of the island, insomuch as, that a garden is not now reckoned complete without being provided with several compartments for forcing fruits, with a green-house or conservatory, with flued walls, and with frames and lights.

I here allude to the gardens of the great and wealthy, who find, in this department, a source of real pleasure and rational amusement. They are gratified by the production of the finest exotic fruits, in a very considerable degree of perfection; of many native fruits, and rare esculents, at an early and untimely season; and of the finest exotic plants and flowers in the world, many of which could

otherwise be known only by their histories. The botanist and florist find here a fund of constant enjoyment. The horticulturist never tires: his pursuits are endless. The agriculturist finds here relaxation, amusement, and often instruction. And all find a garden, blooming fair, and flourishing at midwinter!

But even many market-gardeners, from the demand they have for early fruits and culinary vegetables, and nurserymen in general, for the rearing of exotic plants and flowers, are under the necessity of having hot-houses of various descriptions, green-houses, and hot-beds, in order to enable them to carry on business, and answer the demands of their customers. So much for the wealth of a great nation, in which every luxury is cherished, and every science is fostered!

This has been deemed the most expensive branch of gardening; and many, for want of success in it, have no doubt had cause to be dissatisfied. The following remarks, the hints contained in the succeeding sections, and the general tenor of the directions throughout the kalendar, are intended to set forth methods of forcing, simple and easy, and as little expensive as the different cases will admit of. They are the result of considerable experience, and of much observation, for a period of twenty-five years.

The success attendant on forcing, that is, producing fruits and flowers at an untimely season, and in an artificial climate, depends very much in how near we approach to nature in the process. Of course, it is necessary to introduce the imposed cli-

mate as it were by stealth ; bringing on, as in nature, first spring, and then summer ; making artificial dews and showers, to refresh the foliage and nourish the root ; admitting air freely, unless of an impure kind ; and ventilating the hot-house frequently, to purify it of noxious damp, which are to all fruits pernicious, especially as they approach to maturity.

The plants being forced out of their natural inclinations in a great measure, do not perspire so copiously, nor imbibe nutritive matter from the atmosphere, so abundantly as if they did grow in the open air. Hence it is necessary to compose for them a soil more rich and deep than might otherwise be required, which must be kept in good heart, by the addition of fresh compost, and by the application of fit manures, from time to time, according to necessity.

In the culture of plants in an artificial climate, regard ought to be had to that of their nativity, which should, as nearly as possible, be imitated in the hot-house ; introducing the natural changes of the seasons with equal care. In our variable climate, however, this is done with considerable difficulty, and only by a strict attention to the state of the weather ; which may be conceived by considering the difference of latitude, and the variation of the altitude of the sun throughout the year ; which variation is greater the nearer we approach to the pole.

Hence, in the forcing of fruits in succession, the difference of trouble attendant on early, and on late forcing. Also, the difference of injury done the

plants in the process, and in order that they may sustain as little injury as possible, the necessity of a more moderate treatment in the one than in the other. Late forcing, though mild, is, to a certain degree, constraining nature; early forcing is committing an outrage against her.

Sudden changes from heat to cold, or the contrary, ought carefully to be avoided, especially while the bloom or fruit is in a tender state. And this is more necessary to be observed in the forcing of stone than other fruits, these being impatient of violent checks, particularly in the time of setting and stoning.

To the production of fruits in high perfection and flavour, large portions of fresh air are necessary and essential, more particularly as they approach towards maturity. And although moderate, frequent, and plentiful waterings, according to the nature of the plants in question, be advisable, when in a state of free growth, and while the fruit are swelling; yet water should almost entirely be withheld from the time it begins to colour, that the beauty of the fruit may not be lessened nor its flavour be deteriorated.

SECT. I.

ON THE CONSTRUCTION OF HOT-HOUSES.

VARIOUS are the ideas entertained, and the devices practised on this subject, and very far have some late schemers misled the public; who have held out a shew of economy, and persuaded many to alter well constructed hot-houses to mere gim-cracks; with hot air flues, and cold air flues; *improved furnaces* that set the house on fire, by way of keeping up a regular heat! double roofings; inner roofings; and much other nonsense, too tedious to enumerate.

Very much, too much stress has been laid on the *construction* of hot-houses; and the failure of crops has often unjustly been imputed to their defaults. When matters go wrong, through the inattention and carelessness of servants, the blame must be laid somewhere; and it is as easy to lay it to the construction of the house, as to the sign of the Sun or the King's Arms. Still, it is granted that many houses are faulty, and might be

remedied at a trifling expence; especially when the fault lies in the flues and furnaces.

But often, and indeed generally, the failure or success in forcing depends more on the preparation of a proper soil for the plants, and on their general management, than on the construction of the house; provided a full command of fire-heat be had, and a sufficient quantity of light, and fresh air can be admitted into it.

It is a matter of importance, that every hot-house should be placed, if not in a sheltered situation, at least in a dry one, or in one that is capable of being rendered so by draining. The aspect, for all kinds of forcing-houses, should be as near to the meridian as possible; though the deviation of an hour to the east, or to the west, is not of much importance. Some insist that they should stand to the east, and others that they should stand to the west of south; because some are advocates for the morning, and others for the afternoon sun. The true point is, to the sun at twelve; and the most sensible line of front for a forcing-house is straight, not curved; both ends being glazed; by which means every plant in it may enjoy the full sun and light.

Some argue for concave, and others for convex fronts, and insist that the plants enjoy more light, and that the sun shines more forcibly on the glass, being more at right angles with it in his motion, than on a straight front. This is so far true; but the shadows within the house are broader, and the different parts are longer shaded by one another, the more convex or concave the front be; so that a straight

front, or one very little curved, is to be preferred, for purposes where all the sun and light that can be obtained is desirable. For a green-house, or conservatory, fancy may have its full sway; sunshine being of less importance to the plants generally cultivated in these compartments.

The pitch or angle that the roofs of forcing-houses should make with the horizon, depends on the purposes for which they are intended; that is, whether for early or for late forcing. For late forcing-houses, and pine-stoves, generally an elevation of about 35 degrees will answer; but the roofs of early forcing-houses should be considerably more upright, that the sun may act with full effect upon them in the early part of the season.

The front and end parapets should seldom be more than two feet high of stone or brick-work. If eighteen inches, or a foot only, they look the lighter. The upright glasses in front may be from two to four feet upon the parapets, according to the purposes for which the house is intended, and according to its breadth and height. If building appear above the framing at top, farther than the thin edge of a stone coping, or a batton covered with lead or copper, it has a bad effect.

The length of forcing-houses may be any thing from twenty to fifty feet, but seldom more in one compartment; the width, inside, from ten to sixteen; and the height above the ground level, from twelve to sixteen or eighteen feet; all these dimensions being variable, according to the purposes for

which the houses may be intended, which will be more particularly specified below.

Where there are more than one forcing-house intended, they should be placed together in a range, if conveniency will by any means permit; as by placing them so, there will be an evident saving in the divisions or end lights; besides the saving of trouble and work to those who attend to them. Being properly arranged, according to their different lengths, breadths, and heights, very much beauty and variety may be given to the whole appearance.

Houses glazed all round, that is, on the north, as well as on the south side and ends, may answer very well for some purposes, and on account of their elegance may please; but for early forcing-houses, where the plants should be trained near to the glass, and in the full sun, nearly one half of the expence of building such would be thrown away. Indeed, in all cases where the production of high-flavoured fruit is the object, it is better to lengthen the quantity of glass proposed, than to make over wide, or double houses; which is done, in every instance, at an extra expence, in proportion to the quantity of fruit obtained.

A house for exotic plants may very properly be glazed on all sides, as some plants like the sun, and some the shade; but I am acquainted with no fruit raised in hot-houses, for the table, that does not require the full sun, and all the light we can contrive to admit to it. It were to little purpose, then, to train vines or peaches against

glasses fronting north. The grapes would be sour, and the peaches without colour or flavour.

Having premised this much, in a general way, I shall now state what I think good medium dimensions for different forcing-houses, and a few particulars respecting them; as going into detail on the subject would require a separate volume.

1. *Of the Cherry-House.*

A cherry-house, to be worked by one furnace, may be from thirty to forty feet in length; from ten to twelve feet wide, and twelve or fourteen feet high. The parapet a foot or eighteen inches, and the front glass two feet, or two and a half feet high. The front flue to stand on the same foundation with the parapet, and its return to be by the back-wall; but both flues to be separated from the walls by a cavity of three inches. The front parapet and flue to stand on pillars; which pillars should be thirty inches deep under the surface; the depth, or rather more than the depth requisite for the border. The back wall to be trellised for training cherries to; and the border to be planted with dwarf cherries, or with dwarf apricots and figs, or with all three. The front and end flues to be cribr-trellised for pots of strawberries, French beans, or the like.

2. *Of the Fig-House.*

A fig-house, constructed as above, would answer perfectly well. The figs might be trained to the trellis at back, and either dwarf figs, apricots, or

cherries, or all of these, might be planted in the border. The flues might also be occupied, as above hinted, with strawberries, &c.

3. *Of the Grape-House.*

A grape-house for early forcing, to be commanded by one furnace, should not much exceed thirty feet in length. If it were forty or forty-five feet long, it would require two furnaces to be placed, and the flues to run, as described below. The width of the house may be ten or eleven feet, and the height thirteen or fourteen; the front, including parapet and glass, not exceeding four feet in height. But, if the roof were made to rest on the parapet, without having any upright glass, and if the parapet were about eighteen inches high, it would have a better pitch, and there would be a longer run for the vines.

The front flue should be two feet clear of the parapet, should return in the middle of the border, and double by the back wall, being separated from it by a three-inch cavity, that is, in the case of there being but one furnace for the house. But if the house be much above thirty feet in length, and require two furnaces, one should be placed at each end, in the shed behind, and the power of both should be brought to the front, the flue of the one to be placed within two feet of the parapet, and of the other close behind the first, being separated by a two-inch cavity only, and both to stand on a common foundation. The one may return in the middle of the house, and the other by the back-

wall; but it will be unnecessary to have a double return to either of them; as a house of the above-mentioned width and height, to the extent of fifty feet in length, may thus be fully commanded.

A late grape-house may be of any convenient length, from thirty to fifty feet; fourteen feet wide, and fifteen or sixteen feet high; with, or without front glass, as above hinted. But if it have upright glass, both glass and parapet should not exceed five feet in height; as it is but seldom that any fruit grows below the angle of the rafter, and, if it do, it is never so well ripened as the fruit growing under the sloping sashes. The flues may be conducted, in every respect, as above directed for the early house, and the number of furnaces must be regulated by its length. If under thirty-five feet, one furnace may do; but if longer, it will require two furnaces, in order to have a perfect command of the temperature necessary for grapes.

The parapet and front flue of both these houses should stand on pillars, three and a half feet deep under the ground-level, in order that the roots of the plants may have free scope to run to the border without the house; as the intention is to plant them inside, and train them under the roof, to a trellis fixed to the rafters.

4. *Of the Peach-House.*

A peach-house for the earliest forcing, to be commanded by one furnace, may be of any length, from thirty to forty feet; eight or nine feet wide, and twelve feet high. It should have no upright glass.

The parapet may be about eighteen inches in height, and the rafters should rest immediately upon it. The intention here is, to train the peaches and nectarines up the roof, in the same manner as vines, only a little nearer to the glass, and none against the back-wall.

The front-flue may run within two feet of the parapet, and should return by the back-wall, being separated from it by a three-inch cavity. The parapet and front-flue must stand on pillars, three feet deep under the ground-level, in order to give full scope to the roots of the plants.

A house intended as a *succession house* to the above, that is, not to be forced so early, may be of a like length, ten or eleven feet wide, and thirteen or fourteen feet high; also without upright, or front glass, and otherwise may be constructed in all respects as above. And,

A late peach-house, to be managed by one furnace, may be forty or forty-five feet long; thirteen or fourteen feet wide, and fourteen or fifteen feet high. It may either have, or not have upright glass in front; which should not, however, exceed four, or four and a half feet in height, including the parapet. The flues may be conducted as above specified for the early houses. The intention here is, to train plants on trellises against the back-wall, and likewise half way up the roof, in the manner of vines; so that it may be termed a *double peach-house*.

5. *Of the Pinery.*

Pineries are, and may be, very differently con-

structed; and we find plants thriving, and plants not thriving, in all kinds of stoves, pits, &c. The culture of pine-apples is attended with a heavier expence than that of any other fruit under glass; especially if they be grown in lofty stoves, the erection of which is very expensive, and the keeping up proportionally more so, than that of humbler stoves, or flued pits.

But, independently of all considerations of expence (which may not be valued by some, provided they can obtain good fruit), pine-apples may certainly be produced in as great perfection, if not greater, and with infinitely less trouble and risk, in flued pits, if properly constructed, than in any other way. I would therefore have the pinery detached from the other forcing-houses, and to consist of three pits, in a range; one for crowns and suckers, one for succession, and one for fruiting plants. The fruiting pit to be placed in the centre, and the other two, right and left; forming a range of a hundred feet in length; which would give pine-apples enough for a large family.

The fruiting pit to be forty feet long, and ten feet wide, over walls; and each of the others to be thirty feet long, and nine feet wide, also over walls. The breast-wall of the whole to be on a line, and to be eighteen inches above ground. The back-wall of the centre one to be five feet, and of the others, to be four and a half feet higher than the front. The front and end flues to be separated from the bark-bed by a three-inch cavity, and the back flues to be raised above its level.

The furnaces may either be placed in front, or at the back, according to conveniency; but the strength of the heat should be first exhausted in front, and should return in the back-flues. The fruiting pit would require two small furnaces, in order to diffuse the heat regularly, and keep up a proper temperature in winter; one to be placed at each end; and either to play, first in front, and return in the back; but the flues to be above, and not alongside of one another; as in that latter way they would take up too much room. The under one to be considered merely as an auxiliary flue, as it would only be wanted occasionally.

None of these flues need be more than five or six inches wide, and nine or ten deep. Nor need the furnaces be so large by a third, or a fourth part, as those for large forcing-houses; because there should be proper oil-cloth covers for the whole, as guards against severe weather, which would be a great saving of fuel.

The depth of the pits should be regulated so as that the average depth of the bark-beds may be a yard below the level of the front flues; as to that level the bark will generally settle, although made as high as their surfaces, when new stirred up. If leaves, or a mixture of leaves with dung, are to be used instead of bark, the pits will require to be a foot, or half a yard deeper.

It may be thought too much to insinuate, that those who have large pineries should turn them to other purposes, and erect such as are described above. There cannot be a doubt, however, respect-

ing the satisfaction that would follow, if to have good fruit at an easy rate were the object. I have given designs for no other kinds of new pineries these six years past, but such as these ; with some variations respecting extent, however, in order to suit different purses.

Having detailed the general outline, or dimensions of most kinds of forcing-houses (the greenhouse and conservatory will be found in their proper places), I shall proceed to notice a few subordinate particulars respecting hot-houses, of very much importance, however, in their construction, and also to the welfare of the plants to be cultivated in them. And first,

Of the Furnace.

There are many kinds of furnaces in use, and almost every hot-house builder has a kind that he calls his own, or which at least he adopts. I am in the practice of using three different sizes (but all on the same principle), in order to suit different purposes, and different kinds of fuel. I am not prepared to say that it is the *best* in use ; but I will say it is the most simple ; that which consumes as little fuel as any, and keeps up, perhaps, the most regular heat in the flues.

The arguments for a small furnace : burning off the fire at once ; filling the flue with hot air ; stopping it, and keeping it *in statu quo* for the night, &c. are all very specious, and may amuse or please those who fondly imagine, or conceive the idea of *a great saving* in consequence. But will all this

convince the operative gardener, contrary to the evidence of his own senses, and his experience? Does he not well know, that the flue being thus charged, will, and does cool again in a few hours; and requires of him the trouble of charging it again and again? Whereas, from a fire producing a slow and constant stream of hot air, by which the flues are kept in an equal state for the length of a winter's night, his mind is at ease, and his body finds rest.

The furnace I use is calculated to produce this effect; and, I believe, has given very general satisfaction to operative men; which certainly is the best test by which it can be tried. It is simply an oven, capable of containing less or more fuel, according to the kind of hot-house to which it may be attached, and the kind of fuel to be used; with a grate in front just large enough to kindle the mass of fuel, and keep it alive. I shall set down the dimensions of one of a middle size.

The oven is thirty inches long, and twenty inches wide. The grate eighteen inches long, and ten broad. The furnace-door ten inches square, with a circular valve in the centre of it, three inches in diameter. The ash-pit door is of the same construction and width, but fifteen inches deep. These valves turn with a handle, and are capable of admitting any quantity of air, to the extent of half their diameters, which is deemed sufficient. The sole of the oven is placed twelve inches below the level of that of the flue, and is paved with fire-brick. The walls are also formed of fire-brick, to

the height of twelve or fifteen inches, and the arch is turned with the same materials. Fire-clay is used in place of lime.

The best fuel for the use of the hot-house, is charcoal of pit-coal, as making the most steady fire, the keenest, and the clearest; and the next best, a mixture of cinders with small coal. Cinders and peat make a good fire, but not very lasting. Wood is the worst, as blazing off too suddenly. Whoever has pit coal at command, may easily char it for his own use, if not sold so at the works; for uncharred coal should never be used. When the mass of fuel of this kind is fairly lighted, it will last, in a slow soaking state, for twenty-four hours together; and is always ready to be stirred up when necessity requires a brisker heat in the flue; a matter very different from that of lighting a new fire; but which is a matter of course, with the trifling furnaces alluded to above.

Of Flues.

Many are the opinions respecting the proper dimensions of flues for the hot-house (I mean fire flues), and the materials of which they should be constructed. I have been at much trouble to satisfy myself of this particular, and have made many experiments with flues of various kinds; so much having been agitated concerning them of late. I am prepared to say, there is no flue for the use of a hot-house equal to one constructed of brick and tile, thus:

The sole of two inch thick tiles, each fifteen inches long, by twelve broad; jointed on cross bricks on edge, or pillarets, to keep them about four inches clear of the surface. The walls of well moulded, or stock bricks, six inches clear of each other, and the height of two bricks placed on edge, covered with inch and half thick tiles, each twelve inches long and ten broad, laid the length to the run of the flue; by which means the covers will not be flush with the sides of the flue, but each edge will be chamfered or bevelled, which makes the flue look very light and neat. The open or void of the flue will thus be (with the height of two bricks on edge, and two joints of lime), ten by six inches, or thereby. It is clear and detached on all the four sides, except the interruptions of the pillarets; and is the most effectual flue of many different sizes I have tried, as said above.

The joints should be carefully filled with fine lime, in soles, walls and covers; but no plaster should be used, either within or without. It is a gross error to plaster any flue; as by doing so, the heat is conducted out at the chimney, instead of being let into the house through the pores of the bricks. A few feet, that is, six or eight, next to the furnace, should be of fire-bricks and tiles, in order to withstand the strong heat; and the flue should always extend quite through, to the outside of the wall of the hot-house. The furnace, whether placed at back, front, or end, should never come within the house. This is a measure of precaution very necessary to be taken; as many acci-

idents have happened by furnaces having been thrust into the house; besides, too powerful a heat is thereby excited at one place.

It has been argued, that such a flue as the above is too shallow; that it would often require sweeping, there being so little room to hold soot. But the intention is to burn nothing but charcoal or cinders, as mentioned above; so that very little soot will accumulate, and sweeping oftener than once a-year will seldom be found necessary. Even peat, mixed half with cinders, make very little soot. But small coals, uncharred, should not be used, as they give out too much smoke, and too little heat.

I come now to the consideration of *the air-flue*. These flues, in my opinion, in the ordinary manner in which they are constructed, notwithstanding the encomiums bestowed upon them by certain theorists, are quite useless in the hot-house. The idea of collecting the heated air about a furnace, and conducting it to the cold end of the house, is just, and natural enough. But if this cannot be done without conducting the tube or flue that shall convey it, upon the fire flue, to the evident loss of its surface, and of its best part, I would ask, what is gained by the experiment? or rather, what is lost by it? Evidently a great deal; all the expence, and double the quantity of heat that can be thus conveyed. The fact is, there is no heat comes to the far end of the house, but just what is collected from the fire-flue into the air-flue, as it travels along. None of it comes from the furnace,

I had a suspicion of these truths ; and in order to put them to the test, had tubes of various shapes, sizes, and lengths made ; and which I could lay on the fire-flue, on the ground, on a shelf, or, in short, any where I liked. They were all fitted to the air-chamber, formed round the furnace, which had a turning valve in front, three inches diameter. That with which most of the experiments were made, was a square tube of three inches void, formed of milled clay, and baked in the same way as garden pots are. It was in lengths of three feet each, and jointed with cement, quite close, in the same way as a clay water-pipe.

I tried its effect in conducting the heated air from the furnace at various lengths, and at various heights ; from two yards in length to forty feet ; and from one foot above the level of the furnace, to ten. The result of the whole amounted to this, that unless when laid on the top of the fire-flue, air, perceptibly hot, could not be drawn from the furnace to a distance of more than twelve feet ; even although the furnace were made ever so hot.

When the tube was shortened to two lengths (six feet,) the air issuing from it raised the mercury in the thermometer to 120° ; but when another length was put on, though the fire was kept equally brisk, it fell to 96° ; and by adding a fourth length (the tube being now twelve feet long), the mercury was then not affected by the air of the tube, but fell to the air of the house, 65° .

The above experiment was made with the tube

at six feet above the level of the top of the furnace. It was tried at two feet above it, with hardly any variation; but when laid on the ground, on the same level with the top of the furnace, the heat did not travel to the length of nine feet, so as to affect the spirits in the thermometer, the air of the house being then at 62° . Thus, I think I have ascertained the uselessness of air-flues. I have since pulled them from off the fire-flue, but have never erected one upon it.

Of Ventilators.

The hot-house may require to be ventilated at times, when it may be improper to open the sashes for the purpose. Ventilators are in that case useful. They may be contrived in different forms, and may be placed in different situations. If the hot-house have a shed behind it, they might be made to open, in the manner of a common window, near to the top of the back-wall; and three in an ordinary-sized house would be enough.

I lately made four ventilators, in a house that had no shed behind it, in this manner: When the wall was raised to within a yard of its full height, apertures were formed in the manner of a common chimney or fire-place, eighteen inches wide, and two feet high, from which a small vent was carried through the coping. On the top was fixed a horizontal tube, three inches square, and two feet long, with a centre pipe fixed into the vent. The aperture or chimney was filled in front, with

two moveable pannels or boards (painted to represent a window), hung in the manner of common sashes, the one to move up, and the other down, for the admission of air through the tube at top. Thus diverting, or breaking a strong current, which might be prejudicial to the grapes.

Ventilators in front, at the distance of six or eight feet from one another, may be made thus : Pierce a hole an inch diameter, through the bottom rail of the under sash, if the house have no upright glass, or through the upper rail of the upright sash, if it have. In this hole insert a tin tube to fit, having a funnel mouth, outwards, and a fine rose, like that of a watering-pot, to fit to it inside. The tube should be made in lengths of two feet each, that the air may be either diffused as it enters through the front, or be carried to the centre of the house, or farther, if thought necessary. When not in use, it should be stopped with a cork or plug.

When a full stream is wished, the rose need not be put on ; but it should, if the air be keen. In order the better to collect the air, the funnel should be pretty large ; that is, about seven or eight inches diameter.

With these, and with the ventilators at or near to the top of the back-wall, as mentioned above, any hot-house may safely be aired, or ventilated, even in the severest weather ; and also when it may be improper to open the glasses, as in rain.

Of the Framing.

The framing of hot-houses should be neat and substantial; of the very best materials, and well put together. The rafters should be deep and narrow, and not broad and shallow, a thing we universally find in all the old hot-houses. The strength of any rafter depends on its depth. If it be nine inches deep, and two inches thick, it is stronger than if it were six inches square, and containing, of course, double the quantity of timber. Two, or two and a half inches is sufficient thickness; and if neatly dressed off on the lower edge, it will not obstruct much light. The depth may vary, according to the pitch and width of the roof, from nine to eleven inches; but ten deep, and two and a quarter thick, is a strong rafter.

I have been thus particular respecting the size of rafters, because on them depends the free running of the sashes, which should move on small rollers, and in the easiest possible manner, as a security against the breaking of glass. The breadth of the lights should seldom be more than three and a half, or less than three feet. If the lights be too broad, they are unhandy; and if too narrow, there is an obstruction of light, by an unnecessary number of rafters.

The sashes should generally be made of two inch stuff; the styles and astragals, being narrow and deep, in order to admit all the light possible. They should be strengthened by one, or if necessary, by two small cross bars of iron. There should gene-

rally be four stripes or rows of panes in the sash ; and if the lights are not all made moveable, at least every alternate one should move *.

Of Glazing and Painting.

Crown-glass only should be used in hot-houses, as being capable of admitting more light than green glass. I was formerly of opinion, that the laps in glazing should not be puttied up ; but since contriving the ventilators, as described above, I have altered that opinion, and would advise that they be filled with blue or black putty. It is a great saving in the breaking of glass ; and also of fuel, in stormy weather. The laps should not be more than a quarter of an inch in breadth ; and the glazier should be careful to fit the panes to each other, not reversing the bends ; by which they are less liable to break, than when laid in accidentally, some round, and others hollow.

Every part of the framing of hot-houses should be well painted, and kept so. They should never be

*^o On account of the high price of timber, some are now constructing the framing of hot-houses of cast-iron. I would beg leave to remind such, that there is nothing so prejudicial to vegetation as the dripping of rusted iron ; and would advise, that the frames be well painted, and frequently painted, in order to prevent the bad effects of irony water falling on the foliage and fruit. I am of opinion, however, that iron-framed hot-houses will soon get out of fashion. From the quantity of water that *must* be used, in order to keep the plants in health, the frames *must* be often moistened, and *will* corrode.

reckoned finished with less than three good coats ; and would require a coat on the outside every year, or every second year at farthest. On the inside, once in four or five years may suffice. Paint is a great preservative to timber in all situations, and in none more than in the hot-house. By the action of the weather without, and the heat of the flues within, it is very much tried.

Of Trellising.

Roof trellising is now universally of wire, and often also that against back-walls. It is cheaper than wood, and, on account of its lightness, fitter for the purpose, especially when placed on the roof, or against the end lights.

The distance at which the wires should be placed apart for grapes, is ten or twelve inches; for cherries or peaches, four or five. The distance of the wires from the glass, for grapes, a foot; for peaches and nectarines, nine inches. But there should be a lower trellis, with the wires placed at two feet apart, and a foot under the proper trellis, on which to train the summer shoots of vines that are in a full bearing state, in order that there may not be too great a confusion of fruit, shoots, and foliage. See training of vines.

When vines are trained up the rafters in a stove or green-house, they should not be nailed to the beam; but three rows of wire should be extended for them, at the distance of four or five inches from each other, and three from the rafter; being set out

with studs of wire, or of iron; made to screw into it, and with eyes to take in the wire.

SECT. II.

OF SOILS FOR VARIOUS FRUITS TO BE FORCED IN HOT-HOUSES.

1. *Cherries.*

THE border should be from twenty-four to thirty inches deep; the bottom, if not naturally mild and dry, to be drained and paved, or formed as directed at page 151. The soil should be a sandy loam, or light, hale garden earth, made moderately rich with stable-yard dung well reduced, or with other light compost. If a small portion of lime, or a moderate quantity of marl were mixed with it, so much the better.

The soil for cherries to be forced in pots or tubs, should be considerably richer than the above.

2. *Figs.*

A soil, in every respect as above, will answer; whether for plants in the border, or in pots and tubs.

3. *Grapes.*

The bottom is supposed to be made perfectly comfortable, as noticed above for cherries. The average depth of the border should not be less than a yard. If four feet, so much the better. It is not

easy to say how broad it should be; but it should not be narrower, outside and inside of the house taken together, than thirty feet. The soil should be thus composed: One-half strong hazelly loam; one-fourth light sandy earth; an eighth part vegetable mould of decayed tree-leaves; and an eighth part rotten dung; to which may very properly be added, a moderate quantity of lime, or of shell-marl. These articles should be perfectly decomposed, and intimately mixed, before planting.

4. *Peaches and Nectarines.*

The bottom is supposed to be made comfortable, as above stated. In treating of the dimensions of peach-houses, in the last Section, I have supposed, that in all cases they are to be trained up the front, and that the front walls stand on pillars, that the roots may pass through to the border on the outside. The breadth of the border should therefore be, the width of the house within, and to the extent of ten or twelve feet without. The average depth, thirty inches at the least; but if a yard, it would not be too much. The soil to be thus composed: Three-fourths strong loam; an eighth part light sandy earth; and an eighth part rotten stable-yard dung, with a competent quantity of lime or marl; all being properly mixed before planting, as stated above.

The soil for plants to be forced in pots or tubs may be considerably lighter, and richer.

5. *Pine-Apples.*

“Vegetable mould being a chief ingredient, a

stock of it should be provided wherever the culture of the pine is followed. The kind to be used here is that from decayed tree-leaves, and those of the oak are to be preferred; but when a sufficient quantity of them cannot be had, a mixture with those of the ash, elm, birch, sycamore, &c. or indeed any that are not resinous, will answer very well.

“ In autumn, immediately as the leaves fall, let them be gathered, and be thrown together into an heap; and let just as much light earth be thrown over them as will prevent them from being blown abroad by the wind. In this state let them lie till May, and then turn them over and mix them well. They will be rendered into mould fit for use by the next spring; but from bits of sticks, &c. being among them, they will require to be sifted before using.

“ Strong brown loam is the next article. This should consist of the sward of a pasture, if possible; which should, previous to using, be well reduced, by exposing it a whole year to the action of the weather.

“ Pigeon-dung, also, that has lain at least two whole years in an heap, has been frequently turned; and well exposed to the weather, is to be used. Likewise shell-marl. And, lastly, sea or river gravel, which should be sifted and kept in a dry place; such part of it as is about the size of marrowfat peas is to be used.

“ This is the proportion: For crowns and suckers, entire vegetable mould, with a little gravel at bottom, to strike in; afterwards, three-fourths ve-

getable mould, and one-fourth loam, mixed with about a twentieth part gravel, and two inches entire gravel at bottom, till about a year old. For year olds, and till shifted into fruiting pots, one-half vegetable mould, one-half loam; to which add a twentieth part gravel, and as much shell-marl, with three inches clean gravel at bottom. For fruiting plants, one-half loam, a fourth part vegetable mould, and a fourth part pigeon-dung; to which add marl and gravel as above, and lay three or four inches of clean gravel at bottom *."

The above compositions are what I formerly used for pine plants, with much success; and are what may be reckoned good medium soils for the production of pine-apples; which may be varied or improved, as shall be dictated by better judgment, and more experience.

6. *Strawberries,*

To be forced in pots, require a strong, and a very rich loamy earth.

7. *Cucumbers,*

Soil thus composed will produce cucumbers in great abundance: Three-fourths light, rich, black earth from a pasture; an eighth part vegetable mould of decayed tree-leaves, and an eighth part rotten cow-dung.

8. *Melons.*

Earth for melons may be thus composed: One-

* The Forcing Gardener, article Pines.

half strong brown loam from a pasture ; a quarter light sandy earth ; an eighth part vegetable mould of decayed tree-leaves ; and an eighth part rotten stable-yard dung.

The mould for both cucumbers and melons should be well incorporated ; should be exposed to the frost, and be frequently turned over to meliorate.

SECT. III.

OF VARIOUS KINDS OF FRUITS TO BE FORCED IN
HOT-HOUSES.

APRICOTS.

APRICOTS do not force well. Nevertheless a plant or two may be tried in the border of a cherry or peach-house, as a dwarf, or espalier ; and some may be planted in large pots or tubs, and may be treated in the manner of cherries or peaches in such ; in which way they generally succeed best.

The kinds are the Early Masculine, the Brussels, and the More-Park. They are described at pages 167 and 168.

The More-Park is well worth a place on a flued wall, along with nectarines and peaches.

CHERRIES.

The May-Duke should take preference of every other for forcing, either in the border, or in pots or tubs. None of the other kinds set so well, except the morella. This kind was accidentally planted

in a cherry-house, built by myself six years ago. I do not hesitate to say, that it well deserves a place; the fruit acquire a size and flavour superior to any thing I could have supposed, and the plant bears large crops. These two kinds are described at pages 168 and 169.

FIGS.

There are many varieties of figs. The kinds fittest for forcing, are

The Brown Ischia,	The White Genoa,
The Black Ischia,	The Brown Italian, and,
The Black Genoa,	The Black or Purple Italian.

1. *The Brown Ischia.*

This is a fine, high-flavoured fruit; brown, or more pale, according to the colour of the soil in which it may grow, and red inside. A good bearer.

2. *The Black Ischia.*

This is high-flavoured, and of a moderate size; dark purple, or nearly black when fully ripened, and the inside a deep-red. A great bearer.

3. *The Black Genoa.*

Is a long fruit; dark purple or black, when well ripened, and red inside. It is high-flavoured, and a good bearer.

4. *White Genoa.*

This is large, high-flavoured, pale-yellow; and light-red inside. A very good bearer in general.

These four kinds are fittest for planting in the border; the two following for pots or tubs, being naturally dwarfish.

5. *The Brown Italian Fig*

Is small, round, high-flavoured; brown or russet, when ripe, and red inside.

6. *The Black or Purple Italian Fig*

Is also a small, round, high-flavoured fruit; dark-red inside. They are both great bearers.

GRAPES.

The varieties of grapes are numerous, and are every year increased by seeds; so that they may be multiplied to a very great extent. I shall here name and describe twenty-four; marking those I esteem the best kinds with an asterisk (*.)

- | | |
|----------------------|-------------------------------|
| * White Sweet Water. | Syrian. |
| White Muscadine. | * White Tokay. |
| * Royal ditto. | * Flame-coloured ditto. |
| Black ditto. | * White Passe Mosque. |
| * Black Frontinac. | * Grecian. |
| * White ditto. | * White Muscat of Alexandria. |
| * Red ditto. | * Black ditto. |
| * Grizzly ditto. | Large Black Cluster. |
| * Black Hamburgh. | * Black Constantia. |
| White ditto. | * White ditto. |
| White Raisin. | St Peter's Grape. |
| Red ditto. | * Lombardy. |

I shall copy the description from the Forcing Gardener, as formerly given by myself; to which I can add nothing new.

1. *White sweet Water.*

This is the best early grape we have. The berries grow close on the bunch, are white, or rather of a russet colour when ripe, round, large, and thin skinned; and are replete with an agreeable, sweetish juice. An error, too common, prevails, of cutting this grape ere it be fully ripe. Hence it is less in repute than it deserves to be.

2. *White Muscadine.*

The berries are of a moderate size, white, roundish, the skin thin, juicy and delicate; the bunch well formed, and moderately large. This grape is also frequently cut before it be perfectly matured; but it is a good fruit, comes in early, and bears abundantly.

3. *Royal Muscadine.*

This grape nearly answers in description to the preceding, only that the bunches grow much larger, and the wood and foliage a good deal stronger.

4. *Black Muscadine.*

The berries of this kind are black, round, and juicy; the skin is thin, the bunch of a moderate size, and well formed. It is a plentiful bearer in general.

5. *Black Frontinac.*

The berries are round, black, of a moderate size, and of the most exquisite flavour, as all the kinds of

Frontinacs are ; the bunch long, unshouldered, but well formed.

6. *White Frontinac.*

The berries are large, round, and of a greenish white colour, except the side next the sun, which, when well ripened, is a pale russet. The bunch is large, and somewhat more shouldered than the preceding.

7. *Red Frontinac.*

The berries are round, of a brownish red colour, moderately large, and grow close on the bunch. I know many who esteem this above all the kinds of Frontinacs, for its high musky flavour. The plant is a moderate bearer, and produces well-shaped, middle-sized bunches.

8. *Grizzly Frontinac.*

The berries are round, of a grizzly brown colour, moderately large, and very high-flavoured ; the bunch of a middle size, rather longish, and unshouldered : a great bearer in general, when well managed.

9. *Black Hamburgh.*

The berries are large, black, of a roundish, oval shape, and consist of a pulpy flesh and thickish skin ; are not of a very high flavour, but agreeably sweetish. The bunches are large, handsomely shouldered, and are produced in great abundance : few, if any grapes exceeding this in luxuriance.

10. *White Hamburgh, or Portugal.*

The berries of this kind are large, oval, of a pale white, thick skin, and hard pulpy flesh; the bunches are large and long, and somewhat shouldered. The plant is a great bearer, and grows very strong, both in wood and foliage.

11. *White Raisin.*

The berries are large, white, oval, with a thick skin, and hard, firm flesh. The bunch is long and handsome, in which the berries hang loosely.

12. *Red Raisin.*

The properties of this kind are much the same as those of the preceding, only that the berries are of a reddish black.

13. *Syrian.*

Amongst the coarsest of the grape kind, nor has it any property to recommend it, except that it is a good bearer, and produces enormously large bunches. The berries are large, round, and white.

14. *White Tokay.*

The berries are white, rather oval than round, of a moderate size, thin-skinned, and grow close on the bunches; which are of a good size, and well formed. This is an agreeably flavoured grape, and a pretty good bearer in general.

15. *Flame-coloured Tokay.*

The berries are large, of an oval shape, pretty

thin-skinned, of a beautiful flame-colour when well ripened, but not very high-flavoured; the bunches are large, and elegantly formed with shoulders; and the plant generally produces good crops.

16. *White Passe Mosque.*

This is a good grape. The berries are large, round, and of a yellowish white when fully ripe; the bunches are of a moderate size, and well formed; and the plant is a pretty good bearer.

17. *Grecian, or Greek Grape.*

The berries are of a middle size, of an oval cast, of a bluish-white hue, and grow rather close in the bunches, which are of a moderate size, and well formed. This is a high-flavoured grape, and a plentiful bearer in good soil.

18. *White Muscat of Alexandria.*

The berries are large, oval, of an amber colour; and a high musky flavour; but the skin is thickish, the pulp hard, and not very juicy. The bunch is large and handsome, on which the berries hang loosely. On the whole, it is an excellent grape.

19. *Black Muscat.*

The berries are round, black, of a middle size, thin-skinned, and of a high flavour; the bunch is moderately large and well-shaped, on which the berries sit rather close. The plant is a pretty good bearer in general.

20. *Large Black Cluster.*

The berries are rather small, oval, black, grow close on the bunch, which is not very large, though pretty well shaped. The juice of this fruit is harsh, and makes the palate feel rough, as when having tasted Port wine, which is made from this plant alone.

21. *Black Constantia.*

The berries are of the middle size, rather oval than round, black, but not very high-flavoured. The bunch is moderately large, and well formed.

22. *White Constantia.*

Much the same as the preceding, but on the whole, a large and better fruit.

23. *St Peter's Grape.*

The berries are large, round, and black; the skin thin, and the flesh delicate and juicy; the bunch is large, and handsomely formed; and the plant is a good bearer.

24. *Lombardy.*

The berries are pretty large, black, rather oval than round; the skin thick, and the flesh soft and juicy. The bunch very long, and unshouldered, on which the berries sit rather closely. The plant is a pretty good bearer.

NECTARINES.

The kinds of Nectarines fittest for a forcing-house are, the

Elruge,	Temple,
Duc de Tello,	Roman,
Scarlet,	Newington, and
Murray,	Brunion.

- | | |
|--------------------------|--------------------------------------------------------------------------------|
| 1. <i>Elruge</i> , | } These are described
at pages 170 and
171. They are all
free-stones. |
| 2. <i>Duc de Tello</i> , | |
| 3. <i>Scarlet</i> , | |
| 4. <i>Murray</i> , | |
| 5. <i>Temple</i> . | |

6. *Roman*.

This is a large round fruit, dark-red next the sun, and yellowish on the other side. It is a cling-stone; and when fully ripened it shrivels, and in that case is reckoned excellent. It is a good bearer.

7. *Newington*.

This is a good, middle-sized, high-flavoured fruit; red next the sun, and yellow on the under side. The tree is also a good bearer. It is a cling-stone.

8. *Brunion, or Italian*.

This is also a cling-stone, and, when well ripened, is a good fruit. It is middle-sized, deep red next the sun, and light yellow on the other side. The tree is a good bearer.

I might add several others; but these I believe are the best kinds of nectarines at present known, and which answer best for forcing.

PEACHES.

The kinds of Peaches are, the

Red Magdalen.	Teton de Venus.
White Magdalen.	Late Purple.
Royal George.	French Mignonne.
Noblesse.	Smith's Newington.
Montauban.	Early Purple; and
Admirable.	Orange.

1. *Red Magdalen.*
2. *White ditto.*
3. *Royal George.*
4. *Noblesse.*
5. *Montauban.*
6. *Admirable.*
7. *Teton de Venus.*
8. *Late Purple.*

These are described at pages 171 and 172. They are all free-stones.

9. *French Mignonne.*

This is a large, beautiful, high-flavoured fruit; blush, or rose-coloured next the sun, and pale yellow, or white on the other side. The tree is a moderate bearer; a free-stone.

10. *Smith's Newington.*

This is a handsome, middle-sized peach; high-flavoured, juicy, and of a beautiful red next the sun. A good bearer, and also a free-stone.

11. *Early Purple.*

This is a large, juicy, high-flavoured fruit; dark red, or purple next the sun, and pale on the other side; also a free-stone. The tree is a very good bearer.

12. *Orange.*

This is the most elegant peach I am acquainted with; a cling-stone, and of these the best flavoured. It is rather large than otherwise, round, dark-red or purple next the sun, and a bright orange on the other side. The flesh is a deep orange, and purple at the stone. The tree is a very great bearer.

Many others might be added to the above; but they are the best sorts I know for forcing, and afford ample variety.

PINE-APPLES.

The kinds of Pine-Apples most generally cultivated in the hot-house are,

The King.

The Queen.

The Black Antigua.

The Brown Sugar Loaf.

The prickly striped

Sugar Loaf.

The smooth striped Sugar
Loaf.

The Montserrat.

The Silver striped Pine.

The Havannah; and

The New-Providence Pine.

1. *The King.*

The kind I here mean is not that described by Mr Speechly under that name, which, he says, "is of a grass-green colour, (that is, the leaves); the

flesh hard and stringy, and sometimes not well flavoured." I had half a dozen plants of the kind I here describe, from London, by the name of *the King Pine*.

It is smooth, dark or bluish-green leaved; grows pretty upright, and very strong. The pips or protuberances are square, and as large as those of the Antigua; and in a well set fruit, are six or seven rows in depth. The fruit is dark-coloured until it begin to ripen off. When ripe, it is a light yellow inside, very juicy, and high-flavoured. It is tankard-shaped, and grows to a large size; often as large as the Antigua.

2. *The Queen*.

This is the hardiest kind we have, and that best adapted for a general crop. It may be termed middle-sized. It is a large fruit that weighs three pounds. It is tankard-shaped, and golden coloured; the pips moderately large, and in a well set fruit there are eight or nine rows in depth. The plant grows stiff and upright; the leaves prickly, and thickly serrated; very mealy on the under sides when the plant is healthy. The fruit should always be cut when it has attained a greenish-yellow colour; for if allowed to stand till dead ripe, it loses much of its flavour.

3. *The Black Antigua*.

The leaves are brownish-green, long and falling; the prickles strong, and thinly set. The pips are square and very large, often an inch over; and in a

well swelled fruit, become almost flat. The form of the fruit is rather square than tankard-shaped; of a dark colour until it ripen off; pale-yellow inside; and very juicy and high-flavoured. It grows to a very large size, sometimes, as is said, to four or five pounds in weight.

4. *The Brown Sugar Loaf.*

The leaves of this kind are very much like those of the Antigua, only they grow more upright, and not quite so long. The fruit is also dark-coloured before it ripens off; the pips are large and flat; and it is broad at the base, and tapering like a sugar-loaf. It grows to a large size, but is not so juicy as the Antigua.

5. *The prickly striped Sugar Loaf.*

The leaves are green, striped with purple, upright, and prickly like those of the Queen. The pips and fruit also grow much of the same size with it, only that the latter is tapered like a sugar loaf. The fruit, in colour and flavour, resembles that of the Queen; and the plant is more hardy than most other kinds.

6. *The smooth striped Sugar Loaf.*

The same as the last in all respects, only that the leaves have no prickles, and are somewhat of a darker shining green.

7. *The Montserrat.*

The leaves of this sort are of a brownish-green, strong, upright, and tall; and the prickles are strong,

and closely set. The pips are small; the fruit dark-coloured, tankered, and long. The flesh is high coloured, but not very juicy. This kind often fruits untimely in the pinery; insomuch, that I have had some plants five years old, and could not get them to start into fruit, until placed a fortnight in the green-house, in order to give them a check; at the same time I have known others of this sort start into fruit at a year old. Upon the whole, therefore, I do not like this kind.

8. *The Silver striped Pine.*

The leaves of this sort are very beautifully striped green, silver, and red. The pips are large, and when ripe are variegated or marbled red, green and yellow; the flesh being a pale yellow, and very juicy. This sort is often very long in starting into fruit, and is only worth cultivating on account of its singularity. A few plants is sufficient in a stock. I have met with a *gold striped* kind in several places, of a weaker growth than the above; but which I never met with in fruit, and so cannot describe it.

9. *The Havannah.*

I am very much inclined to think that this is the same as that I had from London, by the name of the King Pine, described above.

10. *The New-Providence Pine.*

This kind I have not seen in fruit; but am told it grows to an immense size, much larger than the Antigua, or any other kind hitherto introduced into this country.

STRAWBERRIES.

The best sort of strawberry for forcing is *the Virginia or scarlet*; the next best, perhaps, *the Alpine*. I have never forced any other kinds, so cannot speak to their properties in that respect. These sorts are generally known, and need not be described here.

CUCUMBERS.

The kinds of cucumbers are numerous, and every gardener having his favourite, it is no easy matter to advise. The early sorts, generally known, and which need not be described farther than as noticed below, are,

1. *The Early Short Prickly, (the earliest.)*
2. *The Early Smooth Green, (a long fruit.)*
3. *The Long Green Prickly, and*
4. *The White Prickly, (a short fruit.)*

The late sorts, also generally known, are the *Green Turkey*, and the *White Turkey*, which both grow very large. I have grown them twenty-six inches long.

MELONS.

The same thing (as above) may be said with re-

spect to melons. I shall only therefore name a few also in the order in which they ripen :

The Early Golden Cantelope.	The Carbuncled Rock.
The Orange Cantelope.	Lee's Rock Cantelope.
The Netted Cantelope.	Lee's Romana.
The Silver Cantelope.	Large Netted Romana.
The Black Rock Cantelope.	Fair's Romana.

1. *The Early Golden Cantelope.*

Excepting a kind called the Pocket Melon, (which is a trifling, small thing,) this is the earliest I know. It is deep furrowed, middle-sized, longish; golden coloured, with green spots or blotches of different sizes, which generally disappear when the fruit gets dead ripe. The flesh is not very high-coloured, nor can it be reckoned high-flavoured; though, with respect to flavour, there is something in it particular, in which it differs from other cantelopes, and with which some are pleased. The plant grows freely, shows early, sets its fruit well; and it is a very great bearer.

2. *The Orange Cantelope.*

This is an excellent early melon, smaller than the above, round, and pale yellow; though it becomes deeper yellow when dead ripe. The flesh, when just fit for cutting, is orange; but when riper, it is more red. When the fruit is young, and indeed till it be half grown, or more, it is covered with soft bristles or hairs. As it swells and ripens, it becomes partly netted, but not nearly so much so as

that next named. This fruit, in respect to flavour, is excelled by none of the melon kind; being juicy, sugary, and rich. The plant is a free grower, an early *setter*, and a great bearer.

3. *The Netted Cantelope.*

This is decidedly the best melon I know. It is equally juicy and high-flavoured as the last mentioned; a good deal larger, that is, fully middle-sized; round, solid, and very ponderous; having a very small vacuum for the seeds; and it may be eaten nearer to the rind than most other kinds. Like the orange cantelope, it is also covered with bristles or hairs when young; and it becomes netted all over when full grown. It is also yellow outside, but not so deep a red inside, as the last named. The plant sets freely, and is a good bearer.

4. *The Silver Cantelope.*

This is a good fruit; round, of a middle size, shallow furrowed; and when full grown, before it begins to colour, is all over mixed silver and green, and hence its name. Upon the whole, it partakes much of the qualities of the two last mentioned, and is a very good bearer.

5. *The Black Rock Cantelope.*

This melon is very generally known; but the kind here meant is the *large*, not the *small* black rock, which is an earlier variety, and also a very good fruit. This is a very large growing melon;

round, black, or very dark green when full grown, but yellow when ripe. It is juicy, but not so high-flavoured as any of the above cantelopes, except the first named; nor is the plant so good a bearer. Four or five fruit in a light is a medium crop of this sort.

6. *The Carbuncled Rock Cantelope.*

Of this sort there are also two varieties, a large and a small; which are both very similar to the black rocks, as to colour and flavour; but they are flat, or cheese-shaped, and covered with large protuberances or carbuncles, and hence the name. The small kind bears pretty freely, and the large sort, much as the last described.

All these rocks fall much off in flavour, if they be not cut and eaten *sharp-ripe*; which indeed is the case, in a certain degree, with all melons.

7. *Lee's Rock Cantelope.*

Sometimes called *the Green Rock Cantelope.* This is of a size middle way between the large and small black rocks; rather long than round, and more green than black. The flesh is also more pale, when ripe, than them; but as to flavour, it is much the same.

8. *Lee's Romana.*

This is a good, middle-sized, longish fruit; shallow furrowed, solid, and ponderous. The rind is hard, partly netted, and pale yellow, if not over-

ripened ; the flesh a full yellow, pretty high-flavour-
ed, but not very juicy. The plant is a good bearer.

9. *The Large Netted Romana.*

This is an excellent melon. It is the largest of
the romanas, regularly netted all over, shallow fur-
rowed, oval, solid, and very ponderous. I have of-
ten had them nine or ten pounds in weight. The
rind is hard, pale yellow when fit to cut ; the flesh
a full yellow, but not very juicy ; though the fruit
is very high-flavoured, if eaten sharp-ripe. The
plant is a better bearer than any other large sort I
know.

10. *Fair's Romana.*

This sort my father had from Mr Robert Fair,
seedsman (now in London,) when of the house of
Dicksons and Fair, Edinburgh, under the name of
“ the Smooth Rock Cantelope ;” but it is evident-
ly a romana, and partakes nothing of the qualities
of the cantelope.

It is much smaller than either of the above roma-
nas ; oval, smooth, solid, and ponderous ; the rind
hard, greenish-yellow when fit to cut, and the flesh
a pale yellow. It is not very juicy, but is very well
flavoured, and agreeable ; and it may be pared very
near to the rind (which is a good property), if well
matured. The plant is a very great bearer.

I have often grown this sort in a flued-pit, for a
late crop ; have had eighteen or twenty full-sized
fruit in a light ; and have had them as late as Oc-

tober or November. But in this way, being hard-skinned, they are not so high-flavoured as when grown earlier in the season; nor so fit for a late crop, on that account, as the orange or netted cantelopes.

January.

THE CHERRY-HOUSE.

Of planting a new Cherry-House.

REFERRING the reader to the preceding sections, on the Construction of the Cherry-house, the Preparation of the Soil, and the Kinds; and supposing all to be ready, this is a very fit time to plant, provided the weather be open. Clean, healthy, young plants, that have been one or two years in training against a wall, are to be preferred; that is, for the dwarfs to be planted against the back trellis. They may be planted at the distance of from eight to ten feet apart. That is to say, if the house be above twenty-five, and under thirty feet in length, plant three dwarfs; and if above thirty, and under forty feet, plant four against the back trellis. Riders that have been three or four years trained, and are well

furnished with fruit-spurs, may be planted between the dwarfs. They may probably yield a few fruit the present season; and will hardly fail to produce plentifully the following.

In the border may be planted, as dwarf-standards to be kept under five feet in height, some well furnished plants that have been kept in large pots or tubs for a year or two; such being more fruitful, and less apt to grow to wood than plants that have grown in the open ground. In planting these, the ball of earth should not be very much reduced; only a few of the under roots should be spread out; for if the ball were reduced, and the whole roots spread out, as in the ordinary way of planting when it is wished that a plant may push freely, the intention here would be thwarted; which is to have the plant dwarf and fruitful, growing little to wood.

Along with these may be planted in the same way, an apricot or two, or figs, or both, that have been dwarfed in pots or tubs, as above. If they succeed, it would give a pleasant variety; of which there need be little doubt, as the temperature, soil, and general treatment for cherries will suit apricots, and not far disagree with figs. These little standards may be allowed a space of about four feet square each, which is sufficient, as they must not be suffered to rise high, or spread far, on account of shading the trees on the trellis.

In planting of the principal dwarfs and riders, let the work be carefully performed. They should be raised with as good roots, and be kept as short time out of the ground as possible; placing them just as

deep as they have been before; spreading out their roots and fibres, and filling in with fine earth. The whole should have a moderate quantity of water, and have air freely admitted every day; defending them, however, from snow or much rain.

The house should not be forced the first year; and it will be better to defer heading in the plants till the middle or end of March, than to prune them now. I shall therefore take no further notice of them till then, supposing they are to be attended to with respect to air, and moderate waterings. It is necessary, however, to remark, that the plants should be carefully anointed with the liquor, as directed at page 198, either just now, or some time in the course of the month.

Of forcing established plants in the Cherry-house.

I will suppose the house to be in complete order for forcing, having been several years planted, and forced last season. Also, that the trees have been pruned and anointed, as directed in November, and that forcing is to commence with the year; the house having been shut up the middle of last month, in the manner directed below for the grape and peach-houses.

Proceed by making fires so moderate for the first ten or twelve days, as that the thermometer shall not rise, by the force of fire-heat, to more than 40° on Fahrenheit's scale*. After that time, increase

* The reader is requested to notice, that Fahrenheit's scale is always alluded to, throughout the book.

the fire-heat gradually, and so as to raise it to 45° ; at which keep as nearly as possible, for the remainder of the month. In sunshine, in good weather, the thermometer may be allowed to rise to 50° or 55° , but not more; for large portions of air should be admitted every fresh day at the first outset, in order to bring on vegetation in a slow and gradual manner; on which depends very much of the success to follow.

The airing of the house may be performed by the sashes with every safety till the buds begin to break, and the flowers begin to expand. After that, in frosty or bad weather, it may be ventilated, as hinted at in Section I.

The plants must have moderate supplies of water at the root; and once in two days let them be well scoured with the engine, first right and then left. This is done to refresh the branches and infant foliage; but chiefly, at this time, for the suppression and prevention of insects, that are as troublesome here as in any other forcing-house, and are easier *kept down than brought down*.

Of forcing Cherries in pots or tubs.

Cherries may be forced successfully in large pots, or in tubs of a foot or fifteen inches diameter, that are handy, and can be moved from one place to another. Three or four dozen good plants, well managed in this way, would give a deal of fruit; which might be had in succession for a considerable length of time, by dividing the plants into three or four classes

or divisions, and shifting them from one compartment to another.

Supposing this to be the case, and that the plants are in good condition, the first twelve trees may now be placed (from the open air of course) in the greenhouse or conservatory, if there be one, or in a peach-house now at work; placing them in the coolest part of the house, but in the full light, and where they may have plenty of air. They must be duly attended to with water at the root, and be frequently syringed at top, generally once in two days. The pots being occasionally watered with the drainings of the dunghil, would add much to the vigour of the plants: there is no method of manuring more effectual, or so easily accomplished.

The plants may remain here till the fruit be fairly set, the stoning over, and all danger of dropping be past. They may then be placed in a vinery or stove to ripen off, where they would come in early, and be very high-flavoured, if placed near the light, and so as that they might have free air daily.

OF FORCING FIGS.

I believe there are few compartments built on purpose for forcing the fig, it being more generally forced in peach or grape-houses. The cherry-house, however, is better adapted to the fig than either. It will do very well, no doubt, in a peach-house moderately forced: but the climate of the grape-house, after a certain period, is too much for the fig. It is not my intention to treat of forcing figs

distinctly by themselves, in this undertaking; as the volume will be necessarily fully swelled otherwise. I shall suppose them to be planted, either in the border of the cherry or the peach-house; and to fare as apricots, cherries, or peaches, planted in the same manner. It is therefore only necessary to refer the reader to the treatment of these, and to the foregoing sections on soils for, and the kinds of figs to be forced.

It is to be presumed that the plants are to be dwarfed as much as possible, as hinted above for cherries; and of course they will grow little to wood, but chiefly to short stubs or spurs, that will be abundantly fruitful, provided the knife be not much exercised on them. Indeed most of the pruning requisite for figs properly treated in this way, may be done with the finger in spring, by merely rubbing off the infant shoots thought necessary to be displaced.

With respect to water, they must have their full share; and very much pains should be taken to suppress the red-spider on their foliage; whether by the engine, syringe, or by frequently brushing* the under sides of the leaves, in order to destroy his webs, that are there thickly wove. Few other insects annoy the fig, except sometimes the coccus or

* The brush for this purpose should be a painter's sash-tool. In brushing the leaves of the fig, less care is necessary than in brushing more delicate foliage, such as that of the vine and melon.

scaly insect; which is destroyed by washing the branches in winter, with soap-suds and sulphur, or with the liquor, as directed at page 198.

Plants kept in pots or tubs, to be forced in succession, may be treated very much as directed above for cherries. Two dozen, or thirty plants, would be a good stock for that purpose. The first division might be placed in a cherry or peach-house, about the middle or latter end of the month.

THE GRAPE-HOUSE.

Of planting a new Grape-House.

The reader is referred to the sections on the Construction of the Grape-house, on Soils, and on the Kinds. It being presumed that every thing is ready, and that the weather is open, about the middle or latter end of the month is a very fit time to plant; or indeed any time till the middle or latter end of March*.

The plants are to be planted behind the parapet, between it and the front flue, and are to be trained up the roof. One to be placed in the centre of each

* I have planted grape-houses in May, and in June, that have succeeded so well, as that the plants have reached the top of the house before November in the same years. They were kept in pots, and so carefully turned out of them in transplanting, as that the plants experienced no check, although sprung many inches. I have also done the like with peaches.

light; the pits to be thrown out accordingly, of a large size, and half filled again with fine rich earth; if vegetable mould, so much the better.

Plants made from cuttings, that have been two seasons in pots, and have been properly treated, and trained to a single shoot, are to be preferred. The shoot of the first year should have been headed down to within six or eight inches of the pot, and that of last season, to four, or at most five eyes, in November; or it may now be headed so, if not yet done. The plants should have been fresh potted, into good earth, last season, and should be *now* in pots of nine or ten inches diameter, well rooted, and healthy. Such plants are much to be preferred to those raised from layers, that are seldom well rooted, and never grow so freely as plants raised from cuttings.

Let them be carefully turned out of the pots, reducing the balls a little, and singling out the matted roots. Then place them in the pits, just as deep in the earth as they were before, carefully spreading out the fibres, and filling in with fine sifted earth, or with vegetable mould. Settle all with a little water; and let them have plenty of free air every day, defending them from very severe frost or much wet; which is all the care they will require, till they begin to push young shoots.

Of forcing established plants in the Grape-house.

Those who have two or three grape-houses generally begin to force the earliest by the first of the year, and sometimes even in November or Decem-

ber. To go through the minutiae of forcing more than one house, would require more room than can be spared in this volume. I shall therefore confine my observations to one compartment, commencing at a medium season, in order to answer the purpose in a general point of view. I shall suppose the forcing is to begin the first of February; that the plants are three or four years old, fully established, healthy, in good order, the wood having been well ripened; and that they have been pruned in October or November; which see.

About the middle of the month, let the border be pointed or forked over carefully; and let it be watered all over with the drainings of the dunghil; which repeat at the end of four or five days, and also again, at a like interval; giving as much as will sink down to the deepest-placed roots and fibres. The border on the outside should also be covered, or rather should already have been covered, to a good thickness, with stable-yard dung; not, however, mere litter, but good fresh dung, the juices of which may be washed down to the benefit of the roots. The intention of this covering is to answer as a manure; and also to keep severe frost from the roots, from the time the sap is put in motion, till the spring be so far advanced as that the plants shall sustain no injury. Previous to laying on the dung, the border should be pointed or forked over, that the juices may descend the more readily to the roots, and not be washed off.

From the middle of the month, the house should be shut up at night, and have plenty of air through

the day; shutting up, however, from snow or rain. Thus preparing for lighting the fires the first of February.

THE PEACH-HOUSE.

Of planting a new Peach-house.

The reader is referred to the sections on the Construction of the Peach-house, the Preparation of the Soil, and the Kinds of nectarines and peaches. It is presumed that all is ready for planting, and that both nectarines and peaches are to be cultivated in the same house, their treatment being similar in every respect.

In peach-houses, intended for early forcing, of the dimensions as described at page 275, the trees should be planted in front, and trained up the roof, in the manner of grapes; training none on the back-wall. It is common, in narrow peach-houses, to plant the trees, and train them against the back-wall only; but it is a better way to reverse this order, and train them up the roof only; by which the plants have a greater extent, (the roof measuring more than the back-wall,) and the fruit may be produced in higher perfection, being nearer to the sun and air.

In a house thirty feet long, three dwarfs should be planted, and in one thirty-five or forty, four dwarfs; with riders between them, in either case. Clean, healthy dwarfs, that have been one or two years trained, are to be preferred to older plants.

The riders may be three, or even four years trained ; for, being temporary, it is desirable to have them produce fruit as soon as possible ; and if the dwarfs thrive, they will require to be removed in three, or at most in four years. The planting should be carefully performed, and in every respect as directed above, for planting the principal dwarfs and riders in the cherry-house ; attending to the watering, airing of the house, &c. as there noticed ; and deferring the heading down of the plants till the end of March, or first of April, which see.

In a late peach-house, of the dimensions as specified at page 276, dwarfs should be planted in front, in manner as above, to be trained about half way up the roof ; and dwarfs, with riders between them, against the back-wall, to be trained to the top. In this case, the trees on the back trellis would not be shaded by those in front, provided they be not trained to more than half way up the sloping-glass ; and thus the greatest possible extent of unshaded surface, and the greatest quantity of unshaded fruit may be obtained. A house planted in this manner, about forty, or forty-five feet in length, may have four dwarfs in front, and four dwarfs and five riders at back ; and when in a full bearing state, would produce a large quantity of nectarines and peaches. If only thirty, or thirty-five feet in length, three dwarfs in front, and three dwarfs and four riders at back, would be trees enough to fill it.

Of forcing established plants in the Peach-house.

I shall suppose the plants to be in good order ; the

wood well ripened; that they have been planted several years, and were forced last season: Also, that the trees have been pruned and anointed in November. For the sake of brevity, and for the reasons given (page 321.) in forcing early grapes, I shall not go through the minutiae of forcing more than one peach-house. In order to answer a general purpose, as there also noticed, I shall suppose the forcing is to begin the first of February.

About the middle of the month, let the borders, both within and without the house, be digged or forked over; covering the border outside with stable-dung; and watering that inside with the drainings of the dunghil, as directed for the borders of the grape-house, page 321. Likewise shut up the house at night, from the middle of the month, and admit plenty free air through the day; but defend the plants or border from snow, or much rain: Thus preparing to begin forcing the first of February.

Of forcing Nectarines and Peaches in pots or tubs.

This matter may be accomplished, and a very considerable quantity of early fruit may be obtained, by following the hints given at page 316, on forcing cherries in pots or tubs, or by improving on those hints.

A nectarine or peach-tree, loaded with two or three dozen handsome fruit, being set on the table, when every one around it may pull and eat, has a very pleasing effect. If accompanied by an apricot, a cherry, and a vine, equally well loaded, and at an

early season, when fruits are rare, the gratification would be the greater.

THE PINERY.

A complete pinery should consist of three distinct pits, or compartments (see page 277,) one for crowns and suckers, one for succession, and a third for fruiting plants; because, at certain seasons, the plants require a different treatment, and the compartments require to be kept at different temperatures. I shall therefore suppose that there are three compartments, and that the plants are grown in pots; which, in my opinion, is a better method than that of planting them out on a bed of earth.

Pines do certainly not require so strong a bottom heat as many keep them in; yet, there is something in a mild tan heat, so congenial to their natures, that they thrive much better in pots plunged in a bark-bed, if properly managed, than when planted out on a bed of earth that is heated, and often scorched, by under flues.

When tanner's bark is difficult to be procured, and where oak and other tree leaves are to be had in plenty, the bed may be composed chiefly of leaves, or of a mixture of leaves with stable-litter; using only a little bark (fifteen or eighteen inches), in which to plunge the pots. But in using leaves, or leaves mixed with litter, they must always be well fermented, and the rank heat extracted out of them before they are made up into a bed for the plants.

Even in using bark alone, it should be well sweated, and often be turned over, previous to putting it in-

to a new pit, so as to reduce it into a half rotten state ; and in adding new bark at any time, in shifting the plants, there should never be a great proportion added ; seldom above an eighth part. The new bark added, too, should always be kept well down ; making a point of plunging the pots entirely in the old.

By observing these simple rules, there will be no danger of burning or scorching the roots of the plants ;—a thing which frequently happens with those who work violently, and keep up a fiery bottom-heat, out of all proportion to that of the house, and what the roots of no plant, even in the torrid regions of the earth, are accustomed to. The temperature of the bark-bed, at the bottom of the pots, should not exceed 96° , at any time ; and until it falls below 75° , there is no necessity for stirring it up, or adding new bark. Its state may be known, at any time, by plunging a thermometer in it, to the depth of a foot, or to that of the bottom of the largest pots.

Having premised this much, I shall proceed to the consideration of particulars ; and, first,

Of the Nursing Pit.

It is presumed the crowns and suckers contained herein are struck, having been planted in summer and autumn last year, or as the crop was gathered ; also, that the bark-bed was stirred up and put in order for the winter, in November, and that it contains a sufficient heat to last till next month, or till March.

The temperature of the pit, with fire-heat, should

be kept as near as possible to 65° , mornings and evenings; and in sunshine, on good days, it may be allowed to rise to about 70° .

Air should be admitted to a certain extent every good day; dividing the quantity admitted equally, that there may be a regular circulation in all parts of the pit. Even in hard frost, when the sun shines, two or three of the lights should be slipped down, to let the rarified air escape at top, and keep down the temperature to the degree stated above, or near it.

The plants will require very little water at this time; perhaps a little only once in eight or ten days, or even at greater intervals, if the weather be moist and hazy. It is safer, in winter, to give too little, rather than too much water to pine plants; nor should they be watered over head at this season. They should be watered in the forenoon of a sunny day, at this time of the year, in order that any water spilt on the bark, or in the hearts of the plants, may be exhaled by the heat of the sun, and by an extra quantity of air purposely admitted. This precaution, however, is only necessary for the sake of such crowns and suckers as have been struck late last season, and are not very well rooted; such being more apt to damp off than others that are better established.

The pit should be carefully covered up soon after sunset every evening, either with double mats, or with a proper thick canvas cover, made on purpose for it, and mounted on rollers. The cover should be removed by sunrise in the morning, and should

should never be kept on through the day, except occasionally, in very severe weather. For if all the light possible be not admitted to the plants, they lose colour, and become sickly. By using a proper cover, however, in the night, and only in very severe weather in the day, at particular times, a considerable deal of fuel may be saved.

Of the Succession Pit.

The treatment of the succession plants, at this season, is, or ought to be, very much as above stated for crowns and suckers; it being presumed the bark-bed was stirred in November, is in good heart, and of heat sufficient to last till next month.

The temperature, by fire-heat, should be kept as near to 60° as possible, and even in sunshine, should not often be allowed to pass 65° , lest the plants start into fruit, which would be a disagreeable circumstance, as they would in that case be next to lost.

The admission of air may be regulated, as directed for the nursing-pit; and water may be given once in eight or ten days, in moderate quantities, also in the forenoon of a good day; covering up in the evening, &c. as above hinted.

Of the Fruiting Pit.

The fruiting plants should be treated in every respect the same as the succession plants at this season; keeping the temperature as steady as possible, lest the plants should start into fruit; which is not

desirable till next month, or rather till about the first of March.

Of forcing Strawberries.

Strawberries are brought to early perfection in different forcing compartments, such as the pinery, grape-house, or peach-house. I think the climate of the cherry-house, however, more suitable to the nature of strawberries. They will also do very well in a hot-bed; but perhaps the best method is to force them, if by themselves, in flued pits, such as that for nursing pine-apple plants, described at page 277. In such a compartment, the pots could be plunged in a mild bark heat, and by aid of the flues, the temperature being kept at 50° , and about 55° or 60° in sunshine, the plants would thrive, and the fruit set freely*.

But in whatever way strawberries are forced, they should have air freely admitted to them in good weather, and be plentifully supplied with water at all times, until the fruit begin to ripen off; which should then be very much withheld, lest the flavour be rendered insipid. If forced in a stove, grape-house, or the like, they should be placed on shelves, near to the glass, as, if placed at a great distance from it, the foliage would be much drawn up, and the fruit would be apt to drop off in setting.

Those who force strawberries to a considerable extent, perhaps a thousand pots, bring them in, in

* When the season of forcing strawberries is past, the pit could be occupied in producing a late crop of melons.

different successions, in the manner I have stated for cherries, forced in pots or tubs ; bringing in a hundred or two hundred at a time ; that is, in places where there are several forcing-houses ; and they take in the first class sometimes as early as November or December. Plants, however, placed in the forcing-house before the first of the year, seldom produce a crop worth the trouble of attending to them.

There are different ways of preparing the plants for forcing : Some force old roots or stools, and others the runners only. Those who force the old roots, generally lift and pot them about October or November ; lifting a bulk from the bed or row, nearly sufficient to fill a nine or ten inch pot, of plants three or more years old. Others plant runners of the former year, in April, three or four in a large pot, or two in a middle-sized one, and plunge them in the earth all summer, giving them occasional waterings, and taking proper care of them. These succeed better than old roots, treated as above. But when I was in the practice of forcing strawberries, I used to prepare my plants in the following manner :

In July or August, I planted runners of that season, three in a nine or ten inch pot, watered them, and placed them in the shade for a few days ; then plunged them to the brim, in a freely exposed situation. In October, their leaves were dressed off, and the plants trimmed ; and before winter, they were covered with a little dry litter, in order to preserve the pots from the effects of frost. The

following spring, any flowers that made their appearance were pinched off; and throughout the summer, the plants were occasionally refreshed with water, and kept clear from weeds. In autumn, the leaves were again dressed off as before; and when taken up for forcing, the pots were dressed and fresh earthed at top, previous to being placed in the forcing-house.

This method of preparing the plants is no doubt more troublesome than either of the above mentioned; but the plants, by being completely established, and of a proper age, produce better crops. I have tried all the three ways repeatedly, and prefer the last. The proper soil in which to force strawberries, and the kinds for forcing, have been spoken of at pages 290, and 291.

OF HOT-BEDS.

Under this head I propose to treat of forcing Asparagus, Cucumbers, and Melons; these articles being generally, and very successfully, forced by dung-heat. In order to prevent repetitions, I shall here drop a few hints on the formation of dung hot-beds.

They should never be sunk, unless the area in which they are placed be rendered perfectly dry, and be paved; nor should they be built against the earth, but against retaining walls of brick, or of stone; for, if sunk in the earth, its coldness and dampness exhausts their heat. They should, however, either be partially sunk, or be placed in a low and sheltered situation; as, if they be much ex-

posed to the wind, the heat will be of short duration, and linings will be oftener necessary. They should be exposed to the full south sun, in whatever situation they may be placed.

Hot-beds are generally composed of stable-litter, and often of a mixture of litter with tree-leaves; which last produces a lasting and uniform heat, if the litter be rather moist, than dry and fiery. The litter, whether mixed with tree-leaves or not, should always be fermented to a certain degree, before it be built into a hot-bed. If a mild heat be required, it should be the more fermented, and if a brisk heat, the less. From eight to fifteen or twenty days, according to the state of the litter, and of the weather, may be required for such fermentation; during which period, it may be necessary to turn over the heap once, or even two or three times, and to water it well if it be dry, and there be much rank straw in it. It is always safer to ferment the materials too much, than too little, and to avoid a dry, burning heat, which though violent at first, is sooner over than a moderate, and rather moist heat; nor is the former so congenial to the nature of vegetation as the latter, or to the general health of any plant.

In the building of hot-beds, care should be taken to shake and mix the materials well, and to beat or tread them regularly, that the bed may settle equally in all parts, and may not sit into holes, or crack; which, if it does, is very prejudicial to the roots of plants, by rending or breaking them asunder. If the frame be of the ordinary breadth, that is, five

or six feet, the bed should generally be raised nine inches or a foot higher at back than in front, in order to give the lights a proper degree of slope. In the early part of the season particularly, the bed should generally be built of dimensions sufficient to be a foot or fifteen inches larger than the frame all round, which saves a deal of trouble in lining. Beds built near to the frame, a thing not uncommon, very soon lose heat, and require to be lined; and the sooner, the narrower the frame be.

The materials for linings should be fermented with as much attention as for the bed; and in the building, they should be as carefully shaken and beaten, that they may settle equally.

Of forcing Asparagus.

Asparagus may be brought to perfection in hot-beds at any time from November, till it comes in the natural ground. Those who wish to have it at Christmas, should begin to prepare a bed, or beds, about the middle of November. As the process of forcing, however, does not materially differ at any season from November till March, I shall choose a medium time, and begin with the year. The intelligent reader will make allowance for the season, and proportion the strength of the bed or beds accordingly; which forms the chief difference, together with the admission of fresh air; as the state of the weather will permit.

A moderate heat is sufficient for the production of asparagus, and rank steam is pernicious both to its colour and flavour; the dung or litter to be used

should be well fermented, in the manner as hinted at above. When it is fit, let the bed be built to the height of four feet at back, and three in front, and twelve or fifteen inches larger than the frame all round; carefully beating and treading it, as above directed. Finish with some of the smallest of the dung, and lay the surface smooth. Then cover the whole with rolls or squares of turf, cut so as again to join exactly; which lay green-side down, and beat them well with the back of the spade, that the whole may be close and compact, in order as much as possible to exclude steam.

The frame may now be put on. It should be about two feet deep at back, and a foot in front; and if a few inches deeper, it will be nothing the worse. It is not very material in what kind of earth the roots be placed, provided it be light and dry. I have often used old bark, reduced to a fine mould, without any mixture of earth, and have sometimes mixed it with fine sandy earth, with little difference in the success; only I have observed, that when the roots were placed in bark entirely, the buds would come a few days earlier. If old bark cannot be had, any dry, light, and moderately rich mould will answer, in which to bed the roots; which should be laid on the turf, to the thickness of three or four inches.

The roots being covered with litter, &c. so as to be easily come at in the case of frost being in the ground, should be carefully lifted, and be trimmed of rotten fibres, haulm, or other rubbish. They should not be under four years old, nor above eight; as if

younger, the grass will be small and trifling, and if older, many of the buds will not spring; and so, much trouble would go for nothing. They should be placed with their crowns upright, as closely together as possible; spreading out and intermixing the fibres, and keeping the crowns quite level, that they may be equally covered with the mould. It should be rendered very fine, either with the spade, or by being sifted; and it should be laid on, to the thickness of four inches, smooth and equal. A little dry earth may also be laid on outside, all round the frame, and over it planks to stand or walk upon.

The lights may now be put on, and may be kept close shut down till the heat begin to rise in the frame, covering carefully at nights with double mats. The heat will begin to rise the second or third day, and air should then be admitted, by tilting the glasses a little, in order to pass off the steam, and dry the surface of the mould. This must be repeated every good day till the buds begin to appear, and then air must be more freely admitted, to give them colour and flavour; leaving a little air, even in the night, if much steam prevail.

If the weather be severe, it will be necessary to cover at night with mats, but otherwise it may not be so. If the air of the bed raise the thermometer to 50° in the night, it is sufficient. Even in the day, in sunshine, it should not be allowed to rise above 60° , on account of drawing up the buds weak; and if kept down to 55° , by the free admission of air, both their flavour and colour, as observed above, will be enhanced. See this subject continued next month.

Of forcing Cucumbers and Melons.

About the middle of the month, a seed-bed may be prepared for raising early cucumbers and melons. Some begin sooner, but it is striving hard against the stream to little purpose. If the dung be prepared, and the bed be got ready, so as to sow about the first of February, the success will often be greater than by sowing a month earlier; the growth of the plants being frequently checked by bad weather, and sometimes they are entirely lost.

The dung should be carefully fermented, as above directed, and the bed built to the height of five feet at back, and four in front; keeping it a foot larger than the frame all round. The frame here meant is for one light, about five or six feet by three, or three and a half; which is sufficient for the purpose of raising seedling cucumbers and melons to an ordinary extent.

Let the bed be finished and turfed over as above directed for the asparagus bed, and put on the frame. Then lay in it fine dry sand, as free of earth as possible, to the depth of about six inches, laying it in a sloping manner, corresponding with the glass, and to within six inches of it; over which lay an inch or two of dry, light earth.

The seeds may immediately be sown. Some wait till the heat rise; but it is losing time; besides, by sowing now, vegetation is brought on by degrees, as the heat rises. They should be sown in fine light earth, or, if it can be obtained, in vegetable mould of decayed tree-leaves; covering to the depth of

about half an inch. The seeds should be sown in a broad pan, four inches deep; or in small pots, four or five inches diameter, and as much in depth; which should be plunged to the brim, near to the back-part of the bed *. Now put on the light, and let the frame be matted up at night, in the ordinary way.

Be careful to guard the seeds from mice, which generally swarm about hot-beds, by laying a pane of glass over the pot or pan till they have come up; and afterwards, at night, by covering with a pot of equal size, till the seed-leaves have expanded, and the husks have dropped: for until then, the plants are liable to be destroyed. The cover, however, should always be removed by sun-rise, and be replaced in the evening. It is at night these vermine generally commit their depredations.

No air need be admitted till the heat begin to rise, and steam begin to appear; but after that, the light should be tilted a little every day, in whatever state the weather may be, until the plants break ground. Air must then be admitted with more care; and if frosty or very chill, the end of a mat should be hung over the opening, that the air may sift through it, and not immediately strike the plants. A little aired water may be given once a day, from the time the seeds begin to chip; and if a very strong heat rise, the pots should be raised a little, to prevent the roots from being injured. They should be frequently examined on this ac-

* The kinds are noticed at page 293.

count, and if the heat be violent, should be set loosely in the sand, or be placed entirely on the surface.

The air of the bed should be kept to about 65° in the night; allowing a few degrees of a rise in sunshine. If the weather be severe, therefore, the mats must be doubled, or tripled; and if mild, perhaps a single one may suffice. But unless in very bad weather, they should always be removed by sun-rise, in order to admit all the sun and light possible to the plants, which is very essential to their welfare.

Of forcing Sea-Cale.

This esculent is now in very general use, and many force it successfully at mid-winter. The reader may see full directions, by turning to this article in November.

February.

THE CHERRY-HOUSE.

Of forcing established plants in the Cherry-house.

THE reader is referred to this article for last month.

Continue to regulate the temperature of the house so as that the thermometer may not rise, by the force of fire-heat, to more than 50° ; and by the free admission of air, in sun-shine, keep it down to 60° or 55° . The house should be aired, or ventilated, to a certain degree, every day: In mild weather, by opening the sashes in the common way; and in frosty, or cold chill weather, by means of the ventilators, as hinted at in Section I. page 273. Nothing is more conducive to the health of the plants, and the setting of the fruit, than a regular and free circulation of air; and if this be denied them for many days together, the effect will soon be visible. The foliage will become languid, and the flowers will drop away. Therefore a day should seldom pass in which less or more air is not admitted.

The plants must have regular and moderate supplies of water at the root till the fruit be set, and then more freely, as the season, and as their growth advances. The engine may be exercised upon their branches, in a moderate manner, once in two days; generally in the afternoon about sunset; using always well aired soft water. But from the time the flowers begin to open, until the petals begin to drop again, desist from using the engine. At this interval, the foliage must be refreshed by steam, which may be produced plentifully every evening, by pouring water on the flues when the fire is at the strongest. A very fine dew might be thrown on the plants by a soft syringe; but as soon as the fruit are set, the engine is the instrument we should trust to, for the suppression of insects.

Let the principal trees, and also the dwarfs in the border, or in pots, be frequently examined for the detection of that arch enemy, the grub, or small black caterpillar, described and spoken of at p. 228. It is often very troublesome in the cherry-house, and is of a nature so mischievous, that too much care and pains cannot be taken for its destruction. It is generally to be found rolled up in the leaves, in a kind of down; so that every leaf, curled or rolled up, should be examined for it, and should be picked off and burnt. See Destroying of Caterpillars, page 229 to 233.

If the plants be attacked by the green-fly, let the house be close shut up at night, and fumigated with tobacco, until a person cannot see another in it. If this be repeated the next evening, they will be completely destroyed.

THE GRAPE-HOUSE.

Of forcing established plants in the Grape-house.

The reader is referred to this article for last month. As there hinted at, I shall suppose the forcing is to commence the first of February.

Make the fires so moderate as that the thermometer may not pass 50° , or at most 55° , mornings and evenings, until every bud in the house have begun to spring. This is a point of very great importance in the forcing of grapes. If the forcing be commenced with a *dash*, as some fast-going gardeners term it, and if a high temperature be kept up from the beginning, the chance is, that a third or fourth part of the buds will not push, and of course

there will be a great falling off in the expected crop. After the whole of the shoots and buds are in an evident state of vegetation, the temperature may be gradually raised to 60° , 65° , and 70° , at which it may continue till the bloom begin to open. This rise from 50° to 70° , must not be sudden ; it should not be effected in less time than a fortnight, or, if the plants be not in a very strong state, three weeks, otherwise the shoots will push weakly.

Air should be admitted freely every day, by opening the sashes in the ordinary way, until the foliage begin to expand ; and to an extent that the thermometer may not rise to more than five degrees above the fire-heat medium, in sunshine ; thus bringing away the buds strong and vigorous. But after the foliage begins to expand, except in fine weather, the house should be chiefly aired by means of the ventilators, until the blossom is over, and the fruit begin to set ; or at least until the season become mild.

The border must be duly and freely refreshed with water ; generally once in two or three days ; and if occasionally watered with the drainings of the dunghil, it would add much to the vigour of the plants. The branches should be watered once in two days by the engine, with a considerable degree of force, in order to keep the plants clean, and prevent the breeding of the red-spider and thrips, which are often very troublesome in the grape-house.

Vines whose shoots have not been well ripened last season, and particularly if they have been pruned late, often bleed after vegetation commences, which

is a great misfortune, as it very much weakens the plants, and is very difficult to stop. Such bleeding is most successfully stopped by an application of hot wax ; of which, see Pruning of Grapes, in October.

THE PEACH-HOUSE,

Of forcing established plants in the Peach-House.

The reader is necessarily referred to this head for January, where I shall take up the subject ; supposing the fire is to be lighted the first of this month.

Let the temperature be kept to about 45° for the first twelve or fourteen days, and then increase the heat to 50° or 52° , working as steady as possible. The times of regulation are supposed to be at six or seven in the morning, and eight or nine at night.

Air should be freely admitted every day, even in frosty weather, by the sashes, till the flowers begin to expand ; after which time by the ventilators, except in fresh weather, till the season become mild. Air should be admitted all this month, to such an extent as to keep down the temperature, in sunshine, to within five degrees of the fire-heat medium ; and this in order to strengthen the buds as they break, and that the young shoots may spring in a vigorous manner.

The border should be kept in a moderately moist state ; and the branches should be well scourged twice or thrice a-week with the engine, for the sup-

pression of insects, until the flower-buds begin to break ; of which see further in March.

THE PINERY.

Of the Nursery, and Succession Pits.

The rules laid down for the management of these compartments of the pinery, last month, are to be followed, with little deviation, throughout this. The same degree of temperature should be kept up ; air must be admitted as freely as the state of the weather will allow ; and water may be given in somewhat larger quantities towards the end of the month, if the weather be not very adverse.

Of the Fruiting Pit.

About the beginning of the month, it will be proper to turn over the bark-bed, and add new bark to the extent of an eighth, or perhaps a sixth part. The quantity to be added must depend on the state of the old bark. A lively, but not a violent heat, is now required, in order to start the plants into fruit. Let the bed, therefore, be stirred up to the bottom, and divide the new bark added as equally as possible ; keeping it down, however, a full foot under the surface, that the pots may be plunged entirely in the old bark. See further of this matter, p. 325.

Such of the plants as have not yet shewn fruit, are healthy, and stand firm and erect in their pots, need not be shifted, but may be top-dressed ; that is, may have two inches of the old surface-earth taken off, replacing it with fresh mould ; at the same time

twisting off any decayed leaves about the bottom of the plant. This will cause them put out new fibres from the stem, and very much encourage their growth. But plants that are unhealthy, feeble, and do not stand firm in their pots, should be shaken out entirely, and be replaced in the same pots; trimming their roots according as they may need, but retaining all fresh, healthy fibres. For the kind of mould to be used, see Section II. on Soils for Forced Fruits, page 291.

Any plants that have already started into fruit, should also be shaken out, and be fresh potted, as above; which, by the check they receive, will keep them back to a better season of ripening, and by the force of fresh earth, make them swell their fruit larger than they otherwise would have done. I have thus new potted plants, even in flower, with very much success, and have swelled the fruit to a size far beyond my expectations; of which fact any one may easily satisfy himself, by fresh potting a few plants, and comparing their progress with others treated in the ordinary way.

Let the plants be replunged to the brim as before, keeping the pots quite level. If the plants be full sized, and strong, they will require to be set at about twenty inches apart, from centre to centre, on a medium. But they should be sorted; the smallest placed in front, and the largest at back, as in arranging plants on a stage, that they may have an equal share of sun and light.

As soon as replaced in the bark-bed, let them have a little water, to settle the earth about their roots.

This need not be repeated till the heat begin to rise ; after which they should have a full watering, both at the root, and over head, in order to clear the leaves from dust, &c. received in the operation of potting. As the season, and as their growth advance, the quantity of water must be increased ; but it will not be necessary to water oftener than once in six or eight days, in this month.

After the plants are replaced in the pit, the temperature may be kept at about 64° , till the heat in the bark rise to the pots ; that is, for two or three days. Let it then be raised to 70° , or 72° , and increase gradually to 75° ; keeping as near to that point as possible.

Give air as freely as the season will admit of, and in sunshine, to such an extent as not to allow the thermometer to pass 80° . In continued dull weather, a pretty brisk fire may be made in the morning, occasionally, in order to enable you to admit a little air for an hour or two, and at the same time keep up the temperature. This is necessary to the welfare of the plants ; for if they be long confined without air, they will become languid, and lose colour.

HOT-BEDS.

Of forcing Asparagus.

If a succession of asparagus be required, it will be proper to make up a second bed about the beginning of the month, to succeed that made the middle of January, the grass in which will now be

advancing, and will soon be ready for use. The process is the same in every respect, as that stated last month, except that the bed need not be quite so strong.

With respect to the asparagus now advancing, care must be taken to keep the bed as clear of steam as possible; and air must be freely admitted, in order to give the buds flavour. A moderate quantity of water may be given once in three or four days, if the heat be not violent; and if otherwise, oftener. But if the dung was properly fermented, and the bed carefully turfed, according to the directions given, the heat should be mild, and little steam should appear by the time the buds have come up. If the weather be severe, cover at night accordingly; but uncover betimes in the morning, that the buds be not drawn up weak and ill coloured.

If the heat has decreased much, on account of severe weather, and if it be thought not sufficient to carry the plants through, or to spring all the buds, one, or both sides of the bed should be lined; lining the front first, and if that does not throw in heat enough, then the back, at an interval of eight or ten days. For this purpose, the dung must be fermented, as at first. The old dung must be cut away, perpendicularly by the frame; and the new lining must be built about two feet broad, and to the height of six inches above its bottom; beating or treading it well, and making it up to the same height in a few days again, as it will fall considerably in heating. When the lining has done settling,

it may be covered with a little light earth, over which may be laid some clean straw, or fern-branches, and a plank to keep all down, and to walk upon.

By the time the buds have come up three inches above the surface, they are fit to gather for use, as they will then be six or seven inches in length. In gathering them, draw aside a little of the mould, slip down the finger and thumb, and twist them off from the crown. This is a better method than to cut them; at least it is less dangerous to the rising buds, which come up in thick succession, and might be wounded by the knife, if cutting were practised.

An ordinary-sized three-light frame, completely filled with good roots, and properly managed, will only yield a dish every day for about three weeks at most; so that if a constant succession of asparagus be required, it will be necessary to make up a bed every eighteen or twenty days, till the middle or end of March. Each successive bed may be made a little lighter; and less trouble will be required as the season advances, though the success will be greater.

Of forcing Asparagus in a Flued Pit.

Asparagus may be successfully forced in flued pits, and with less trouble than on a dung hot-bed. The kind of pit here meant, is such as that for young pine plants, described at page 277. The roots may either be forced on bark, or on dung, or on dung and bark. But old, half rotten bark, in which there is not much heat, is to be preferred. Next, well fermented dung underneath, and old bark to the thick-

ness of a foot or fifteen inches at top. If dung alone, or a mixture of dung and leaves, be used, it should be carefully fermented, and should be in a state past heating violently, before it is put into the pit. In this case, observe to finish the bed with the smallest and driest part of the materials.

In using any of these materials, the roots should be bedded in light dry earth, as directed for those on a hot-bed in January; placing them closely together, and covering with fine mould, in like manner.

If by the heat of the bark or dung, and the use of mats or canvas covers at night, the thermometer stand as high as 50° , fire-heat will be unnecessary; but otherwise, recourse must be had to the flues. A very moderate degree of fire-heat, however, will be sufficient; and a small fire made in the evening will generally answer the purpose. Sometimes, in dull hazy weather, a fire may be necessary in the morning, in order to enable you to admit air more freely, and to dry off damp.

The roots must have moderate supplies of water; and as the buds begin to appear, as large portions of air must be daily admitted as the state of the weather will permit.

In forcing asparagus in this manner, if the pit be twenty-five or thirty feet long, it will be enough, for the supply of an ordinary family, to fill one-half at a time. If the second half be planted when the grass in the first half is fit for use, and so on, a constant succession may be kept up in the same pit for any length of time required. In order, how-

ever, to forward or protract the growth of the one part, or of the other, the pit may be divided in a temporary way, by fitting a board neatly under the middle rafter. By this means, one-half may be kept cooler or hotter than the other, by matting or not matting, or by the admission of more or less air, &c.

In filling the first end of the pit a second time, if bark be used, it will not be necessary to add fresh materials; as trenching over the bed will be found to answer the purpose, even a third time. And in using dung, the stirring up of the old, and adding as much new as will raise the bed to a proper height, finishing with the smallest and best fermented part, will generally be sufficient for a second filling. For a third filling, one-half new dung may be necessary, which, however, should be moderately fermented, and be kept well down.

Of forcing Cucumbers and Melons.

When the seedling cucumbers and melons, (sown as directed last month,) are about an inch and a half high, they are then fit to be pricked out into nursing pots. These pots should be about three and a half or four inches diameter at top, and as much in depth. The mould to be used should be the same as that the seeds were sown in, and should be laid in the frame a few hours previous to potting, in order to bring it to a proper degree of warmth, that the tender fibrils be not chilled by it.

Let the pots be filled about one-half with the earth; turn the plants carefully out of the seed-

pot ; place three in each, against the side of the pot, and so as that their leaves may be just above its margin ; then cover the roots with the mould, rubbing it fine between the fingers, and filling the pots nearly to the brim. Work over the sand in the frame to its full depth ; plunge the pots to within an inch of their rims ; and cover the whole surface with a little dry earth as at first, making it level with the tops of the pots. Then give a little aired water, in order to settle the earth to the roots of the plants.

As these tender seedlings, at this early period, are liable to many accidents, it will be proper to sow a little more seed of the same kinds at this time, in order to provide a supply of plants. If they should not be wanted, the trouble is not much ; and they may be given to a neighbour, or be thrown away.

The plants will now require due attention. Let air be admitted to them as freely as the state of the weather will allow ; and supply them moderately with water once in two or three days. Examine the pots frequently, if the heat be violent, lest the roots be scorched ; setting them loosely, or pulling them up a little, in that case ; or, if thought necessary, placing them entirely on the surface. If much steam abound in the bed at this time, it may be proper to leave the light tilted half an inch in the night ; observing to hang the lap of a single mat two or three inches over the tilt. But if the bed was carefully turfed over, as directed at making up, this will seldom be necessary ; never but in thick, hazy weather.

Mat up carefully at night ; but make a point of admitting all the sun and light possible to the plants ; therefore uncover always by sunrise ; and frequently wash or wipe the glasses clean, outside and inside, as they are often clogged by a mixture of steam and dust. Also, occasionally stir the surface of the sand or earth in the frame with the point of a stick, in order to extirpate vapour that hovers on the surface, and so purify the internal air of the bed.

If the heat begin to decrease, and particularly if the weather be severe, it may be necessary to line one or more sides of the bed, that the plants may receive no check in their growth. If it be a one light box, both back and front may be lined at the same time ; and if necessary, in ten or twelve days, the two sides. Observe the same method, as directed above for lining the asparagus bed, page 346 ; and if much steam arise from the linings after they come into heat, be careful, in matting at night, to tuck up the edges of the mat, lest it be thrown into the bed.

Let dung be put in preparation for *ridging beds*, and so as that it may be ready about the first of March ; as about that time, if all have gone well, the plants will be fit for *ridging*, or finally planting out. The dung must be carefully fermented, according to the hints given at page 332, and according to its state, as whether it be littery, or otherwise.

March.

THE CHERRY-HOUSE.

Of the new-planted Cherry-House.

THE reader is referred to this article in January.

About the middle or end of the month, it will be proper to head down the plants. The dwarfs, planted against the trellis, should be well cut in; that is, each shoot of last year should be shortened back to three or four buds, that the plants may throw out a sufficiency of young shoots to fill the rail from the bottom. The dwarfs, planted in the border as little standards, need not be headed-in so much; as the intention is to have them fruitful, and that they may grow little to wood from the beginning. Their short, stubby shoots, need not be touched, unless bruised or hurt in transplanting; shortening back the longer and weaker ones *only*, a few inches, according to their strengths.

The riders, planted against the back-trellis, may be treated very much in the same manner; the sole intention being to obtain a few crops of them while the dwarfs are making wood and filling their spaces.

Train in the summer-shoots of the dwarfs as they advance, at the distance of about eight or nine inches from each other; and otherwise observe the rules laid down for training and pruning cherries on walls and espaliers, in the Fruit-Garden for January, June, and July.

The plants must be duly attended to with water throughout the season, and be liberally supplied, in order to encourage their growth; frequently exercising the engine upon their branches, to keep them clean, and suppress the red spider. If the aphid or green-fly appear on the leaves, let the house be fumigated with tobacco, as directed for the cherry-house in forcing, last month. Encourage a large and free circulation of air throughout the season. Indeed, were it not for the sake of other plants that may be placed in the house, as strawberries, French beans, &c. it might stand open night and day. After these articles, however, are removed, it should be fully exposed, that the plants may grow strong, make good roots, and be able to bear gentle forcing next season.

Of forcing established plants in the Cherry-House.

If the plants have been treated, as directed in the two former months, and if all has gone well, the fruit will now (beginning of March) be setting. The temperature of the house must therefore be kept, as steadily as possible, to about 50 degrees, lest the fruit drop; this being the most critical period of the forcing, and is so with all stone-fruits.

Air must also now be as freely admitted as the state of the weather will allow, either by the sashes, or by the ventilators ; admitting it, in sunshine, to such an extent as that the thermometer may not rise to more than 60° , and at other times, to 55° , or thereabouts.

Until the fruit have fairly set, the border should be kept rather in a drier state than heretofore ; as if it be kept too moist, it may occasion their dropping ; but afterwards, let it be regularly and freely watered, in order to promote the growth of the plants, and the swelling of the fruit. Now again resume the use of the engine ; and exercise it with force upon the branches, every second day, for the suppression of the red spider, and to keep the plants clean.

If the plants are fully established, have filled their spaces, and have formerly been forced, they will make very little wood, and of course little trouble with respect to pruning and training will be requisite. This must be so far attended to, however, as to divest the plants of water-shoots, or breast-wood that may rise among the spurs, as they appear ; laying in, or extending such shoots only, as may be wanted to fill any occasional vacancy.

THE GRAPE-HOUSE.

Of forcing established plants in the Grape-House.

The directions given last month, with respect to the temperature, airing, and watering of the house, are to be followed till the plants come into bloom. After that time, the heat must be increased to

75°; the border must be kept in a moist state; and the house must be steamed, mornings and evenings, by pouring water on the flues, when the fires are brisk. Air need not be so freely admitted at this time, as heretofore, and afterwards to be advised; as grapes are found to set best in a high, moist heat. A moderate circulation by the ventilators will be sufficient for the purpose, except, perhaps, in clear sunshine; when it may be necessary to open a few of the sashes at top, in order to let the rarefied air escape, and keep the temperature within due bounds.

With regard to pruning, all that is necessary to be done at this time may be performed with the fingers, without a knife; and indeed most of the summer-pruning of grapes may be so performed; the shoots to be displaced being easily rubbed off, and those to be shortened, being brittle, are readily pinched asunder.

After selecting the shoots to be trained for the production of a crop next season, and others necessary for filling the trellis from the bottom; which shoots should generally be laid in at the distance of a foot or fifteen inches from each other; rub off all the others that have no clusters, and shorten those that have, at one joint above the uppermost cluster. For this purpose, go over the plants every three or four days, till all the shoots in fruit have shewn their clusters; at the same time rubbing off any water shoots that may rise from the old wood.

Train in the shoots to be retained, as they advance; using strands of fresh matting, and allowing

sufficient room in the ties for the swelling of the shoots. Likewise pinch off all laterals and tendrils, every time you go over the plants, as these only tend to confusion, and take greatly from the strength of the clusters.

With respect to the manner in which vines should be trained, opinions are at variance. Some advise training the shoots in a straight and direct manner; others in a horizontal manner; and others in a serpentine form. If grapes be otherwise well managed, they will do well in any of the above ways; and I have just to observe, with respect to the last-mentioned method, that it necessarily leads to more confusion, particularly with regard to the training in of the summer-wood, than either of the preceding methods. On dwarf walls or trellises, the horizontal or zig-zag manner may be very proper; but in a properly constructed, and properly planted grape-house, (as that under consideration,) the most sensible manner of training, in my opinion, is directly up the roof. I shall, therefore, throughout the management of grapes, suppose them to be trained in that manner.

THE PEACH-HOUSE.

Of the new planted Peach-House.

The reader is referred to this article in January. About the latter end of the month, or as soon as the plants begin to vegetate, it will be proper to head them down. With respect to the dwarfs, the shoots

on the lower branches should be cut back to two or three buds, that the trellis may be furnished from the bottom with young wood. The shoots on the upper or farther extended branches, may be shortened back to half, or one-third of their lengths, according to their strength, provided they have been well ripened, and are free from canker; but if the tree be anywise diseased, let them be cut so far back as to get rid of the cankered or mildewed part. I mention this as a matter of precaution, but would rather advise that no diseased tree be planted, unless of a particular kind, that cannot be easily obtained.

The riders need not be headed so much in as the dwarfs; the object being rather to throw them into a bearing state, than to cause them push very strong shoots, which would not be fruitful. If they make moderately strong shoots, and if these be well ripened in autumn, a good crop may be expected on them next year.

Let the young shoots be laid in, as they advance, at the distance of about nine inches from each other: that is, of the dwarfs. Those of the riders may be laid in considerably closer, it not being intended they shall grow so vigorously as those of the dwarfs. In other respects, observe the rules laid down for the summer pruning and training of peaches and nectarines, in the Fruit Garden for June, July, and August.

The plants should be freely supplied with water at the root throughout the season, in order to promote their growth, and the engine must be applied

with force to the branches, for the suppression of the red-spider, and refreshing the foliage, generally once in two or three days. If the green-fly make its appearance, recourse must be had to the fumigating bellows, with which proceed as directed for the cherry-house in February.

Air should be freely admitted every day, from sunrise to sunset, giving large portions in sunshine, in the middle of the day. After the first or middle of June, if it be not for the sake of other plants contained in the house, it will be proper to keep it open night and day, shutting up, however, in continued rains, which might make the border too damp.

If all go well, the plants will bear gentle forcing next season, but it should be very gentle, and should not be begun sooner than the middle of March. It should rather be considered as preparatory to forcing the plants fully the third year, which may commence the first of February.

Of forcing established plants in the Peach-House.

The plants, if treated as directed last month, will now be full in bloom. Let the temperature be kept as steadily as possible to 55° , and admit air, either by the sashes, or by the ventilators, as freely as the state of the weather will allow. Less or more should be admitted every day, if possible, as, if the house be long shut up at this time, the fruit will not set freely, but many will drop off.

The plants must also be moderately supplied with

water at the roots, but not lavishly, as too much moisture at this time would cause the setting fruit to drop. After the fruit are fairly set, water may be given more freely, in order to promote their growth, and also that of the wood. From the time the flowers begin to open, until the petals have all fallen, steaming must be substituted for watering of the branches with the engine. This is to be done by pouring water on the flues in the evening, as directed above for the grape-house, and for the cherry-house last month. But as soon as the flower leaves have dropt, and the fruit have begun to set, resume the use of the engine on the foliage, in order to prevent the breeding of the red spider, so much an annoyance to all forced plants. If the green-fly begin to appear, apply the fumigating bellows. Tobacco is its bane and certain destruction.

By the time the fruit are as large as garden peas, the shoots should be disbudded, or finger-pruned. For full directions on this subject, see the article *Disbudding*, in the Fruit Garden for April.

THE PINERY.

Of the Nursing-Pit.

About the beginning of the month, the bark-bed will require to be trenched over, and have some new bark added to it. A moderate, growing heat is required; therefore let new bark be added,

according to the state of the old, observing the directions already given on this subject, and taking care that the pots be replunged entirely in old bark, by keeping a sufficient stratum of it uppermost, a few inches thicker than the pots are in depth.

At this time, also, the plants must be new potted. Let them be shaken out entirely; the balls be quite reduced; the roots be trimmed of all straggling and decayed fibres; and let them be replaced in the same, or in similar pots. The proper size of pots, however, in which to put crowns and suckers struck last season, is about four inches inside diameter at top, and six inches deep.

A little clean gravel should be laid at the bottom of each pot, in order to drain off extra moisture; and this should be observed in the potting of pine plants of all sorts. I have generally observed, that if the bark heat be not violent, the plants will push very strong fibres into this stratum of gravel, in which they seem to delight. I therefore generally make it two inches thick in small pots, and three or four in larger ones, less or more, according to their sizes. From the time I first adopted this mode of potting, I hardly ever had an instance of an unhealthy plant; and this very particular, together with that of keeping the plants always in a mild bottom heat, is of greater importance in the culture of pines, than all the other rules that have been given respecting them, out of the ordinary way.

The roots of pines seem to delight in gravel, and the reader will see, by turning to the subject of *Soils for Pine-Apples*, Section II., that I have been

careful to introduce it into the mould for plants of all ages. I generally used small sea gravel, in which was a considerable proportion of shells, or chips of shells, with other particles of a porous nature; and I have uniformly observed the finest fibres cling to these, and often insinuate themselves through the pores, or embrace the rougher particles. Therefore, if sea gravel can be obtained, prefer it; and next, river gravel; but avoid earthy pit gravel, and rather use sharp sand, or a mixture of pounded stone chips and brick-bats.

The plants being re-potted, plunge them in the bark-bed again, quite down to the rims of the pots, keeping them perfectly level. Eight or nine inches from centre to centre will be distance sufficient. When they are all placed, give a little aired water, to settle the earth about their roots. This need not be repeated till the heat in the bed rise to the pots, after which, as the plants will now begin to grow freely, they must be watered at the root once in four or five days; and they may have a dewing over head, from the fine rose of a watering-pot, occasionally, if the weather be fine.

The temperature should now be gradually raised to 70°, at which it should be kept as steadily as possible; the times of regulation being six in the morning, and eight or nine at night. Air should be admitted every day, as freely as the state of the weather will permit; and in sunshine, to such an extent as that the thermometer may not pass 80°.

Of the Succession-Pit.

The bark-bed in this compartment should also now be stirred up, and have a fresh supply of bark added to it, according to its state, in the manner directed above for the nursery-pit.

The plants must likewise now be shaken out of their pots, and be replaced into the same, or into similar pots, as also above directed. These pots should be about seven or eight inches diameter, and nine or ten deep. Observe what is said above, in respect of placing some gravel at bottom; and for the kind of mould to be used, see Section II., on Soils for Pine-Apples.

Let the plants be re-plunged, quite to the rims of the pots, at the medium distance of fifteen inches from centre to centre, keeping the pots perfectly level. With respect to water, observe the rules given above for the nurse-plants. Keep the temperature as near to 65° as possible, and admit air as freely as the state of the weather will allow.

Of the Fruiting-Pit.

The bark-bed having been trenched over, and the plants shifted, as directed last month, it is only now necessary to attend to the plants with water, to keep up a proper degree of heat, and to admit air regularly.

Water may be given oftener than heretofore advised, and also in larger quantities; generally a moderate watering at root once in three or four days,

and a dewing over head occasionally, to refresh the leaves, and keep them clean from dust. From the time the plants are out of flower, and the fruit begin to swell, water must be applied in a very liberal manner once in two or three days, always giving the necessary quantity at root, and then a dewing over head. Watering to this extent, however, if the fruit be not in too forward a state, will seldom be necessary before the end of the month, or till April.

The temperature should be kept up to from 72° to 75° with fire heat, admitting air regularly, and in as large portions as the state of the weather will allow. In sunshine, admit air so freely as to keep down the thermometer to 80° , or even, after a continuation of dull weather, to the fire-heat medium. From the middle or end of the month, the sashes may be opened, in good steady weather, by nine in the morning; the quantity of air may be increased by ten or eleven, reduced again by one or two, shutting up about three or four, according to the state of the atmosphere.

HOT-BEDS.

Of forcing Cucumbers and Melons.

If no accident have happened to the cucumber and melon plants, raised as directed last month, they will soon be fit for transplanting into *ridging-beds*, as they are termed, that is, into beds where they are finally to remain, and produce fruit. I advised the

preparation of dung for these beds the latter end of February. If it be ready, let them now be built, of dimensions answerable to the size of two or more frames, of two or of three lights each, according to the quantity of fruit required ; keeping the cucumbers and melons in distinct frames, however, as they require a different mode of treatment, in many particulars.

The bed for cucumbers may be built to the height of about four and a half feet at back, and three and a half in front ; and that for melons half a foot or nine inches higher ; keeping both fully a foot larger than the frame all round ; shaking out, beating, or treading the dung well, that they may settle equally in all parts in heating. This is a matter of particular importance in the building of *ridging-beds*, for which the dung should also have been carefully fermented ; for, if they settle unequally, or fall into holes, the roots of the plants, after they have begun to run, perhaps, will evidently be injured, and may be broken in twain by the rending of the bed. I have noticed this before, and mention it again, in order the better to caution the unwary.

If the dung have not been well fermented, and if there be reason to dread its heating violently, it will be proper to turf the bed all over, in the same manner as directed for the asparagus bed in January ; previously laying on two or three inches of the smallest and best reduced part of the dung (which for that purpose should be laid aside as it falls out in the operation of building), over which lay as much old bark, or dry sand. But otherwise,

placing a thick, round turf, a yard over, in the middle of each light, so as that its centre may be exactly under the plants, will generally be found sufficiently safe.

The frames may be put on ; and if the beds be matted up at night, the heat will rise the sooner. When it has risen a day or two, let the beds be earthed over to the thickness of six inches, with the proper and respective moulds, (see Section II. on Soils for Cucumbers and Melons) previously rendered quite dry, and sifted, or broken very fine.

Next day the bed will be in a fit state to receive the plants ; and if they have each got two or three rough leaves, they are fit for being transplanted. But before planting, if the beds have settled anywise unequally, let the frames be rectified, and be set level, by placing boards, slates, or bricks, under the low corners, as shall seem requisite to keep them correct. Then make up the outsides of the bed with dung, a few inches higher than the bottom of the frames ; over which lay some dry litter, or fern branches, and planks at top to walk on.

Now gather up, from the surface of the beds, a sufficient quantity of earth to raise hills whereon to plant. They should be raised exactly in the middle of each light ; about a foot broad at top, and to within six inches of the glass. If the frames be of a proper depth, they should be twelve or fifteen inches high above the turf. Make a hole in each, sufficiently large to receive the balls, which turn out of the pots carefully, and as entire as possible ; placing them level with the surface of the hill, filling in

the earth round their sides, and settling all with a little aired water.

In the case of planting older plants than the above, at a farther advanced period of the season, or such as have quite filled their pots with roots, the balls may be reduced a little, and the fibres should be singled out, if anywise matted. But the above plants are supposed to have barely filled the pots with roots, and then the balls should be kept entire, that they may not receive a check in the transplanting.

Let the plants now be carefully attended to with moderate supplies of water once in two or three days, and have air regularly admitted to them, in as large portions as the state of the weather will allow; being careful to let off rank steam, if it abound, by leaving a little *tilt*, even in the night, as directed for the seed-bed last month. In order to determine to what extent the frames should be covered or matted, let a thermometer be kept in each bed; by which also the airing may be regulated. The medium heat for cucumbers is 60° , and for melons, 70° ; allowing a few degrees of variation at this season, on account of changeable weather. In sunshine, admit air to such an extent as to keep down the mercury to within five degrees of the above-mentioned mediums, which will greatly strengthen the plants, and promote their growth.

In a few days the plants will begin to put out runners or vines, whether the heart-buds be picked out or not, which is a matter of trivial concern, although

much insisted on by some, as being necessary to their doing so at all. For my own part, I never could discover any difference, and I have repeatedly made the comparison in the same bed, which otherwise of course could not be fair. When the vines have grown to the length of four or five joints, and if fruit appear on them, they may be stopped at one joint above the fruit; but otherwise, they may be allowed to run to the length of seven or eight joints, and may then be stopped, which will generally cause them to push fertile shoots. These should be regularly spread out, and be trained at the distance of eight or ten inches apart.

By this time the roots will have spread quite over the hills, which must be enlarged, in order to encourage the growth of the plants. Let the earth, therefore, in the other parts of the frame, be stirred up to its full depth with a hand-fork or weeding-iron, breaking it fine, if anywise caked by the heat; and add fresh mould, sifted or finely broken, and in a dry state, so as to raise the surface nearly to the level of the hills; laying it in a sloping manner from back to front. Previous to doing this, let the frames be rectified, as above directed, and be so raised as that the glass may be eight or nine inches above the mould in the centre.

Towards the end of the month, the heat may probably begin to decrease, and it may be proper to line the front, or perhaps the front and ends of the beds. Let this be done in the same manner as directed for lining the asparagus bed, and the seed-bed, in February. Also, observe the cautions there

given, with respect to matting afterwards, lest mischief be done by steam rising from the linings. In ten days or a fortnight after, it may be proper to line the back ; but this matter must be determined by the state of the weather.

About the end of the month, or beginning of April, as shall seem fit, successional beds for both cucumbers and melons may be made ; (the plants having been raised in the ridging frames, in the same manner as directed for raising them in the seed-bed) ; but they will not require to be so strong as those built the end of February or first of March. The dung, however, should be carefully fermented ; and the process, in all other respects, is the same as that already set forth.

April.

THE CHERRY-HOUSE.

Of forcing established plants in the Cherry-House.

REFERRING the reader to this article last month, let the directions there given be continued till the

fruit begin to colour, and swell off for ripening; being liberal in the waterings at root, and regular in the exercise of the engine; raising the temperature four or five degrees; and encouraging as free a circulation of air as the state of the weather will permit.

When the fruit begin to swell off, withhold water from the border by degrees, and towards their being ripe, entirely. At this time also, watering with the engine must be withheld; but previously exercise it with force, and often, for a week or two, so as completely to subdue the red spider, if he have gained any ground lately. After the crop is gathered, these waterings must be resumed, and should be continued till the foliage begin to drop; not, however, so much on account of the cherry-trees, as on account of other plants that may be placed in the house; for if the enemy be allowed a footing on the former, he will soon shew himself on the latter, where perhaps he may be less vulnerable, especially if the plants be of a tender kind. The border may be kept in a moderately moist state till the leaves fall, or till the house be exposed, or be uncovered.

As the fruit ripen, give as large and regular portions of air as possible; opening the sashes by eight or nine in the morning; giving full air about ten; reducing about two or three; and shutting up about four or five, sooner or later, according to the state of the atmosphere. In conducting this matter, however, regard must be had to the temperature; but air may be admitted, in sunshine, to such an extent

as to keep down the mercury or spirits in the thermometer to 65° , and at other times to 60° .

These directions, with respect to the application and withholding of water, and the admission of air, are of the utmost importance in forcing, not only cherries, but all fruits: of which the reader may see further, by turning to the Introduction to the Forcing Garden.

When the fruit are gathered, if consistent with the welfare of other plants that may have been placed here, the house may stand open night and day; or the glasses may be entirely taken off, as shall be thought proper.

THE GRAPE-HOUSE.

Of the new planted Grape-House.

The reader is referred to this article for January. With respect to the temperature of the house, if the weather be not very unfavourable, fire-heat will not be required at this time; but from the time the buds begin to open, any check in their growth should be prevented, by making a little fire in cold weather, so as to raise the thermometer to about 55° , mornings and evenings.

After the buds have sprung an inch or two, it will be proper to single out those to be trained, and displace the others with the thumb. Three shoots *only* should be trained on each plant; that is, the two lowermost, and the uppermost, if it be vigorous; but otherwise displace it, and train the next below it. Ob-

serve, I allude to such plants as are recommended to be planted in the grape-house in January. As the shoots advance, they should be trained at the distance of ten or twelve inches from each other; allowing them sufficient room in the ties, to swell, without being bound. Pinch off all laterals as they appear, except one or two nearest to the point of the shoot, lest by any accident it be broken, and in that case, that a substitute may readily be found; which, however, is never equal to the main shoot; so that great care should be taken in the training of principal leaders. One side-shoot of each plant may be stopped when it is five or six feet in length, and the other when nine or ten, (as they are to be cut well down in the winter pruning,) which will throw in the more strength to the middle shoots, that are only to be headed down to about six or eight feet, and which, if well ripened, may yield a few fruit next season. These should be encouraged, therefore, and be carefully trained, as long as they will grow.

Let air be freely admitted in good weather, and less or more every day, in order to strengthen the shoots as they spring; observing the rules given above for airing the cherry-house; and admitting it to such an extent, in sunshine, as to keep down the temperature to about 65° . As the season, and as the growth of the plants advance, the mercury may be allowed to rise to 70° or 75° ; but it should seldom pass the latter point, unless in clear sunshine, and when the weather is naturally as hot. In this case,

the house may stand open day and night, or at least, *from six till six* *.

The plants must be duly attended to with water, and be liberally supplied as they advance in growth. The vine, when in a free growing state, requires more water than is generally imagined; and many, very many gardeners half ruin their plants, and very much injure their crops of fruit, by withholding this element. I know some who do not give as much water to a vinery in a whole season, as it ought to have in a month. But what is the consequence? wood as large as wheat-straw, and berries the size of garden peas! yet these blind men † cannot see their neighbours, within a few miles of them, producing shoots like walking-sticks, and berries as large as plums, in soil no better than their own. They have formed opinions, are inflexible, and blind to conviction. Because vines grow on the dry and rocky mountains of Italy, and of Madeira, must they have no water in a hot-house? do they not also grow in the fertile and moist valleys of France, and of Germany? But to return:

* This is a common phrase with gardeners, and well understood, being the general limits of their day.

† Some of these may probably have been pupils of the late Mr John Mawer at Dalry, so much praised by Mr Loudon for his excellence in forcing. This much I do know, and often have seen, that both at Duddingston, and at Dalry, Mr Mawer's grapes were generally to be found as here described; nor had he ever a peach worth eating, or a pine-apple above a pound in weight.

Let the engine be freely and regularly exercised on the foliage throughout the summer, both to refresh it, and to keep down the red spider. Examine the young leaves and points of the shoots with a glass, whenever you perceive them begin to curl up, turn brown, or anywise become discoloured. It is most probably caused by the thrips, an insect exceedingly mischievous to grapes, particularly in a pine, or other stove, and often in the vinery, in hot weather*. It may be destroyed by a fumigation with tobacco, in the same manner as the green fly; but the fumigation must be stronger, and longer persevered in, and perhaps may require to be repeated. See fumigating the cherry-house in February.

Of forcing established plants in the Grape-House.

If the directions given in the two preceding months have been observed, the plants will be out of flower by the first of this, and the berries beginning to make their appearance. The temperature must be continued, and be kept up to about 75°, by fire-heat. As the fruit begin to swell, large quantities of water must be given once in two days, or moderate quantities every day, in order to further their progress, and that they may be produced in perfection, plump, and full sized.

* See more concerning the Thrips, at the article *Destroying Insects*, in the Fruit Garden for April.

It should be considered, that from this time the roots have much to do, in sustaining and nourishing both fruit and shoots, and so ought to be liberally supplied with water. If the border were well soaked, both inside and outside of the house, once a-week or ten days, with that nectar of vegetable life, the drainings of the dunghil, the roots would be much invigorated*.

The use of the engine may now be resumed once in two or three days, for the suppression of the red spider; applying it with force. In the intervals or these waterings, the house may be steamed in the evenings, as long as the state of the weather require the flues being made so hot as to produce steam in any considerable quantity.

Look out for the thrips, as directed above, whenever the young leaves, or points of the shoots begin to turn brown or curl up. The remedy lies in the fumigating bellows, when charged with tobacco and a live-cinder; if the directions on this subject, already repeatedly given, be followed. I must further observe, however, that fumigations should be performed before the fruit begin to swell off, or colour, as it might otherwise be tainted by the smoke.

* I have practised this kind of watering to a great extent, in every species of forcing, with much success and satisfaction. To all plants forced in pots, it is eminently useful. When the pool at the dunghil has been dried by evaporation in hot weather, I have often laid dung in steep or soak, in order to enable me to continue such watering.

A free and regular circulation of air should now be encouraged, and less or more must be admitted every day ; observing the rules given above for airing the cherry-house, with respect to giving and taking it away by degrees.

With regard to pruning and training, the directions given last month are to be followed ; and if there be an under trellis, on which to train the summer shoots, (see the article Trellising, Section I.) they should now be let down to it, that the fruit may enjoy the full air and light, as it advances towards maturity. Such of these shoots as issue from the bottom, and are to be shortened in the winter-pruning to a few eyes, merely for the production of wood to fill the trellis, may be stopped when they have grown to the length of four or five feet. Others that are intended to be cut down to about two yards, and which issue at different heights, may be stopped when they have run three yards or ten feet, less or more, according to their strength. And those intended to be cut at, or near to, the top of the house, should be trained a yard or two down the back-wall ; (a trellis being placed against it purposely ;) or they may be run right or left a few feet on the uppermost wire.

I would here observe, that in order to be a good trainer of vines, and be able to provide for a crop the following season, a man must have some forethought, and be capable of making his selections, as the plants shoot, even at this distance of time. He must predetermine how he shall prune, and where he shall cut, at the end of the season ; and

so, as it were, fashion the plants to his mind. He has this more effectually in his power, with respect to the vine, than any other fruit-tree, on account of its rapid growth, and docility.

The stubs, or short shoots on which the clusters are placed, will probably push again after being stopped, (see last month) if the plants be vigorous. If so, stop them again and again; but after the fruit are half-grown, they will seldom spring. Observe to divest the shoots in training of all laterals as they appear, except the uppermost on each; in order to provide against accidents, as hinted at above, in training the new planted vines. When these shoots are stopped, as directed above, they will push again. Allow the lateral that pushes to run a few joints, and then shorten it back to *one*; and so on, as it pushes, until it stop entirely. When the proper shoot gets ripened nearly to the top, the whole may be cut back to the originally shortened part, or to one joint above it, if there be reason to fear that the uppermost bud of the proper shoot will start.

Be careful to divest the plants of all damped or decayed leaves, as they appear, as such will sometimes occur in continued hazy weather; and some may be bruised by the glass, in moving the sashes for the admission of air, or by other accidents.

THE PEACH-HOUSE.

Of forcing established plants in the Peach-House.

The reader is necessarily referred to this article last month. The temperature of the house should be continued, as steadily as possible, at above 55° , at the times of regulation, mornings and evenings. Air should now be freely admitted by the sashes, and in the manner directed above for airing the cherry-house; admitting it, in sunshine, in such quantity as to keep down the mercury in the thermometer to about 65° , and seldom allowing it to pass 70° : which if it does, will have the effect of drawing the shoots up weak, and may cause the setting fruit to drop.

Water should now be given pretty freely to the plants at root, once in two or three days; increasing the quantity as the fruit begin to swell, and as the shoots advance in growth. Also, continue the operations of the engine regularly; and do not be sparing, or be afraid to hurt the foliage, if the red spider appear on it. Hit hardest at, or near to the top of the house; as it is there he preys most, being fostered by the extreme heat, in which he delights. In looking out for this enemy, therefore, keep your eye particularly on this part.

If the green fly, or the thrips, make their appearance, recourse must be had to fumigations; which have frequently been spoken of in the preceding pages. The coccus and chermes are not so immediately hurtful, and unless very numerous, need not

be much minded at this season; but they must be more particularly attended to at the time of pruning in November; which see. The males, which have wings, and are active, will be dislodged by the operations of the engine; and the females, which are stationary, and adhere to the shoots and branches, if very numerous, may readily be crushed by the finger, or by a small flattish stick that can easily be insinuated into the angles of the branches, where they often lodge.

With respect to pruning, and training of the summer shoots, the directions given in June and July, for training peaches and nectarines against walls, in the Fruit Garden, are generally to be followed. The expert gardener, and the judicious, will make proper allowances, and will readily discriminate any difference to be observed; deviating from, or abiding by them, as shall seem necessary.

If the trees set an immoderate quantity of fruit, which plants not in a healthy and vigorous state will often do, (that is to say, such will frequently set more than they are able to sustain or nourish,) they should, in that case, be moderately thinned at this time. Also, the fruit on trees in a more vigorous condition should be thinned; thinning most where health is most wanting, and least where it prevails over sickness. And observe, that for want of timely and judicious thinning, sickness is often induced, and the whole crop lost*. See

* This kind of sickness or disease, as in some animals, may be termed that of *Excessive Fertility*; for which, in the latter

further on this subject, in the Fruit Garden for June and July. But thin with caution; and by little and little, till the stoning be over, and all danger of dropping be past.

Of forcing Nectarines and Peaches on open Flued-walls.

This species of forcing is practised by many in a very injudicious manner; and much mischief has been done through error, to thousands of fine trees; many of which I have myself seen ruined, or next to ruined, by a wrong mode of treatment. My object here shall be to place these errors in a just light, and to offer directions for a method more safe.

No kind of forcing is so intricate as that attending open flued walls, without having any sort of cover; which may easily be conceived, when it is considered that the plants are placed between the extremes of heat and cold at one and the same time. The error is the greater, and the practice the more censurable, the earlier in the season such forcing be commenced. The temperature cannot be regulated here, as in the hot-house; nor can the effects of frost on advanced vegetation be resisted without means that may prove more hurtful, namely, the ap-

case, there is an obvious remedy. In the former case, in so far as regards several kinds of fruits, I have frequently restored health, by divesting the plants partly, or entirely of their crops, for a season, or for two seasons. We complain, in bad years, when the crops out of doors are carried off by adverse weather; but nature is thus often relieved, and health restored to sickly over-burthened plants.

plication of excessive fire-heat ; by which many a fair plant, with its infant load, has been scorched and blasted, so as never more to produce flower or blade*.

Flued walls are certainly eminently useful, particularly in the northern parts of these kingdoms, and are often necessary to the production of nectarines and peaches in bad seasons. But they should not be used so much to force, as to help nature, as it were, in a bad climate, or in adverse seasons, in the more perfect production of a crop.

Fire heat should never be applied to naked walls in the spring, so as to force the plants ; which should be allowed to vegetate of their own accord, to flower, and to shoot. But after vegetation has commenced, and when the flowers, foliage, and infant fruit are in a perilous state, if bad weather overtake them, the help of the flues may be called in, and they may be employed, in an auxiliary manner, for their defence. If further aided by the application of nets, or of canvas screens, as spoken of in the Fruit Garden for April, their mutual help might, with proper attention, be reckoned upon as the sure pledge of a crop, and of well matured fruit.

* I have witnessed this misfortune, in two different instances, to such an extent in the one case, as that all the trees on a flued wall 120 feet long, were at once destroyed ; and in the other, all, on a wall 300 feet long, with their fruit just set, were so much hurt as that the crop was totally lost that season, and the trees languished, and died the next.

The fires, if any are made at this season, should be very moderate. The flues should never be heated so as to feel much warmer than the hand after having been kept a few minutes in the bosom, that is to say, they should seldom be above blood-heat, or what is termed milk-warm. But a more proper time for the application of fire-heat to flued walls, is the latter-end of summer, and in autumn; and that in order to mature the fruit, to further the growth of, and perfectly ripen the shoots, that they may the better produce a crop next season. See this subject resumed in August.

The management of the trees, in other respects, differs nothing from that of nectarines and peaches on common walls, treated of throughout the Fruit Garden, except that the foliage must be more frequently and severely scoured by the garden engine, in order to keep down the red-spider, which, on account of the application of fire-heat, will breed more plentifully here than on trees trained against other walls.

THE PINERY.

Of the Nursing and Succession Pits.

The respective temperatures of these compartments of the pinery are to be continued, as directed last month; and air should be freely admitted every day, in the manner there noticed for the fruit-

ing-pit, if the state of the weather will by any means permit.

The plants will now be taking on a fine growth, and water must be given more liberally than heretofore, generally once in three or four days. They should first have the proper quantity given at the root, from the spout of the watering-pot, and then a dewing over the leaves from the rose. They may also be occasionally watered, at root, with the drainings of the dunghil, which will much promote their growth.

Of the Fruiting-Pit.

Observe the directions given last month, respecting the temperature and airing of this compartment; from which there should be no deviation throughout this, excepting to admit air more freely as the season advances.

Water must now be given in a plentiful manner, once in two or three days; in order the better to swell off the fruit. The roots have now much to do in sustaining it, and also the suckers, which will be fast advancing in growth. For this reason, water frequently with dunghil-drainings, or with water of dung, soaked on purpose; and after each watering at root, give a dewing over the leaves, as directed above.

Some kinds of pine-apples put out suckers on the fruit-stalk, at the base of the fruit, which should be rubbed off with the thumb as they appear, be-

cause they rob it of nourishment to a certain extent. If the object be to have large fruit, all suckers of the root, and all but two or three of the best of those rising from between the leaves, should be destroyed. Those of the root may easily be twisted off, and the others may be destroyed, or be prevented from growing farther, by breaking out their heart leaves, which is no difficult matter, while they are young, being then brittle.

But if the increase of the stock be the object, all suckers of the stem should be encouraged, and even some of the best of those from the root. These last, however, are more apt to become untimely-fruited plants, than the others, or than crowns; especially such as rise from the extended roots, about the margin of the pot. It may also be observed of these last, that they are generally ill-hearted, and more unshapely than such as rise nearer to the stem of the plant.

HOT-BEDS.

Of forcing Cucumbers and Melons.

If an ordinary degree of success have attended the process of forcing these plants, if the weather have been pretty favourable, and if the directions given in the preceding months have been followed, (perhaps improved), cucumbers will be fit to cut for use about the beginning of the month; and the melon plants will be shewing fruit abundantly, if

they be of the proper early sorts, the golden or orange cantelope.

There is a very delicate and nice operation to be performed on the flowers of melons at this time, in order the better to insure their setting, ripening, and the maturation and fertility of their seeds, which is, impregnating the female flowers by the males *. It is more necessary that melons be impregnated, as noticed below, than cucumbers, unless with respect to such cucumbers as are intended to be reserved for seed; because cucumbers will grow, and will arrive at full size, without the female flowers being impregnated. So will melons; but their seeds will be abortive, nor will the fruit swell off so fair and handsome †.

Therefore, let nature be assisted in this work, considering that she is more under restraint here, than as if the plants grew in the open air, where the wind, insects, and other casualties might be helping. Select the fairest and most shapely cucumbers that you would have seed of; and the strongest

* The cucumber and melon are of the genus *Cucumis*, and of the class and order Monœcia Syngenesia, LIN. the same plant producing male and female flowers.

† I have convinced myself of this fact by actual experiments, thus: by placing a small bell glass (such as is used for striking cuttings of exotic plants) on the embryo fruit ere the blossom opened, and keeping it close down till the corolla faded, so that the farina of the male flower could have no access, by wind, by insects, or by any means visible.

and most promising melons, as they appear. Proceed thus :

The female flower being just full blown, choose a strong, healthy-looking male, cutting or pinching it off, with the stalk as long as to get good hold of it; carefully pick off the corolla or flower-leaves, retaining the stamens and anthers; take it by the stalk, between the thumb and finger; apply the anthers to the bosom of the female flower, and give it a sharp twirl; by which the farina or pollen of the male will be rubbed off, and be deposited on the stigma, the female organ of fructification.

With respect to the future management of the cucumbers, they should have very liberal supplies of water, and always from the rose of the watering-pot, every two or three days; generally watering in the afternoon about four or five o'clock, as, if done in the morning, now that the sun is powerful, they might be scorched by his rays; a thing that often happens to tender foliage under glass, if the water poured on it be not evaporated, or be inhaled before the rays fall upon the plant. Do not apply cold or frosted water, but at this season let it be aired by some means or other.

Air should also be freely admitted every day, in as large portions as the state of the weather will allow, giving and reducing it by degrees, in the manner as above directed for airing the cherry-house. When a free circulation is wished in the frame, it is better to slip the sashes down than to tilt them; as if they be slipped down the breadth of the bottom rail, the air will get in between the glass and front-board

of the frame. Or the two side lights may be slipped down, and the middle one may be drawn up a little way, (if a three light box), which is a more secure method than to tilt the lights both at top and at front, especially in windy weather, or in situations much exposed. In sunshine, if the mercury stand at 70° or 72° , the frame will be abundantly hot for cucumbers.

If the green fly or the thrips make their appearance, a remedy lies in fumigation. If cucumbers be kept as moist as they require, and if the vines are trained on the earth, (which they should), instead of slates, tiles, or dry moss, the red-spider will seldom attack them. It is very proper to place a bit of slate, tile, or glass under the fruit, particularly of melons, in order to keep it from damping, and from partaking of an earthy flavour. But to slate or moss the whole surface is wrong, as nothing tends more to the breeding of the red-spider, which is often a great annoyance to melons, especially at times when it is improper to water them freely, as when the fruit are ripening off.

The frame will now be full of vines, (I speak of the cucumbers), if these have been stopped and trained as directed last month. The plants should now be kept moderately thin of shoots, but should never be pruned much at a time, being apt to bleed, and in that case might be much weakened. All bruised, damped, or decayed leaves should be carefully picked off as they appear, and the plants should be cleaned from weeds, and other rub-

bish that may be conveyed into the frames by the wind, or otherwise.

The treatment of the successional frames of cucumbers (see March) and melons, differs in no respect from that already set forth, and to be noticed below, except that the beds will seldom require lining; and if they do, it must be observed to line cautiously, and only one side at a time, lest too violent a heat be thrown in, to the injury of the plants.

With respect to the further treatment of the melons under consideration, and deviated from to speak of the cucumbers, they must have moderate supplies of water once in four or five days, watering over the foliage as directed above. The waterings may be repeated oftener, as the season, and as the growth of the plants and fruit advance, in order to swell it off the better.

Air should be freely admitted, as above directed, though not in such quantity as for the cucumbers, which do not require so high a temperature as melons do. In sunshine, however, the mercury in the thermometer should be kept down, by the admission of air, to about 80° or 75°.

The plants should be kept moderately thin of vines, though not so thin as cucumbers, (the foliage being smaller,) which should never be much lopped at a time, as they are also apt to bleed. Keep clear of decayed leaves, &c. as above directed; and place the fruit on bits of slate or glass some time before it begins to ripen, as the flavour might else be tainted. But by no means slate or moss the whole surface

over, for the reasons stated above, respecting the red spider. By slating or tiling the surface, too, it is further to be observed, that the plants are placed in a situation almost intolerable. Think on the reflection of the sun upon the slates or tiles, in hot weather particularly, and of his additional force, in shining through glass! It is more consonant to the nature of the plants that they be trained on the earth.

By mossing the surface, the indolent may find a pretext, as it no doubt, in some measure, lessens the labour of watering. But it is wrong to do so, in so far as it harbours and encourages the breeding of various insects; and, as the fruit approach to maturity, taints it by unpleasant effluvia.

May.

THE GRAPE-HOUSE.

THE directions given last month, respecting the temperature and airing of the house; watering the border and foliage; training the summer shoots; and pruning the plants of superfluous growth, are to be followed in every respect; augmenting the portions of air, and increasing the quantities of water, as the season, and as the growth of the plants and fruit advance.

The fruit will now be in that state, in which it requires particular attention: the bunches must be thinned, in order that the berries may have room to swell fully. This is not a thing in general practice; but every gardener of penetration and discernment will admit its utility; and further, that of supporting the shoulders of such clusters of the large growing kinds as hang loosely, and require to be suspended to the trellis or branches, in order to prevent the bad effects of damp or mouldiness in over moist seasons.

Of these, the Hamburgh, Lombardy, Royal Muscadine, Raisin, St Peter's Syrian, Tokay, and others, should have their shoulders suspended to the trellis, or to the branches, by strands of fresh matting, when the berries are about the size of garden peas. At the same time, the clusters should be regularly thinned out, with narrow pointed scissars, to the extent of from a fourth to a third part of the berries. The other close growing kinds, as the Frontinacs, Muscats, &c. should likewise be moderately thinned; observing to thin out the small seedless berries *only* of the Muscadine, Sweet-Water, and Flame-coloured Tokay.

In this manner, handsome bunches, and full-swelled berries may be obtained; but more so, if the clusters on over-burdened plants be also moderately thinned away. Indeed, cutting off the clusters, to a certain extent, of plants over-loaded, and pushing weak wood, is the only means by which to cause them produce shoots fit to bear fruit next year; and this should be duly attended to, so long as the

future welfare of the plants is a matter of importance.

THE PEACH-HOUSE.

After the fruit are fairly stoned, that is, the shell hard, and kernel formed, there need be little fear of their dropping off, provided the trees be in a healthy state. The temperature of the house may therefore be raised to 60° by fire-heat, at the times of regulation; which will, by a still regular, and more free admission of air, promote and further the swelling of the fruit. I have spoken fully of thinning it last month, although, perhaps, from the state of the plants, it may only now be time for final thinning.

Continue to give large portions of water to the border, and to exercise the engine on the foliage; in order the better to swell off the fruit, and to keep the plants free of insects.

Towards the end of the month, let the trees be gone over, and be pruned of all useless spray, as water-shoots, laterals, &c. At the same time laying in the proper shoots closely, that the fruit, towards its ripening off, may be fully exposed to the sun and air.

From this time, fire-heat may not be requisite; but the state of the weather must determine that matter. In very cold, or in damp weather, a little fire may still be necessary, to keep the thermometer at about 60° in the night.

THE PINERY.

Of the Succession-Pit.

About the first or second week in the month, the plants will (if they have been treated as directed in the former months), require to be shifted into larger pots; and the bark bed will need to be stirred up, and have some new bark added to it.

A mild, growing heat is required; and if the bark be not much wasted, it will be unnecessary to add more than a tenth part of new bark; perhaps not more than a twelfth or fifteenth part. Observe the rules formerly given, in respect to keeping the new bark well down, that the pots may be entirely replunged in the old.

The directions for potting, given in March, are to be followed in every respect; except that the plants are not to be shaken out at this time, but are to be shifted, balls entire, into pots of about six inches diameter, and eight inches deep. If the roots be anywise matted at bottom, or at the sides, they must be carefully singled out; and in potting, be sure that there be no cavity left between the ball and the sides of the new pot. In order the more effectually to prevent which, use a small, blunt-pointed, somewhat wedge-shaped stick, to trindle in the mould with; observing that it be in a dry state, and be sifted fine; and also to shake the pot well (potting on a bench or table), the better to settle the earth about the ball. Pots of this size should be filled to within half an inch of their brims (the balls be-

ing covered about an inch with fresh earth), as the whole will settle about as much, and so leave a full inch for holding water, which is enough.

In preparing the plants for potting, observe to twist off a few of the bottom leaves, as they always put out fine roots from the lower part of the stem. Also, before letting the plant out of hand, trim off the points of any leaves that may have been bruised or anywise injured in the shifting.

Replunge the pots to the brim, as before, observing to keep them quite level, at the distance of fifteen inches from centre to centre of the plants on a medium; then, give a little water, which need not be repeated till the heat rise to the pots.

If the season be mild, and particularly if the situation of the pinery be sheltered, fire-heat may now be unnecessary, especially after the bark bed comes into a proper state of fermentation. The thermometer, however, should be kept at 68° or 70° in the night, either by the flues, or by matting.

When the heat in the bark bed has risen to the pots, the plants should have a full watering at root, and be dewed over the leaves to clean them of dust, &c. As the plants will now grow vigorously, they must be regularly and plentifully supplied once in three days; always giving the proper quantity at root, and then a dewing over the leaves. Water frequently with the drainings of the dunghil, as already often advised.

Air must be freely admitted every day, and in the manner already frequently spoken of in the for-

mer months, with respect to giving and reducing it by degrees.

Of the Succession-Pit.

The succession plants must be treated, in all respects, as above; and also the bark bed. They should be shifted into pots of about nine or ten inches diameter, and twelve deep; and must be put into the proper mould specified for them, in the Section on Soils for forced Plants. Let them be replunged to the brim, eighteen inches apart on a medium.

If the mercury stand at 65° , or between that point and 70° , in the night, fire-heat will not be necessary.

Of the Fruiting-Pit.

It will be proper at this time (about the first of the month) to renew the heat in the bark bed, which will now have considerably decreased, in order the better to swell off the fruit, and that the bottom may keep pace with the superficial heat. Let new bark, therefore, to the extent of about a tenth, or an eighth-part, be added; keeping it well down, however, that the pots may be entirely plunged in the old bark.

Trim the plants of decayed leaves, or those bruised at the points; reducing an inch or two of the earth from off the surface, and adding some fresh mould, which will invigorate the plants, cause them to push surface radicals, and so keep them the more firm and steady. This need not be done, however,

to plants whose fruit are nearly ripe ; but chiefly to healthy plants new shewn, in flower, past the flower, or about half grown. And with respect to any that are unhealthy, and whose fruit are less than half grown, do not hesitate to shift them, or to follow the directions given on this particular point in February. It is a very great improvement in the culture of pines, which I formerly practised, have since advised, and have seen followed with much success.

Replunge the pots to the brim as before, and give each a little water ; which, after the heat rises in the bark, repeat in the same liberal way as advised last month, both to roots and leaves. From the time the fruit begin to colour, however, begin also to lessen the quantity of water ; and towards its being fit for cutting, withhold water entirely, else the flavour will be very much deteriorated.

I shall here observe, with respect to the different kinds of pines (See Sect. III. on the kinds of Pine-Apples), that the Queen and the Sugar-loaf sorts, require considerably more water than the King or Havannah, and the Antigua. The difference in the manner of watering should be more particularly attended to as the fruit approach to maturity ; as the latter named kinds are naturally more juicy and watery than the former.

It may also be remarked here, that if pine-apples be not cut soon after they begin to colour, that is, just when the fruit is of a greenish-yellow, or straw colour, they fall greatly off in flavour and richness ; and that sharp, luscious taste, so much admired, becomes insipid.

The temperature must be kept up, by fire-heat, (probably all this month, if the weather be not mild,) to about 75°, at the times of regulation, mornings and evenings. Admit air so freely in sunshine, as to keep it down to 85° or 80°; more particularly as the fruit approach to maturity, which will much enhance its flavour.

HOT-BEDS.

Of Melons.

The fruit will now be fast approaching to maturity, if the plants have been treated as directed in the former months, and if the weather have not been very adverse*. As it ripens, let the quantity of water be lessened, giving as much only as will just sustain the plants, and keep them in health.

A free admission of air is now of very great importance, for giving flavour to the fruit; which may be further enhanced by thinning out the vines, and by picking off such leaves as shade it from the sun.

Melons, if allowed to remain on the plant till they be of a deep yellow colour, (which many do,) lose much of their flavour. They should therefore be cut as soon as they begin to change to a greenish

* I formerly cut melons, for three years successively, on the 15th, 12th, and 10th May, and never sowed before the last week of January or first of February. In 1788, when at Rainham Hall in Norfolk, I sowed melons on the 12th March, and cut ripe fruit on the 20th May. The kind was the Early Golden Cantelope. This shows how little is to be gained, or rather, how much may be lost, by *early* forcing.

yellow, or rather, as soon as they begin to smell ripe. They may lie in the frame for a day or two, if not immediately wanted, where they will acquire sufficient colour. But if they are let remain many days in the frame, they will become as insipid as if they had been left too long on the plant.

With respect to the saving of melon seeds, I shall briefly observe, that it should be clean washed out; skimming off the light seeds, as those only that sink in water will grow. They improve by age*; and should not be sown younger than two years old, unless they be worn in the pocket, near the body, for several months previous to sowing, which has the effect of fully maturing them. If seeds of the last season be sown, without taking this precaution, or something similar, the plants will not be fruitful, but will run much to vines, and show chiefly male blossoms.

When all the fruit of this crop are cut, suppose in three or four weeks, the plants may be pruned for the production of a second crop, equal, and perhaps superior to the first†. They should be cut pretty much in, in order to cause them push plenty

* I have sown melon seeds twenty years old, from which I have raised very healthy, and fruitful plants.

† I once had fifty-two full-sized fruit produced in a three light frame, a second crop, and two dozen a third, off the same plants, the Early Golden Cantelope. Of the first crop, (twenty-six fruit), two were cut the 10th May. Thus, a three light box produced, in one season, *one hundred and two* fully matured melons.

of new vines, which will be very fruitful ; observing to cut always at a joint of some promise, and to thin out all decayed or unhealthy vines, dead leaves, &c. Observe also, to cut at an inch or two above the joint you expect to push, and then to bruise the end of the stem so lopped, with the thumb and finger ; which will, in a great measure, prevent it from bleeding.

The plants should be shaded from the mid-day sun, for a week or ten days ; exposing them to his full rays by degrees. Now also let the mould in the frame be well watered, in order to put the roots in a state of active vegetation ; point over the surface, with a small stick, or little wedge ; and cover the whole with about two inches of fresh mould. This will greatly encourage the plants, and cause them to make new fibres near the surface. At this period, air need not be admitted very freely, especially while the glasses are covered ; but rather, as it were, endeavour to force the plants into new life.

After they begin to shoot, water, admit air, prune, train, and otherwise manage the plants as before directed. If the season be fine, they may yield you a third crop, by a repetition of the above rules, coming in in September, which might be very gratifying.

June.

THE GRAPE-HOUSE.

As the fruit begin to colour and swell off for ripening, the quantity of water, hitherto liberally given, must be lessened by degrees; and towards its coming to full maturity, must be entirely withheld, that it be not rendered insipid. The operations of the engine, on the foliage, must also cease; but previously, be particularly severe, and be careful to scourge it well, that no vestige of the red spider be left. This is a matter of very great importance, and but too little attended to: and for want of taking this care, I have more than once seen a whole crop of grapes very much spoiled, and the berries rendered dirty, nauseous, and bitter. If this enemy be not subdued, but be allowed to establish himself among the berries, (a situation he is very fond of, being snug, and as it were entrenched, especially in close-growing bunches,) it is next to impossible to rout him.

Previously to the colouring of the fruit also, if there be any of the thrips about the berries or fo-

liage, (which carefully examine) the house should be strongly fumigated once or twice; which indeed should be done as a preventive, whether they be visible or not.

The plants should now be carefully pruned of all superfluous laterals, tendrils, and decayed leaves, as directed in April, which see; and in order that the sun and air may have the freer access to the fruit, a large proportion of the foliage on the stubs, or short shoots on which the clusters hang, should be thinned off. And even, if the summer shoots have not been trained on an under trellis, (see April,) a part of the leaves on them may be thinned off; that is, such as closely shade the bunches.

Air should now be admitted more freely than heretofore, in order to give the fruit flavour; for on this, and on the withholding of water, as advised above, that matter entirely depends.

If the weather be dry and hot, fire-heat may not be necessary; but if cold and damp, a little fire should still be made at night. In continued damp weather, a little fire may even be made in the mornings, in order to prevent the berries from moulding; and in the case of the weather being such, air should not be admitted; as moist air might induce, rather than prevent mouldiness.

In this state of the weather, examine the clusters carefully, often, and pick out all rotten berries; as, if this be not done, the bunches will suddenly be spoiled. In this case, too, and particularly in later forcing of grapes, when the fruit fall to be

ripe in autumn, it is a good method to cover the border within the house an inch or two with small gravel (not sand), which has an effect in dispelling damps, and purifying the internal air.

With respect to the gathering of grapes, they should be allowed to hang till fully matured and ripened; especially the thick skinned, and fleshy sorts. Even the thin skinned and juicy kinds, as the White Sweet-Water, White Frontinac, and Muscadine, (that are often cut before nearly ripe,) are much improved in flavour, by being allowed to remain on the plant till the skin become transparent, and of a russet or yellowish colour. See description of Grapes, Section III. on the Kinds of Fruits for forcing.

When the fruit are all gathered, prune off the stubs, or short shoots on which the clusters were; and, if the summer shoots trained for the production of a crop next season, have been trained on an under trellis, let them be lifted to the upper one, that they may be nearer to the sun and air, and so may be the better matured.

Now also let the border be heartily watered, and so as that the water may descend to the lowest roots and fibres; which occasionally repeat, in a moderate manner, while the above-mentioned shoots require it; that is, till they begin to shed their leaves. Also, resume the operations of the engine on the foliage; as the red-spider, if he have not already again made his appearance, will undoubtedly do so; the weather being now dry and hot, and

almost every tree and shrub being covered with this mischievous insect*.

The house may now also be fully exposed to the air, by standing open day and night; shutting up, however, in heavy rains, that the border may not be surcharged with moisture. Some take the sashes off entirely; but I think it better to keep them on, for the above reason; and also that the flues and the plaster of the walls may not be damaged by bad weather, as autumn and winter advance.

THE PEACH-HOUSE.

If the directions given in the preceding months have been followed, and if the state of the weather have been pretty favourable, the fruit will now be swelling off, and be fast approaching to maturity.

In order that it may be matured in the greater perfection, prune the plants of all superfluous shoots, as directed last month; and further, thin off such leaves as overhang and shade the fruit; withhold water from the border; and cease to exercise the engine on the foliage, as above directed for the grape-house; observing previously to scourge the foliage for the suppression of the red spider, and to

* Elms, in particular, and roses, and indeed generally all rough-leaved trees and shrubs, are troubled with this insect in hot weather. Likewise most kinds of fruit-trees on walls and espaliers; and consequently it gets into hot-houses, in despite of our best exertions to prevent it.

fumigate for the destruction of the thrips, (if it be found on the fruit), as also above noticed.

Likewise, admit large portions of air every day, except in damp weather, from seven or eight in the morning, to five or six in the evening; opening the sashes, to their fullest extent, from ten till two or three o'clock; giving and reducing air, as already often noticed.

With respect to gathering the fruit, when ripe, observe what is said on gathering stone-fruits, in the Fruit Garden, for August; and when it is all gathered, let the border be well watered; resume the operations of the engine; and expose the house day and night, as directed above for the grape-house.

THE PINERY.

Of the Nursing, and Succession-Pits.

The directions given last month, for both these compartments of the pinery, after shifting of the plants, are to be continued in all respects, for this month, and for July; being liberal in the waterings, and in the admission of air, which will greatly promote the growth and health of the plants.

Of the Fruiting-Pit.

The rules laid down last month, with respect to watering, should be minutely followed, if you would have your fruit produced in high perfection; observing also what is there said, with respect to the admission of air. If the weather be not very unfa-

vourable indeed, fire-heat will be quite unnecessary; and if the mercury stand so high as 70° , as the nights are now at the shortest, it need not be applied.

Unless a considerable number of fruit come off together, there need not be a regular potting of crowns and suckers, but that matter may be deferred till most or all of the crop be gathered. Indeed, with respect to the suckers, if they have been thinned as directed in April, and if the stocks be healthy, (more particularly such as have been shaken out and fresh potted, as hinted at in February,) they will grow as well, if left on the mother plants, as if taken off and potted, while the roots of these are vigorous, provided they be often and plentifully watered. The crowns may be stuck into the front part of the bark-bed, as they are gathered from the fruit, where they will strike root as freely as anywhere.

But in the case of a large proportion of the crop coming off early, the plants should be sorted, and those in fruit should be placed together in classes, according to their forwardness. The suckers of those cut, and also the crowns, gathered and stuck into the bark-bed, as above observed, may then be potted. See directions on this subject the first of August; when it is supposed the whole, or greater part of the fruit will be cut, and when a general potting may take place.

July.

THE GRAPE-HOUSE.

WITH respect to the grape-house forced, the fruit of which is now supposed to be about gathered, nothing is to be remarked farther than what has already been said; nor will it be necessary to resume the consideration of it till October, when the plants will fall to be pruned, and the house put in order for winter.

But in some cases, as where there is only one grape-house, which may not be so forward as the above, and in others, where there are more than one, and where the fruit in the second or successional house may only be advancing towards maturity; they are, in either case, to be attended to, and to be treated as directed for the early forced house, in the two preceding months.

The new planted grape-house too, (see January and April,) must be particularly cared for at this season. The plants must have very plentiful supplies of water, and large portions of air daily ad-

mitted to them, in order to make them push both shoots and roots vigorously. The engine should also be regularly and forcibly exercised upon the foliage, to keep down, or to prevent the breeding of the red spider; at the same time keeping a look-out for the thrips, the remedy for which has often been noticed, and must be applied, if it make its appearance. Sometimes the green-fly will attack grapes too; but if the plants be properly and frequently scourged with the garden engine, neither it nor the thrips will gain a footing upon them.

Observe the directions given for training-in the summer wood of these plants in April, for this, and for next month. In September I shall resume further directions concerning them.

THE PEACH-HOUSE.

What is said above will apply, in all respects, whether as to a successional, or to the new planted peach-house; at least so far as relates to watering, airing, and destroying of insects. With respect to pruning and training, the reader is referred to the Peach-house for March, April, and May; and to the Fruit Garden, article Nectarines and Peaches, for these months, and for June and July.

THE PINERY.

This article is mentioned merely in course, and to put the reader in mind to continue the directions

given in the two last months; as nothing particular requires further to be noticed, till about the first of August; when the bark-beds will require to be renewed, the plants to be fresh potted, the suckers to be taken off the old stocks, and be planted.

OF MELONS.

Of growing late Melons in a Flued Pit.

A flued pit, such as that for nursing pine-apple plants, or in which to force asparagus, strawberries, &c. (described in Section I. at page 277,) is a very fit compartment in which to grow a late crop of melons, and is much to be preferred, for this purpose, to a common hot-bed; because, if the season prove cold or wet, a proper temperature can be kept up, and damps can be expelled, by aid of the flues.

About the middle or latter end of July is a fit time to plant. The seeds, of course, should be sown about the first of the month; and the plants may be raised in any of the hot-beds now at work, or under hand-glasses. It would only be wasting time to give directions for this; the process being more simple and less tedious than that attending the rearing of early melons, already fully noticed. I shall therefore suppose they are to be ready for ridging out, about the third week in the month, and so pass to the preparation of the pit for them; but shall first observe, that, with respect to the kinds to be sown, those fittest for early, are also fittest for late crops; and, that I would, for my own part, choose the early Golden

Cantelope, the Orange Cantelope, and the Netted Cantelope; planting a part of the pit with each*.

A very mild bottom heat is sufficient for the purpose here in view; and if the pit have been occupied in the forcing of asparagus, French beans, or strawberries, on a bark, or bark and dung, or on a bark and leaf heat, it will require no other preparation than to be stirred up, and have a little fresh materials added; keeping the fresh bark, dung, or leaves well down, and finishing the bed with some of the smallest and best reduced. When it has settled a few days, let it be moulded all over to the thickness of twelve or fifteen inches; previously laying on a little more of the above small materials, in order to keep the plants well up to the glass, as the bed will fall considerably in the settling. It should be formed, and the mould should be laid on, in a sloping manner, from back to front, so as in some measure to correspond with the glasses.

All being ready for the plants, they may either be planted in a row in the middle of the pit, at two feet apart, or may be planted in two rows, at four

* Planting different sorts in early hot-beds, from which seeds are to be saved, is not advisable, if it be wished to have the kinds genuine, and distinct; as there might be a degeneration in consequence of a mixture of farina. But in this kind of pit, different kinds may be planted, as they will come in very late, and the seeds may perhaps not be sufficiently matured for saving; at least there would be a chance of the plants, raised from such seeds, running very much to vines.

feet apart; or, if they have been planted, in nursing, three in a pot, plant in the centre of each light, as directed for the common hot-bed in March. Let them have a little water, and be shaded from the sun for a few days; exposing them to his rays by degrees.

The future management of the plants differs in nothing from that of melons in a hot-bed, till September, when it will be proper to apply fire-heat; at which time I shall again notice their farther treatment.

August.

Of the management of Peaches and Nectarines on open Flued Walls.

THE reader is necessarily referred to this article in April. As there noticed, this is the most eligible time for the application of fire-heat to open flued walls; and that both on account of the fruit, and of the wood that is to bear fruit next season. If the weather be unfavourable at this time; and if the fruit be not forward, particularly if the kinds be late, fire-heat may be applied from the beginning of the month; but otherwise, from about the middle or latter end of it.

I have formerly observed, that the management of flued walls, with respect to the application of fire-

heat, is more difficult than any species of forcing under glass; the plants being placed between the extremes of heat and cold, and so near to the flues, as that *an over-heat* may prove very hurtful to them. Yet, if a trellis be placed against the wall, except against the first course of the flue (which it should be,) the trouble nearly goes for nothing; as the shoots to be ripened are, in that case, placed beyond the power of the fire, and by circulation of air between the wall and branches, are kept more cool than they would be, if trained close to an unflued wall.

As noticed above, a trellis should be placed against the first course of the flue; and that as a matter of precaution, that the shoots trained on it may be the more safe. The sort of trellis meant here, is one simply composed of spars an inch square, which are nailed close to the wall, across the courses of the bricks, at the distance of five inches from each other, and reach from the bottom, to two inches above the top, of the flue. Thus the shoots will be secure against over-heats, and will not be removed far from the influence of the flue; and they may be trained close to the upper courses of it, without any fear of danger, if the following directions be observed, viz.

The fires must be made very moderate at first, increasing their strength gradually, as the season advances. The fire may generally be put on about four or five in the afternoon, kept slow, and should be made up for the night, about eight or nine o'clock. The flues, that is, the first course at the far end, and the second course about the middle,

should seldom feel more than milk warm, at the times of regulation. And observe, that in cold weather, or in a stormy night, the fires are not to be stirred up, and the fuel increased, as in a hot-house, to raise its temperature; else both fruit and shoots may be ruined, and they had better take their chance of the weather for the time. Continue the fires in the above mild manner till the end of October, when the shoots will be fully ripened, and their growth will stop for the season.

THE PINERY.

Of taking off and preparing the Crowns and Suckers.

It is supposed the fruit are now all, or nearly all cut; and as a general potting of the succession plants must take place about the first or middle of the month, it is proper to remove the old stocks from which the fruit have been cut, and make room for them in the fruiting-pit. The nurse-plants now become the succession; the succession the fruiters for next season; and the crowns and suckers occupy the nursing-pit.

The suckers may be twisted from off the stocks, and may be laid by, in a dry shed or loft, for a few days, till the other operations in the pinery be performed, and the nursing-pit be ready to receive them and the crowns; (collected as the fruit have been gathered); which, if rooted, may be potted as noticed below, and may be placed for the above time, either in a frame, or in a forcing-house of any kind, as they will sustain no injury, though out of the bark-bed, for so short a time. Such crowns as

have not struck root, may be laid aside with the suckers.

With respect to the time for taking off the suckers, it is when the bottom part becomes brown; and they are then easily displaced by the thumb, after having broken down the leaf immediately under them. But indeed, by the time the fruit is ripe, all suckers of the stem are fit for taking off, though they will sustain no injury by being left on, even for a month, but rather improve, if the stock be healthy, and if it be well watered. Suckers that rise from the root always have fibres, and may be taken off at any time; but, as formerly observed, they should not be taken into the stock, unless in a case of necessity.

Some think it necessary to dry, or *win*, all crowns and suckers before potting them, and for that purpose lay them on the shelves, &c. of the stove for a week or ten days. By this treatment they certainly may be hurt, but cannot be improved, provided they have been fully matured before being taken from off the fruit or stocks, and that these have previously had no water for about ten days. They will succeed as well, if planted the hour they are taken off, as if treated in any other way whatever; and I only advise their being laid aside as above, as being a matter of conveniency.

Of shifting the Succession Plants.

As the succession plants, formerly treated of, now become the fruiters for next year, the bark-bed in the fruiting-pit must be prepared for them, and they

must be fresh potted, and be placed therein. A mild heat *only* is required, lest they might, after potting, start into fruit; a thing that must by every mean be guarded against. Therefore, carefully observe the rules formerly laid down on this subject; adding new bark only to the extent of a tenth or fifteenth part, according to the state of the old, and keep it down at least fifteen inches, that the pots may be plunged entirely in the old bark.

The plants should be shifted into pots of about eleven or twelve inches diameter, and fourteen or fifteen inches deep. Observe the directions for potting, given in March, and in May; and let the pots be plunged to within an inch, or two inches of their brims, keeping them quite level. The plants should be allowed from eighteen to twenty inches, centre from centre; placing them, as directed in February; for which, see the Fruiting-Pit for that month. When they are all placed, give a little water to settle the mould about their roots.

When the heat in the bed has risen to the pots, give a moderate watering at root; and also a dewing over the leaves, in order to clear them from dust that may have been collected in the shifting, and to refresh them. The waterings must forthwith be regular, and moderate, as it is not intended to force the plants into much growth, it being supposed they are now very healthy and strong. They are just to be kept going on; and air must be very freely admitted to them, particularly in sunshine; keeping down the mercury to about 80° or 75° , if the external air be not very hot, or be up to these points.

This treatment, in conjunction with that of a mild bottom heat, as noticed above, will be a mean of preventing the plants from shewing fruit at this season, which, if they did, they would be next to lost. I would rather have a one-year old, than a two-year old plant show now, as the loss would evidently be less; but frequently the former will bring a better fruit than the latter, in the end of the season.

Of shifting the Nurse Plants.

The nurse-plants are now to be reckoned the succession, and are to be removed into the succession-pit; which, for their reception, should be prepared in every respect, as directed above; and the plants must also be treated in the same manner, with regard to water, air, &c. It is unnecessary to say more of them, therefore, than that they should be put into pots of about seven or eight inches diameter and nine or ten inches deep. The kind of earth for these, and for all other pine-plants, has been noticed in the section on Soils for forced plants, p. 291.

Of striking Crowns and Suckers.

These having been laid aside, as above hinted, should be potted as soon as the operations in the other compartments of the pinery are over.

A brisk and lively heat is necessary to their striking freely, and making good fibres; so that in trenching and preparing the bark-bed for their reception, new bark to the extent of an eighth, or a sixth part may be added; observing to skim off a quantity of the surface-bark, if it be much wasted,

or to separate the small from the great, by a coarse screen, such as is used by builders for screening of lime and sand. As the plants are to be put into small pots, (deviating from the rules formerly given on this subject,) the new bark may be equally mixed in the bed, to within a few inches of the surface; there being no fear that the roots will be hurt by violent heat, more especially that, as these advance, it will begin to decrease.

In preparing the suckers and unstruck crowns for potting, twist off a few of the bottom leaves, and pare the end of the stump smooth with the knife. Then fill pots of about three or four inches diameter, and five or six inches deep, (the less for the least, and the large for the largest plants,) with very fine, light earth, or with entire vegetable mould of tree leaves, quite to the brim; previously placing an inch of clean gravel in the bottom of each, and observing to lay in the mould loosely. Thrust the large suckers down, to within two inches of the gravel, and the small ones and crowns, two inches into the mould; firming them with the thumbs, and dressing off the mould, half an inch below the margin of the pots.

Then plunge them into the bark-bed, quite down to, or rather below the brim, especially of the smaller pots. If the pots be placed at the clear distance of three or four inches from each other, according to the sizes of the plants, they will have sufficient room to grow till next shifting.

The plants should have no water for the first week or ten days after potting; but as the heat of

the bark will then have risen, and as they will just be pushing fibres, they must have a moderate quantity at root, once in three or four days, but none over the tops till a little better established, and the heart-leaves have begun to grow, lest these might damp off. Afterwards, water freely at root, and also give a dewing over the leaves, as they advance in growth, and may seem to demand it, in the manner often already spoken of.

With respect to air, it need not be very freely admitted, till the heat begin to rise in the bark-bed, but must then, and as the plants take on a growth, be given in larger portions; and, in sunshine, so as to keep down the mercury or spirits in the thermometer, to about 85°, or 80°.

Of destroying Insects on Pine-Apple plants.

I have not hitherto spoken of the insects that annoy pine-apple plants, being hopeful, that, if the directions given in the former months have been followed, none will now be found that will materially injure them. The truth is, that if the plants, by proper culture, be kept healthy and vigorous, *insects will not annoy, but leave them.* This fact I have repeatedly proved, both with respect to the pine, and to other plants that are liable to be affected with the coccus, (the only insect that materially injures the pine,) which seem to delight in disease and decay, as flies do in carrion.

I have received into my stock, plants covered with the *pine-bug*, (coccus hesperidum,) without the

smallest hesitation ; made no effort whatever to get rid of them ; and by next shifting time, in two or three months, have seen no more of them. This I have not done once, but often ; and I have known my brother do the same thing. In short, I never but once in my life have tried any remedy for the *bug* ; and as I was completely successful, I shall here give the recipe, which may safely be applied to pine plants in any state ; but certainly best to crowns and suckers at striking them (as now), or to others in the March shifting, when they are shaken out of their pots at any rate.

Take soft soap, one pound ; flowers of sulphur, one pound ; tobacco, half a pound ; nux vomica, an ounce ; which boil all together in four English gallons of soft water to three, and set it aside to cool. In this liquor immerse the whole plant, after the roots and leaves are trimmed for potting ; and this is the whole matter. Plants in any other state, and which are placed in the bark-bed, may safely be watered over head with this liquor ; and as the *bug* harbours most in the angles of the leaves, it stands the better chance of being effectual, on account that it will also there remain longest, and there its sediment will settle. In using it in this latter way, however, if repeated waterings be necessary, the liquor should be reduced in strength by the addition of a third or a fourth part water.

The brown scaly insect, also a coccus, is often found on pine, and other stove plants ; but I never could perceive that it does any other injury than dirty them, and so is of less importance than the

other species, which eats or corrodes the leaves, in so far as it leaves them full of brown specks or blotches. The above liquor, however, is a remedy for either, and indeed for most insects, on account of its strength, and glutinous nature.

Ants are also to be found in the pinery; but I never could observe that they do the plants any harm, though they are generally to be found in the pots, and among the bark. They are most frequently to be met with there, if the coccus be present, and seem to feed on its larvæ, or perhaps on its fæces.

September.

THE GRAPE-HOUSE.

Of the new-planted Grape-House.

IF the season have been fine throughout, and if there have been an uncommon deal of sunshine, perhaps fire-heat for ripening off the wood, may not be necessary. But it is *now* (the first of the month) that this matter must be determined. This determination, however, must not depend on the present state of the weather, be it fine, or otherwise, but on the state of the wood. The weather may continue dry and hot for a month yet; but it may also

suddenly change to cold and wet. If the lower part of the shoots be not, by this time, turning brownish, then it is advisable to apply a little fire-heat, in order to further the growth of the plants, and the perfection of the wood.

Some would put this matter off, perhaps another month; but if the application of fire-heat be at all necessary, less trouble and expence for fuel will attend the process of ripening the shoots in September than in October. Another consideration is, that, as it were, you take up vegetation on the way, and hand her forward to the end of her journey, instead of allowing her to lag behind, and then forcibly push her on against her inclinations; a matter of the very first consideration and importance in every species of horticulture.

Let very moderate fires be made at first, increasing their strength as the season advances, and so as to keep the temperature, mornings and evenings, at about 70° . This should be continued till the growth of the plants begin to stop, and till the part of the leading shoots whereat you would cut (as to be directed in November,) that is, about six or eight feet upwards, become brownish.

The portions of air, hitherto freely admitted, must be lessened by degrees, as the weather turns colder; and so as that in sunshine, the mercury may not fall below 75° . When the growth of the plants is over, expose the house day and night, except in rain.

Water must also be withheld as the growth of the plants abate, and somewhat in the proportion in

which you would have vegetation stop; not all at once, but gradually. Continue the operations of the engine to the latest; not merely to subdue the enemy at present, but, as far as possible, to prevent his appearance next campaign.

THE PEACH-HOUSE.

Of the new planted Peach-House.

What is said above, respecting the grape-house, will apply here; except that the temperature need not be kept so high, by five degrees; and that, of course, larger portions of air may be admitted.

If an ordinary degree of success have attended the management of the plants, if they have made good shoots, and if these be now fully matured by the help of a little fire-heat, (if necessary), they will bear gentle forcing next spring; which, however, should not be commenced sooner than the first or second week in March.

Fire-heat should be continued till the growth of the smaller, and middle-sized shoots stop, their bottom parts become greenish-brown, and the buds upon them, that is the flower-buds, appear turgid, and be distinguishable from the wood-buds. The stronger, and more extreme shoots of the dwarfs in particular, will continue to grow later than the above shoots; which, as they are to be considerably shortened back in November (which see), for the production of wood to fill the trellis next season, is not very material, provided the bottom part be pretty well hardened.

The leaves may be dressed off, by the use of a withe, or small cane, as directed for the leaves of wall-trees in the Fruit Garden for October. This is more necessary here, than as if the trees were growing in the open air, where the wind, after a night's frost perhaps, might make them tumble down fast. After fire-heat is no longer necessary, let the house be fully exposed day and night, as before noticed; only shutting up in the time of heavy rains.

THE PINERY.

Of the Nursing-Pit.

The treatment directed for the crowns and suckers, after potting last month, is to be continued in all respects, so long as the weather is mild and warm, and while the mercury or spirits in the thermometer stands so high as about 70° in the night; but when it begins to fall considerably below that point, it must be raised to it by the application of fire-heat, at the usual times of regulation, mornings and evenings.

Continue to admit air freely every day; and in sunshine, to such an extent as to keep the spirits in the thermometer down to 80° or 75° ; especially after the fires have been lighted, the better to ventilate the pit, and dry off damps.

Likewise continue to water freely at root, and also over the leaves, while the weather is sunny and hot; but when it becomes cold and damp, water less frequently, and give it in smaller quantities at

root; dewing over the leaves only on occasions, and in fits of better weather, that often intervene in autumn.

Of the Succession and Fruiting Pits.

What is said above will apply to both these compartments of the pinery, except with respect to the temperature; which must be kept, especially after fire-heat becomes necessary, as nearly to 65° as possible; and in sunshine, by the free admission of air, to about 70° or 72° .

By covering at night with canvas covers, or with mats, fuel may be saved in any, or in all of these compartments for some weeks; but where fuel is not very dear, the expence is not equal to the trouble, and the risk of breaking glass. These covers are certainly most eligible in severe weather in winter, when, by their application, fuel to a very considerable extent may be saved, and that at no greater risk of breaking glass, than at another time, when only a little fuel might be necessary. This consideration alone is a sufficient reason for growing pine-apples in these pits, instead of large stoves, that are difficult to manage, and where the temperature in winter is kept up at much expence. The reader may see more on this subject, by turning to Sect. I, on the Construction of the Pinery.

MELONS.

Of growing late Melons in a Flued Pit.

The reader is referred to this article for July. About the beginning of the month, it will be pro-

per to apply fire-heat, in order to further the progress of the late fruit, and to dry off damp. Let the fires be made very moderate at first, however, and increase their strength, as the season becomes more cold and wet.

Keep the mercury up to about 70° in the night; and in the day, by the admission of air, keep it down to about 80° , or 75° .

Very little water will now suffice for the plants, as their roots will be fully established, and be spread over the whole bed; the heat of which will also now have subsided. They should only, therefore, have a little water once in eight or ten days; and as the fruit begin to ripen off, entirely withhold it.

Keep the plants moderately thin of vines and foliage; be careful to pick off all damped leaves as they appear; and fully expose the fruit to the sun as it ripens, in the manner directed for melons in the hot-bed.

In this manner, I have often had melons in October and November, fully swelled, and in good, but not of course in *high* perfection, for want of sun to give them flavour. Any who have a pit of this kind, however, for the forcing of early vegetables, strawberries, flowers, &c. cannot, perhaps, occupy it to a better purpose in the latter part of the season; as the trouble is but little, and the expence not worth mentioning.

October.

THE GRAPE-HOUSE.

Of the Grape-House, forced this Season.

ABOUT the middle of the month, (or indeed any time in this month most convenient,) it will be proper to prune the plants; as the leaves will then have fallen, or be falling. This is the most proper period at which to prune vines within doors, and the more especially such as are intended for early forcing; I mean to say, at the fall of the leaf: later forced houses may not, perhaps, be fit for pruning till November. It is safer, however, to prune early, than too late; as late pruned vines, particularly if forced soon afterwards, are apt to bleed much when they begin to vegetate.

The house under consideration is supposed to have been forced, as directed in the preceding months, and to be intended for early forcing next season. Having been forced from the first of February this year, it may be forced from the first of January next, (if thought proper to begin so early,) without doing much injury to the plants. In order that they may be the better prepared for such forcing, then, it is

proper to prune the plants some time in this month, as said above, that the wounds may be fully healed before, and that bleeding may be prevented when vegetation commences; for it is very difficult to stop this bleeding of the shoots, which certainly very much exhausts the plants.

Applications of hot wax are the best remedy I know of, for this bleeding of vines, after vegetation commences; in which case the end of the shoot should be seared by a hot poker, or rod of iron, in order to dry it so much as that the wax may take good hold, and may afterwards stick on*. But this is only necessary for plants that have been pruned too late, and forced too soon afterwards: which is a great mistake in the management of vines. It is easier to prevent, than to cure diseases, provided we know where the remedy lies. In this case, it lies in timeous pruning; not, however, in too early

* Since writing the above, I have perused the Transactions of the London Horticultural Society, and find that Mr Knight, in one of his communications to that Society, says, "The vine often bleeds excessively when pruned in an improper season, or when accidentally wounded, and I believe no mode of stopping the flow of the sap is at present known to gardeners. I therefore mention the following, which I discovered many years ago, and have always practised with success: if to four parts of scraped cheese be added one part of calcined oyster-shells, or other pure calcareous earth, and this composition be pressed strongly into the pores of the wood, the sap will instantly cease to flow; the largest branch may of course be taken off at any season with safety."

pruning; as therein also lies a mistake. The plants will bleed in autumn, as well as in spring, though not so copiously: in the descent, as well as in the ascent of the sap; or before the juices have stagnated in the branches*.

Referring the reader to the manner in which it is supposed the plants have been pruned and trained in March, and in April, the operation of pruning *now* is simple and easy—much, very much less perplexing and intricate, than as when the greater part of the summer-wood is allowed to grow wild as a bush: the system of some, through an affectation of *that only* which is natural; and of others, through slovenliness. Both systems are wrong, egregiously wrong. Grapes do not *naturally* grow under glass; and so should be *artificially* pruned, as well as planted.

We are told in sacred writ, that God himself planted a garden;—not, certainly, *to grow wild*, however, as we find He afterwards placed our first parent there as gardener: no doubt *to prune*, as well as to plant, to sow, and to water. Where, then, is

* This matter is not quite agreed on. Some contend that the sap does not descend to the roots in autumn, but only becomes stagnant, and remains so in the branches till put in motion by heat; and this argument is supported by the example of the very plant in question, which, in a stove, will grow vigorously, though every root, on the outside, be in a frozen state. That the sap *circulates*, (as the blood in animals,) is a fact not now disputed I believe; and certainly, if it does not prove, it leads to an inference, that it may rise and fall with the season.

the shadow of an excuse for the sloven? or where are the arguments of the advocate for grapes and peaches growing *quite naturally* in a hot-house?

In a properly constructed grape-house, and if the plants be trained up the roof, (see Section I. on the Construction of the Grape-house,) there should be three ranges of bearing shoots, viz. one range at bottom of the trellis, from end to end of the house, reaching from within two feet of the ground, five or six more feet upwards; a second, reaching from a foot, or perhaps two feet under the tops of these, that is, from within seven or eight feet of the ground, to the distance of fourteen or fifteen feet upwards from it; and a third range, reaching from a foot or two under the tops of these last, to the uppermost row of wires on the trellis: the shoots of the first, or lower range, being headed at about five or six feet; those of the second or middle range, at about seven or eight; and those of the third or uppermost, at about nine or ten feet in length; all a foot or two more or less, according to circumstances, according to their strengths, how low or how high upon the plants they have issued, and how far they have sprung, and are fully matured. The distance at which these shoots should be placed from each other, in their respective ranges, is about thirty inches; which distance is necessary to give room to the stubs of next year, on which the clusters are to hang, as in this season; and which distance may be varied a few inches, according to the kinds of grapes, some growing stronger than others. .

The undermost shoots on the trellis, or those placed nearest to the ground, and which were only trained to the height of a few feet, (as directed in April), must be shortened back to two or three joints; it being a principal point in the training of vines, always to provide for a supply of bottom wood, and to keep young wood as near to the ground, or lower parts of the plants, as possible.

In pruning, cut generally at two inches above the bud. Some cut nearer, even as near as half an inch, which is apt to weaken the shoot of next season, and sometimes to prevent its vegetating at all; the buds being very susceptible of injury, on account of the soft and spongy nature of the wood. In the cutting out of old wood, be careful to cut in a sloping direction, and to smooth the edges of the wound, in order to prevent its being injured by moisture.

The pruning being finished, let the loose, shreddy, outward rind on the old wood be carefully peeled off, observing not to injure the sound bark, and clear the trellis and branches of leaves, tendrils, &c. Then carefully anoint the branches, shoots, and trellis, with the liquor, and in the same manner as directed for wall and espalier trees, in the Fruit Garden for January. Thus preventing, as far as possible, the return of insects next season, by the destruction of their eggs * or larvæ:—A matter of much importance in the management of all fruit-trees under glass.

* The red spider, in particular, is oviparous, and the greatest enemy of the insect tribes we have in the hot-house.

Let the shoots and branches be afterwards regularly laid in, at the distances above specified, particularly the young shoots that are expected to bear next season. As to the others, it is not so material; nor is it material how near the young shoots be placed to the old, or even though they sometimes cross them. Choose strands of fresh matting, or pack-thread, to tie with; and observe to leave sufficient room for the swelling of the shoots and branches next season, as often already cautioned.

The house should be shut up at nights for ten days or a fortnight, after being pruned, particularly if there be any appearance of frost; admitting air freely through the day, however. It is proper to keep the plants from the extremes of heat or cold for some time, in order that their pores may contract, and the wounds may heal gradually; as otherwise they are apt to bleed *now*, and to break out afresh on the application of fire-heat in the spring. When they are judged to be safe, expose the house night and day as before.

The border within the house may be pointed or forked over; working in a little short dung or compost, if thought necessary. Thus putting the house in order for winter, and so far having it prepared for forcing again.

THE PINERY.

The same treatment, for all the compartments of the pinery, as directed last month, is to be continued throughout this; with this particular difference, however, that the temperature of each should be gra-

dually let down five degrees ; that is, the nursing-pit to 65°, and the succession and fruiting-pits to 60°, at the usual times of regulation, mornings and evenings.

Air may be admitted in all, to such an extent as in sunshine to keep down the mercury or spirits in the thermometer to within five degrees of the fire-heat medium ; thus according the climate to the nature of the plants, as they cease to grow.

In like manner, also, lessen and retract the waterings ; and forthwith water none over the leaves for the winter, but only at root. A little water once in four, five, or six days, as the season declines, will be sufficient.

OF CUCUMBERS.

Of growing late Cucumbers in a Flued Pit.

Those who would have cucumbers on the table at Christmas (a thing sometimes attempted), will find it more practicable, and less troublesome, if the plants be grown in a flued pit, in the manner of late melons, than if they be grown on a common hot-bed. In this case, the cucumbers should take place of the melons planted in this compartment in July, and which will, by the middle or end of the month, have ripened off all their fruit of any consequence.

The seeds of some of the early sorts (those best for early being also best for late), should be sown in small pots, about the first of the month, and should be placed in the pit along with the melons, or under a hand-glass on a slow dung heat ; where let the plants be nursed, and be prepared for plant-

ing about the second or third week in the month, as hinted at above. Observe to sow *old* seeds, not those saved this season, which would run more to vines than to fruit.

Let the pit be prepared for their reception, by trenching up the bark or dung, and by adding fresh materials, in so far as to produce a moderate, growing heat; observing the directions given for preparing the pit for the melons in July, and moulding it (with proper cucumber earth however) all over, to the depth of a foot or fourteen inches.

The plants may be placed closer in planting them out, than is necessary in a spring hot-bed. They may be planted at the distance of a yard from one another, and two rows lengthwise in the pit, as they will not grow very vigorously at this late season.

They should be moderately supplied with water once in four or five days, and should always be watered over the foliage; the more especially when strong fire-heat becomes necessary, as cucumbers naturally like a moist, rather than a dry heat.

The temperature should be kept up to about 64° or 65° in the night, by the aid of the flues, and by matting, or otherwise covering the pit. Air should be as freely admitted as the state of the weather will allow; and so as to keep the mercury down, in sunshine, to about 70° .

The plants will require little other pruning than to stop the vines, as they shew fruit, at a joint or two above it; for they will not push many superfluous shoots. Observe to pick off all damped leaves

as they appear; and otherwise carefully attend to them, as above directed, while they continue to flourish, or to do any good worthy of such attendance.

November.

THE CHERRY-HOUSE.

Of the Cherry-House forced this season.

IT will now be proper to prune and dress the plants preparatory to forcing again the first of next year. Referring the reader to the subject of pruning the trees in this compartment for March; supposing they have been treated as there directed; and, that being in a full bearing state, they have made little wood, very little pruning will now be requisite:—probably nothing further than moderately to thin out the spurs, and to prune off any accidental breast-wood, or water-shoots that may have risen since the crop was gathered.

The leading shoots, except for the purpose of producing wood to fill up any blank or vacancy, need not be shortened; nor need those in the lower parts of the tree, except for the same reason. But if it

be necessary to shorten these, let them be cut pretty well in, as otherwise they will push very weakly. Shoots on the extreme parts of the tree, that should be shortened for the above purpose, need not, however, be cut so closely in. If they be headed back one-third, or to half their lengths, it will generally be found sufficient.

When the plants are pruned, let them be carefully anointed with the liquor, and in the same manner as directed for wall-trees, in the Fruit Garden for January; at the same time anointing every part of the trellis, &c. that, if possible, no vestige of insects be left. Then dress in the branches and shoots, with strands of clean, fresh matting; and point or fork over the border, adding some small dung or compost, if thought necessary; thus preparing the plants for forcing the first of the year.

Indeed, if there were a successional cherry-house, and if a strong desire to have cherries very early next season prevailed, the house might be forced from the middle of this month, or first of December. But, the trouble and expence, to a certainty, would be great, and most probably the crop might be small. Wherefore, I think it a better method, provided there be a green-house, conservatory, or stove of any kind, to bring on the earliest fruit in pots or tubs, as hinted at, under that head, in January. In that way, the trouble is not much, and the expence next to nothing; as, in any of these compartments, fire-heat should not be increased on account of the cherries.

Of the new planted Cherry-House.

The plants here should also now be pruned. The reader is necessarily referred to this article in January and in March, in order to prevent repetitions.

The dwarfs, planted against the trellis, should be pretty much headed-in, in order that they may produce wood to fill it the better next season. The shoots on the lower and middle branches may generally be cut back to half their lengths; or the weakest of them, perhaps, to two or three buds. Those on the more extended parts of the tree may be shortened one-third, or a half, according to their strengths, and how much of the trellis they have to fill. Observe here, that the shoots expected to spring from them next year, are to be trained at about the distance of eight or nine inches apart; and you must now prune accordingly, in so far as the present state of the wood upon the plant shall enable you.

The riders need not be nearly so much cut in as the dwarfs; it being wished that they shall rather produce fruit than wood. Their lower shoots should not be shortened at all, and their extreme ones only perhaps a little, if necessary for filling the trellis more completely towards the upper part. The trees should, however, be divested of lateral and water-shoots, if they have produced any in the latter part of the season, and if these have not formerly been taken off.

With respect to the little standards planted in the border, they will require no other pruning than being divested of cross and water-shoots; as if they be much pruned, it will have the effect of causing them to push wood, a thing not at all to be desired. We rather wish them to remain dwarfish, and to be fruitful.

After pruning, let all the plants, and likewise the trellises, be carefully anointed, as directed above for the other cherry-house. Then dress in the shoots and branches, and fork up the border in the same manner. The house should now be exposed night and day, only shutting up in the time of much rain.

If there be a good appearance of fruit in the house, and if the plants have generally made pretty good wood, it may be gently forced from the beginning or middle of February next year: and the following years from the first of January, in the same manner as the house above treated of throughout this season.

THE GRAPE-HOUSE.

Of the new planted Grape-House.

About the middle or end of the month, it will be proper to prune the vines in this compartment, it being presumed, that if they have been aided by fire-heat the two preceding months (as advised), the wood will now be sufficiently ripened, and the plants be quite fit for pruning. But for full remarks on this subject, see the Grape-House for October.

It is necessary to refer the reader to the subject of pruning and training the plants in this compartment for April. Three shoots from each plant were then directed to be trained, thus: one of the side shoots, to the height of five or six feet, and the other side shoot to the height of nine or ten, then both to be stopped. The middle shoot to be allowed to grow as long as it would, without being stopped.

Now, these shoots are to be pruned thus: The side shoot, stopped first, to three eyes, the other to five or six feet, and the middle shoot, to seven, eight, or ten feet, according to its strength: from which may be expected a good deal of fruit next season, and a shoot from its extremity, to be stopped at the top of the house this time twelvemonth. From the side shoot, pruned to five or six feet, may be expected a few fruit; and from its extremity, a shoot to be headed at this time next year, at nine or ten feet in length, which will, the season following thereafter, produce a full crop. From the side shoot, shortened to three eyes*, are to be expected two shoots; the one to be trained to the height of about nine or ten feet, (to be pruned to five or six at this time next year); and the other to four or five only, as it is again to be pruned back to two or three buds this time twelvemonth; thus providing for wood to fill the under part of the trellis.

The fulfilment of all or any of these “prophetic

* Although *two shoots only* are to be trained from this stub, yet it is proper to leave *three buds*, for fear of accidents.

“allusions,” as they perhaps may be termed, depends very much on the strength of the plants, and their after treatment, in which, no doubt, a good deal of latitude is to be given and taken. But a proper manager of vines, as I have already observed, must have a predetermination about him, and should leave as little to chance as he possibly can. He must manure well; water freely; admit air freely; keep up a proper degree of heat; summer dress his plants; thin the fruit; and, in short, be ever on the alert, and be careful in all things concerning them.

And, it may fairly be said, few plants, (certainly none under glass), would repay his trouble and exertions in a manner so bountifully as the vine.

The further treatment of the plants, after pruning, is in all respects the same as for those in the forced house, spoken of last month, with respect to washing or anointing the plants, dressing them to the trellis again, and to forking up the border. Observe also to keep them from extreme cold, or much wet, for ten days or a fortnight after pruning, by shutting up the house at night, and in rain; but when the wounds seem quite heal, expose it as formerly.

These plants might be gently forced from the first or middle of March next season; considering such forcing, however, as preparatory to full forcing the third year, which, if the welfare of the plants be studied, is soon enough. The more kindly they be treated *now*, the more grateful will they be afterwards. Though a plant cannot speak and complain,

yet it can, and certainly does, feel the effects of harshness; which it will remonstrate against, by sullenly refusing to bear the burden imposed, and so disappoint unjust hopes.

THE PEACH-HOUSE.

Of the Peach-House, forced this season.

It is now a proper season to prune and dress the plants in this compartment, the more especially if it be intended to force them early next year. The reader is necessarily referred to *pruning* of the plants in March, April, and May. It is supposed they have not made *strong*, but *moderate* shoots; which are of course fully ripened to their extremities, on account of the house having been forced.

If the summer shoots have been regularly trained, at the distances specified, and alluded to above, they will not require much pruning at this time; only perhaps so much as shortening a few of the shoots about the lower and middle parts of the tree, for the purpose of providing a supply of young wood in these parts, and thinning out such shoots here and there as have been left too thick. For others should not be shortened, but should be laid in at full length; that is, such as are short, stout, nearly of an equal thickness, and have a bold wood-bud at the extremity; as from these may be expected the best fruit next season.

In some parts of the tree, perhaps, or in some particular trees, it may be expedient to cut out such

old branches as have but few young shoots on them, provided there be neighbouring branches better furnished, whose shoots may be spread out, so as to fill, or nearly to fill the vacancy occasioned by such lopping. In this case, the shoots *borrowed* as it were for this purpose, must be shortened more or less, according to the size of the vacancy to be filled up, and according to their strengths, in order that the plant may appear complete in all parts as soon as possible.

The pruning being finished, let the plants and trellises be anointed, as directed above for cherries and vines; then lay in the branches and shoots (the latter at about five or six inches apart) observing to tie with fresh matting, and to allow good room in the ties, for the swelling of the shoots next season. Point, or fork up the border, adding a little dung or compost, if necessary; and so prepare the house for forcing; which may be commenced with the year, if thought right, and if there be other houses for the production of fruit in succession.

Of the new-planted Peach-House.

The plants in this compartment should also now be pruned. The reader is again necessarily referred to this article for January and March.

The dwarfs must be well cut in, in order to make them push shoots freely for furnishing the trellis next season. Those situated in the lower and middle parts of the tree, should be cut back to half their lengths, or to a few buds, less or more, according to their strength; and those of the extremities, to one-

third, or to about half their lengths, also according to their strength, and how well they have been ripened. They should be thinned so at this time, as that the shoots which are to issue from them next season, may be laid in at the medium distance of about six inches.

The riders need not be pruned near so much as the dwarfs, as we are wishful to have them produce a full crop of fruit next season. They may be pruned very much in the manner of the trees in the early house, as directed above; shortening no shoots that are fully ripened, except a few of those at the extremities of the tree, in order to make them throw out others for its full extension upwards next year.

When they are all pruned, let the trees and trellis be carefully anointed; dress them in again; and let the border be forked over; all as directed above for the early forced house.

With respect to the new planted house, the trees will bear gentle forcing next spring, from the first or middle of March; which ought to be considered merely as preparatory to forcing them fully, from about the first of February, the third year. By considering the directions given throughout this season, for the management of this, and of the other peach-house, it will not be difficult to proceed properly with it next year. A word to the novice in forcing, however: Be diffident; and drive too slow, rather than too fast. Most new beginners in this business make haste to outdo, or to eclipse their neighbours; and so drive on at a pace they cannot long keep up, but founder their steed, and stop short by the way.

THE PINERY.

Of the Nursing-Pit.

About the middle of the month, the bark-bed will require to be stirred up, and to have some fresh bark added to it, in order to keep up a moderate heat through the winter. New bark to the extent of a tenth, or an eighth part may therefore be trenched in; observing to keep it well down, as often formerly directed.

It is common to add a large proportion of new bark at this time, in the idea of keeping up a strong heat to resist the cold of winter; and some also keep up a high temperature, throughout winter, in the same mistaken idea: than which, nothing can be more pernicious or hurtful to the plants, hundreds of which are cast out "dead men" in spring, after having cost much trouble and expence. If the season be dormant, so ought, and so will the plants be, in despite of all our exertions to the contrary. It is, then, a vain and futile striving, a striving against the stream indeed, to force, or to attempt to force them into activity, without the congenial help and assistance of that "life and soul of vegetation," the Sun.

The plants will not generally require potting at this time, but a few may; that is, the strongest of the suckers, or such others whose roots have filled their pots, and have become anywise matted. Examine any you suspect to be so, and let them be shifted into pots of the next size immediately above those they are in; keeping the balls entire, and only singling out the netted fibres at bottom.

The rest should be trimmed of any dead leaves at bottom of their stems, and should have a little of the old mould taken from off the surface of the pots; which replace with fresh earth; filling the pots fuller than usual, as but little water will be required till next shifting time, in the spring.

The whole should then be replaced in the bark-bed as before, and should be plunged quite to the rims of the pots; giving a little water to settle the earth about their roots, which need not be repeated till the heat rise in the bed.

The temperature should be continued at 65° , or as near to that point as possible, by fire-heat, and by matting or otherwise covering up at night. Observe always to uncover by sunrise in the morning, that the plants may have all the light possible.

Still continue to admit air as freely as the state of the weather will permit, taking every advantage of good days, and of sunshine; at which times admit it so freely as to keep down the mercury to within five degrees of the above medium of 65° .

The plants will forthwith require very moderate supplies of water,—only a little at root once in eight or ten days, and none over the leaves.

Of the Succession, and Fruiting Pits.

These compartments also require to have the bark-beds stirred up at this time, and to have some fresh bark added to them as above directed for the Nursing-Pit; adding about a tenth part new, and observing to keep it well down, that the pots may be entirely replunged in the old bark.

The plants will not require repotting; except, perhaps, a few of those of the succession; which treat as above hinted for the strong suckers, &c. All the other succession plants, and all the fruiters for next year, should have a few of the bottom leaves twisted off, and be fresh earthed at top, as above directed for the crowns and suckers.

Then replace them in the bark-beds, as before; plunging the pots quite to their margins, and giving a little water.

The temperature, in both these compartments, should be kept as steadily as possible to 60°, by fire-heat, and by covering up at night, as above noticed for the Nursing-Pit.

Air should likewise be admitted as freely as possible, and as also above hinted; keeping down the mercury to about 65° in sunshine.

Also, water moderately at root, once in eight, ten, or twelve days, as shall seem meet, according to the state of the weather, and of the heat in the bark-beds; but water none over the leaves for the winter, as it might stagnate in their lower angles, to the injury of the plants.

HOT-BEDS.

Of forcing Asparagus.

Those who wish to have asparagus on the table at Christmas, should now begin to prepare dung for hot-beds, on which to force it.

The process, in the preparation and fermenting of the dung, in building the bed, and in the after ma-

nagement, differs in nothing from that stated in January; to which month the reader is referred for full directions.

Or, asparagus may be forced with equal, or with greater success, and with less trouble, in a flued-pit, as directed in February.

Of forcing Sea-Cale.

Few indigenous vegetables are improved by forcing. This esculent, however, is an exception to the rule, if it may so be called, as it is absolutely rendered, not only more delicate, but more delicious by being forced, and that, too, even at mid-winter. No other esculent we have at present in use, is so easily, or so cheaply forced; which circumstance greatly enhances its value.

For my method of the ordinary culture of this plant, the reader is referred to the Culinary Garden for April. I shall there take up the subject; supposing that the plants are placed in lines thirty inches asunder, and fifteen or eighteen inches in line, and are two or three years old*:

The leaves should be trimmed from off the plants intended for forcing, the ground should be gently forked up about them, and an inch or two of sand, fine gravel, or of very light earth, should be laid over the crowns of the roots, about the first of the month. If it be intended to produce the shoots on the table against Christmas, it will be proper, at the same time, to collect a sufficient quantity of stable-litter,

* Sea-cale has been successfully forced, though only one year old, but the shoots of course were small.

which should be thrown into an heap, and be slightly fermented, as for a hot-bed.

Blanching-pots for this esculent are now in pretty general use. The usual size is fifteen inches high, and fifteen inches in diameter, and they are shaped very much like a bell-glass. Some have them made upright in the sides, to the height of a foot, and flatly rounded at top. They have all handles, by which they may readily be lifted. The improved kind, used in forcing this esculent, are made in two parts: the under part upright, a foot in height, and the upper part, a flatish lid to fit; by which means the crop can be gathered without lifting the lower part, or being under the necessity of removing so much of the dung or litter (and of course cooling it,) as otherwise must be removed. Garden pots of the largest size, however, answer very well, and in cases where covers of the above descriptions cannot easily be procured, may be applied. Three or four dozen of covers, or of large flower-pots, will force sea-cale enough to serve a large family from Christmas till April, provided the plants be in good condition for forcing.

In the last week in the month the covers and dung being ready, let them be placed on the lines of sea-cale, as close to each other in line as may be convenient, according to the distance at which the roots or stools of the plants are situated; pressing the pots firmly into the ground, and, if garden-pots, stopping each hole closely with a cork, &c. in order to keep out the dung and steam. Then fill the intervals of the rows with the litter, gently tread-

ing it, or beating it well with the fork ; and raise the whole to the height of six or nine inches above the tops of the covers, less or more, according to the rankness of the materials. Observe, that good stable-litter, or a mixture of litter with tree leaves, answer equally well.

If the weather be not extremely severe, the shoots will be fit for use within three weeks, or at the most a month, after they have been thus covered up ; and unless in such a case, it will seldom be necessary to add to the covering, or to renew any part of the litter for six or eight weeks. This matter, of course, must be regulated by the state of the weather, and by trying occasionally the state of the thermometer in one or two of the covers. If the mercury stand at 55° , or even at 50° , there will be no necessity for renewing the dung. But even when this is the case, it is not necessary to remove much of it : a third part, or a half at the most, will be enough ; the remainder being well mixed up with the part added, if much reduced.

When the shoots have sprung six or eight inches, (and from that length to a foot,) they are then fit for use, and should be carefully cut, or be twisted off, as noticed in April. If the plant push a flower-stalk, let it be cut clean away, as low down as possible ; and there will consequently rise a fresh supply of shoots, though less strong than the former, which will continue rising for several weeks. In March, or so soon as the plants have done producing, let the covers and dung be removed, and let the ground about them be lightly pointed over with

the spade, or the fork, as is practised in the spring-dressing of asparagus, or of sea-cale not forced.

I know an instance of a row of sea-cale having been forced, as above, every season for the last seven years, and the plants in it are as vigorous and healthy as others in the same quarter that are forced only every second year.

December.

THE CHERRY-HOUSE.

IF it be intended to force the cherry-house from the first of the year, it should be shut up at night from about the middle of the month; giving it air freely in the day for the first week, however, and retracting it by degrees, in order the better to prepare the plants for the application of fire-heat, and a closer confinement.

The border on the outside should be dug over, leaving the surface rough; and it should then be covered with stable-dung, (not litter, however,) to the thickness of a foot, so as to preserve the roots from the effects of frost, and at the same time manure them by the juices of the dung thus applied.

THE GRAPE-HOUSE.

If it be also intended to force this compartment from the beginning of the year, observe the rules laid down, respecting its previous preparation for such forcing, in January. They should be followed at this time without any variation; and it will be proper to shut up the house, at night, from about the middle of the month, in order to prepare for lighting the fires by New-Year's day.

THE PEACH-HOUSE.

This compartment is mentioned, merely to remind the reader to observe what is said above, if it be intended for forcing next month. See directions for its preparation, also in January.

THE PINERY.

What was stated last month, respecting the different compartments of the pinery, will suffice for this; whether as to the temperature, airing, or watering of any of them; as little deviation as possible, from the directions there given, being advisable.

Be particular not to cover up before sunset, and always to uncover by sunrise at the latest, that the plants may enjoy all the sun and light possible at this dull season; else they will lose colour, and become languid.

HOT-BEDS.

Of forcing Cucumbers and Melons.

Whoever would have these fruits the earliest, particularly cucumbers, should begin to prepare and ferment dung for a seed-bed about the middle of the month, so as that the seeds may be sown about the first of the year. The reader will find full directions on this subject, by turning to the article *Hot-Beds* for January.

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PLEASURE GARDEN.

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PLEASURE GARDEN.

INTRODUCTION.

“ *HERE* Nature, always pleasing, everywhere lovely, appears with peculiar attractions. *Yonder* she seems dressed in her dishabille; grand, but irregular. *Here* she calls in her handmaid Art; and shines in all the delicate ornaments that the nicest cultivation can convey. *Those* are her common apartments, where she lodges her ordinary guests: *This* is her cabinet of curiosities, where she entertains her intimate acquaintances. My eye shall often expatiate over those scenes of universal fertility: My feet shall sometimes brush through the thicket, or traverse the lawn, or stroll along the forest glade; but to this delightful retreat shall be my chief resort. Thither will I make excursions, but *here* will I dwell *.”

* Hervey's Meditations in the Flower Garden.

Here, indeed, Nature appears with peculiar attractions, when decked by her handmaid Art. Where are the beauties of the Flower Garden to be equalled? How great their charms, when properly arrayed! Solomon, in all his glory, was not equal to one of these! Whatever can gratify the senses; whatever can please the eye; whatever can sooth the passions is here to be found. Fragrance, delicacy, innocence? All the charms of nature are here combined! Think on the Jasmine and the Violet; on the Carnation and the Rose; and think on the Lily and the Poet's Narcissus! From the humble Daisy to the lovely Robinia, or the tall-flowering Tinus, how many gradations of elegance and of beauty!

The cultivation of shrubs and flowers, has engaged the attention of the curious in all ages. It has been of very great service to the art of gardening in general. The florist naturally becomes a botanist; the botanist, if not an horticulturist, becomes a valuable assistant to him; and by imparting many secrets of nature, greatly promotes the interests of the science.

The British Flower Garden, at this present time, if we include the Greenhouse, the Conservatory, and the Stove, can boast a display, and a greater assemblage of plants and flowers, than is to be met with in any other part of the world. Here are to be met with, all our own natives, and the natives of all other climates! The veronica, and the Japan rose; the campanula, and the cactus grandiflora; the Grampian heath, and the Cape jasmine; with

ten thousand intervening species and varieties of Nature's choicest gifts!

Valuable and dear are these to many. . . What exertions have been made, what trouble taken, to obtain them! What sums expended in laying out, and in erecting suitable compartments for their culture! What care to propagate, to preserve, and to cherish them!

Let this care now be ours. Let us enter, with pleasure, the **Pleasure Garden.**

SECT. I.

ON THE FORMATION OF SHRUBBERIES.

WE are greatly beholden to shrubs for much of the pleasure and delight we enjoy in our gardens. Though they produce no eatable fruits, nor afford us any sort of nourishment, yet they are particularly conducive to our comfort. In winter, they shelter us in our walks; in summer, they shade us from the sun. They afford a great variety of flowers; a varied foliage; and are standard ornaments that give us no great trouble. They are particularly useful in the character of screens, whether against the weather, or to hide disagreeable objects; in which case they may be planted nearer to the house than forest-trees. When planted in masses at a distance, they become agreeable objects, and often improve the scenery of a place.

The shrubbery is often a matter of utility, as well as of ornament; in which case, it gives the highest satisfaction. When formed for the purposes of shutting out the offices or the kitchen garden from the view of the house; for sheltering the latter, or the garden; or for connecting the house with the garden and the orchard; the shrubbery becomes useful and interesting.

Sometimes a shrubbery is formed, merely for the purposes of growing rare shrubs, and for obtaining agreeable walks. In this case it is necessary, perhaps, to be at more pains, and to display more taste in the laying of it out, than in the formation of a useful shrubbery. In the former case, a tasteful arrangement of the plants is a matter of less importance, than the choice and disposition of kinds that will soonest afford shelter, and ultimately become thick screens.

The proper disposition of shrubs, however, where many are to be planted, is a matter of considerable importance to the future welfare of the whole, and that whether they be mixed, or be grouped; that is to say, whether deciduous or evergreen shrubs be indiscriminately mixed, as often done, or the evergreens be planted distinctly by themselves.

The arrangement of shrubs is a matter, no doubt, very much of fancy. In some parts they may be mixed; in others grouped; but in general, there ought to be plenty of evergreens planted, in order that the whole may be the more cheerful in winter. Generally speaking, however, the method of mixing all kinds of shrubs indiscriminately, prevails too much

in modern shrubberies. Much more character and distinctness may be given, by judiciously grouping them, than by following the common methods of planting.

Tall-growing kinds should not be introduced in a very small shrubbery (unless it be merely a screen-plantation); and in any, the dwarf and more bushy growing kinds, should be placed next to the walks or edges, in order to cover up the naked stems of the others. It is a mistake to plant too thickly. The plants should at all times stand, as it were, distinct from one another, in order that they may be the better shown off. The small-growing kinds may be planted at four or five feet apart; the large, at six or eight, according to the quality of the soil. It is not necessary to plant in lines. Regularity, in this respect, is rather to be avoided.

The conducting of walks through the shrubbery is a matter both of conveniency, and of taste. Of conveniency, when the shrubbery is merely a passage from one place to another, or a narrow screen to the garden. In the former case, the walk should be simple and direct. In the latter case, it may be circuitous; and if there be any variety in the ground, it ought to lead to particular points of view. The walks, however, should seldom cross one another; they should rather take off at oblique angles; nor should one run parallel to another, within view. It is proper to show off the shrubs; but too many walks perplex.

Their breadths may be various. If short, they should be narrow; if long, and if a considerable

reach be caught at once, they should be broad. A medium may be taken at five feet; the extremes being three and eight. They may be of turf, or of gravel; but the latter is always most wholesome, and most agreeable in winter.

SECT. II.

ON SOILS FOR VARIOUS SHRUBS.

SHRUBS, in general, thrive very well in ordinary garden-land; and better in light than in heavy soils. Most shrubs, likewise, do well in ground a foot in depth; but it is always advisable to trench to the full depth of the soil, previous to planting, if that were even two feet.

Manure is seldom bestowed on shrubs; and if the soil be not far below mediocrity, it is seldom necessary; provided the ground be otherwise well prepared; and be meliorated by trenching or digging.

In the case of planting screens, where it is desirable to have them effectual as soon as possible, or in planting favourite shrubs in particular situations, every justice should be done to the soil, in preparing and enriching it, either with manure, or by the addition of fresh earth.

Those who are curious in collections of certain shrubs, prepare, or choose certain soils for them. Evergreens, for the most part, thrive well in loam of a middling texture; but some kinds do better in mossy, humid earth; as the azalea, and the rho-

dodendron. Deciduous shrubs in general thrive well in light loams, or sandy soils; but certain kinds flower better in rich mellow earth; as the moss-rose, and the robinia.

SECT. III.

ON THE FORMATION OF FLOWER-PLATS, &c.

THE laying out of flower-plats, or parterres, is a matter very much of fancy; and a variety of forms may be indulged in, without incurring censure; provided the figures be graceful, and not in any one place too complicated.

An oval is a figure that generally pleases, on account of the continuity of its outline; next, if extensive, a circle. Next, perhaps, a segment in form of a half-moon, or the larger segment of an oval. But hearts, diamonds, triangles, or squares, if small, seldom please. A simple parallelogram, divided into beds running lengthwise, or the larger segment of an oval, with beds running parallel to its outer margin, will always please.

Too many gravelled alleys offend the eye, especially if they be much twisted, or run cross; as it comprehends the whole at once. Their breadths should be proportioned to that of the beds; nor should they be much sunk; seldom more than an inch; otherwise they have a bad effect, and look rather like furrows than alleys.

They may be edged with box, with daisies, with

violets, gentianella, or thrift, according to fancy. But the edging, whatever it be, should be kept low, thin, and neat. It should seldom be allowed to rise two inches high, or spread two inches wide. A linear box-edging always pleases, if kept quite close and connected.

SECT. IV.

ON SOILS FOR VARIOUS FLOWERS.

MUCH of what is stated above, respecting soils for shrubs, will apply here. Most herbaceous flowers will thrive very well in common garden earth of a middling texture, if broke fine, to the depth of a foot. Some, no doubt, do better in light, than in heavy soils; and the contrary: and others do best in rich, humid earth.

Bulbous flowers, in general, do best in light, sandy earth; though some require a stronger, and a richer soil. In general, the soil for these should be formed at least eighteen inches deep, and should be made very fine by the spade, or be put through a coarse screen.

The soils for particular flowers will be specified, in treating of them, in the kalendar; which, it is thought, will be more satisfactory than to specify them here, and will also prevent repetitions.

January.

OF SHRUBS.

Of planting Deciduous Shrubs.

ALL kinds of deciduous shrubs may now be planted, if the weather be favourable, and if the soil be dry and light. Heavy soils should not be planted, however, till next month, or till March. In planting at this season, observe to expose the roots of the plants as short time to the air as possible, particularly if the wind be high and sharp. But at such times it is better to delay the business, and to plant only in good weather.

Evergreens should not be planted at this time, but in April, or in August; at which seasons they succeed much better. If it be intended to have a mixture of these among the deciduous kinds, their places should be left till then; and twigs may be substituted in the mean time, in order to guide the mixture or arrangement of the whole. On this subject, the reader will find more particular observations, by turning to Section I.

It is presumed, that in all cases the soil has been properly prepared by trenching or digging, in the previous intention of planting, and according to its depth or quality, as particularly noticed in Sect. II. ; that it is free, open, and well pulverised ; and that pits or holes have been made for the plants, at the distances specified in Section I. according to their kinds, and the sizes of the roots to be planted. These holes should be made sufficiently large, that the roots may be properly spread out, and may not be bundled together ; a thing often carelessly done, but much against the welfare of the plants. Some indeed, in order to save trouble, plant in a slit or gash, without opening holes at all, which is much worse. Very much of the success in planting depends on spreading out the fibres regularly, and covering them equally with fine earth ; so that pains should be taken to break a little earth well with the spade, for each plant in the first place, to place it properly, and to fill in the mould slowly ; shaking the plant gently, treading lightly round it with the foot, and setting it perfectly upright.

If the plants be large, and be anywise in danger of being shaken by the wind, they should be carefully supported, by being staked ; especially those with feeble stems, and of large foliage. Nothing retards the growth of plants more than being beat about, and loosened at root by the action of the wind. Even very small plants, on which the wind can have but little power, should be gone over from time to time, and have the earth trodden firm to their stems, if at all loosened.

Of planting Deciduous Hedges.

All kinds of deciduous hedges may now be planted if the weather be favourable ; such as Briar, Privet, Honeysuckle, Filberd, &c. But evergreen hedges should not be planted at this time, but in April, for the reasons there given ; to which the reader is referred for remarks on the planting and formation of various kinds of hedges, whether as screens, or as fences.

Of cutting Deciduous Hedges.

Deciduous hedges may now be clipped, plashed, or be cut down, according as they may require. This is a business generally performed in severe frosts, or when there is snow on the ground, so as to prevent other operations from going forward, and is very proper employment at such times. For hints on the cutting and training of all kinds of hedges, see April.

Care of Grass or Gravel Walks.

In fresh, open weather, the grass-walks in the pleasure-garden should be polled, swept, and be rolled, once in eight or ten days, in order to clear them of worm-casts, and keep the surface firm, smooth, and agreeable to the foot. Grass-plats and edgings should also be occasionally swept and rolled at this season ; by which they will appear much more pleasing than if left undressed till spring.

The gravel-walks should also be cleared from weeds and every sort of litter, if the weather be

open, either by hand-picking, or by hoeing them ; and they should be frequently and well rolled, especially after having been hoven up by hard frost.

OF FLOWERS.

Care of Auriculas and Polyanthuses.

Attend to the choice auriculas and polyanthuses, whether placed in a stage frame, or under any other kind of covers for shelter at this season. See full directions on this subject in September, where notice is taken of placing them in their winter quarters, and of their treatment in winter.

Care of Carnations and Pinks.

Likewise be now attentive to the choice carnations and pinks in pots, as above, whether placed in frames, or under hoops and mats. If it be wished to have some of these flowers early, in the green-house, or in the drawing-room, they may now be placed in the stove, or other forcing compartment at work, for the purpose of being brought forward. In order to have a succession of flowers, a few may be taken in every two or three weeks, till the first of April. Let them be properly attended to with respect to watering ; stick, and train their flower stems as they advance, as noticed in May and July ; and when just opening into flower remove them to the green-house, or to the dwelling-house, as shall be thought most proper ; where treat them, as directed under the article Green-house.

Care of choice Plants in Pots.

The campanulas, rockets, stocks, wall-flowers, &c. in pots, placed as directed in September, in a situation where they may be defended from bad weather, should also be carefully attended to at this season. A few of any, or of each of them, may be placed in a stove or forcing-house, in order to bring them forward for flowering in the green-house, or the drawing-room; and may be treated as above noticed of carnations.

Care of choice Bulbs.

The beds of choice hyacinths, if not covered as directed in November (which see), should now be covered, in order to preserve them from severe frosts. If the weather be very changeable and wet, they should be defended from its bad effects by hoops and mats, or canvas covers, as directed in March; which covers, however, should always be removed in dry weather, and should only be applied in the time of heavy rains. Snow will do less harm; and if covered as directed in November, the roots will be safe from the effects of frost.

Of blowing Bulbous Flowers in Water, or in Earth.

Of this, see the article Green-house, for October and November, where the subject is fully treated of, and the kinds of roots are specified. If roots, however, have not been planted, or put in water, as then directed, they may now very properly be planted,

or may be placed in blowing-glasses, and may be set in the stove, or in any forcing-house, in order to bring them forward for the green-house or the drawing-room.

Of planting Bulbous Flowers.

Bulbous flower-roots of any kind may be planted at this time, if the weather be open, provided the soil have been properly prepared for them, and be pretty dry. But a much better season is October; to which month the reader is referred for full directions on planting all sorts of bulbs, and also respecting the soils proper for them.

Of planting Anemones and Ranunculuses.

Anemones and ranunculuses may likewise now be planted, if that have not been done as directed in October. In dry, or properly prepared soils, and in good situations, the latter end of autumn is the best season in which to plant these roots; but in heavy soils, or in cold situations, the latter end of this month, or in February, is a very fit time to plant them. See full directions for preparing the soil, and for planting, in October.

Of preparing ground for planting various Flowers next month.

In open, and tolerably dry weather, let the beds, borders, and such pieces of vacant ground in the Pleasure Garden as are intended to be planted with hardy perennial or fibrous-rooted flowers next

month, or in March, be dug and got ready. The ground may be laid up rough, that it may be so far meliorated by the weather in the mean time; and this sort of preparation will lessen the labour of the two following months, in which the gardener is abundantly busy at any rate.

February.

OF SHRUBS.

Of planting deciduous Shrubs and Hedges.

FINISH the planting of deciduous shrubs and hedges as soon as now convenient, in all ordinary soils, and tolerably good situations; but in cold situations, and in moist, clayey soils, delay the planting till March. Evergreens should not be planted till April, or the end of July, which see; and for directions respecting the planting of deciduous shrubs, see Section I. and January.

Of pruning hardy Shrubs.

About the end of the month, when very severe frosts will be over, and none need be apprehended that will materially injure hardy shrubs, they may

be pruned of all dead branches, and of the points of such shoots as have been damaged by the severity of winter. Roses, and several other kinds that grow bushy, may be thinned out a little in the centre; and the stronger and middling shoots of roses should be more or less shortened, in order to cause them push shoots and flowers more freely. Several others require the like management, which need not here be particularized; but most shrubs require nothing further than to be pruned of injured shoots, straggling branches, or of suckers that rise round the stem.

They should not be trimmed up in a formal manner, as used to be done when Dutch gardening was in fashion. The more natural the outline of the plant, the better. Topiary work, and regular shearing of shrubs has been long exploded, as being unworthy of a taste improved by reflections on the simplicity and beauty of nature. In short, the pruning of deciduous, hardy shrubs, should be done in such a manner as not to appear after the plants are again in leaf.

Evergreens, and the more tender kinds, that are apt to be much hurt in severe winters, sometimes require to be so pruned as that it cannot possibly be concealed; which is a great misfortune, and much disfigures these delightful plants. In order that they may not be pruned unnecessarily, or that the pruning may have to be repeated, it is advisable to delay that work till the end of March, or first of April.

Climbing shrubs, and others trained against walls or out-houses, that are sheltered thereby, and are not now in danger of suffering by frost, may be pruned and dressed about the end of the month, or the first of March, according to conveniency. These should be trimmed and dressed in a neat manner; the branches should be moderately thinned out, according to the kinds of shrubs, and trained regularly, as in dressing wall-trees.

Of digging the Shrubbery.

Many kinds of shrubs put up a number of suckers from the root, which should be now displaced; and which if not wanted for filling up occasional vacancies, may be planted out to nurse, in a spot by themselves; or may be otherwise disposed of, as shall be thought proper. Then let the ground be dug over among the plants; observing to injure the roots as little as possible in the operation. If the shrubbery be pretty old, and if the roots be much extended and intermixed, the digging had better be done with a three-pronged fork, than with the spade. In old shrubbries, where the plants are quite met, digging is not very practicable, nor at all advisable. The hoe and the rake *only* should be introduced amongst them. Of which see further in March and April.

Care of Grass Walks and Lawns.

Continue to sweep and roll grass walks and verges, plats, &c. in the pleasure ground, as hinted at last

month, if the weather be such as to permit that work being done. Likewise, towards the end of the month or the first of March, when the pleasure-garden will fall to be put in nice order for the spring season, let the edges of all grass verges and plats be neatly pared and dressed with the iron; making good any deficiencies in them with new turfs, in a handsome manner, and so as that they may unite and quickly look of a piece with the old part of the edging. For this purpose, turf, as nearly corresponding as possible to the old verge, &c. should be chosen; otherwise it will have a patched appearance for a long while.

OF FLOWERS.

Auriculas.

The choice stage Auriculas, made by slips in August, will now require to be put into their full pots. This may be done any time in the month, if the weather be open and fresh. These pots should be about six inches in diameter, and eight inches deep. But of this, and of the soil for potted auriculas, see August. Those in full pots, may be dressed about the middle or end of the month, if fine weather. Of which see March.

Of Sowing Flower-seeds.

Towards the latter end of the month may be sown some of the hardier kinds of annual flowers, such as Adonis, Candytuft, Catchfly, Convolvulus, Hawkweed, Larkspur, Lavatera, Lupines, Lychnis, Poppies;

and Sweet Peas, in patches where they are to remain. Likewise may now be sown for transplanting, Auriculas, Polyanthuses, Sweet Williams, Stocks, Wallflowers, &c. of which, see further in March.

Of planting hardy Perennials.

Towards the end of the month may be planted many hardy perennial flowers, either in patches about the borders, or in beds by themselves, viz. American Cowslip; Asters, many species; Auriculas; Campanulas; Carnations; Cranesbills; Daisies; Dog's-tooth Violet; Double Violets; Double Catchflies; Garden Valerian; Gentianella; Greek Valerian, blue and white; Hepatica; Lily of the Valley; London Pride; Peony-Rose; Pinks; Polyanthuses; Primroses; Ranunculuses, or Bachelor's Buttons; Rocket; Rose Campion; Saxifrage, the large, double, red and white; Scarlet Lychnis; Stocks, many sorts; Veronicas; Wallflowers, single, double, and bloody; and many others.

Of digging and hoeing the Flower-borders.

Let the beds and borders in the flower ground now be dug, hoed and raked; digging with a three-pronged fork among the fibrous-rooted kinds that have been thickly planted, that their roots may not be injured, and pointing up the alleys, and more open spaces with the spade; dressing all neatly with the rake. About the end of the month, get ready the vacant places intended to be sown and planted in March; hoe and weed the walks and alleys, and

otherwise dress up the flower ground, as far as it will admit at this time, that too great a bustle be not occasioned next month, when all is hurry with the gardener at any rate.

Of planting and making Edgings.

Edgings of daisies, thrift, violets, gentianella, &c. may now also be planted ; but those of box succeed better if planted in April or August, which see.

New edgings should be planted rather closely, that they may have an immediate effect ; and in repairing old ones, plant very close, that the whole may appear the more uniform. Some plant these, in either case, with the dibble, but it is better to do this with the spade ; cutting out, by the line, a drill or furrow, perpendicular on the side next the border, and to a depth suitable to the size of the roots to be laid ; placing them against the perpendicular side, and spreading out their fibres sidewise ; exposing them to the air as short time as possible.

March.

OF SHRUBS.

Of Planting Deciduous Shrubs.

DECIDUOUS shrubs may still be successfully planted, if not done last month ; they should, however, be

planted as early in the month as possible, as many of the forward kinds will now begin to vegetate. For directions on this head, see the former months, and Section I.

Deciduous hedges of all kinds may also yet be planted, whether as fences or screens; but the sooner in the month the better, especially if the soil be dry and light, that they may get established before the drought set in.

Of hoeing and dressing off the Shrubbry.

Now let the pruning and dressing of these plants be finished, if not already done. (See February). Also, the digging amongst them; hoeing, raking and dressing off the surface, as already hinted; by which all shrubs and flowers are set off to great advantage.

Evergreens, and the deciduous kinds just opening into leaf, form a delightful and gratifying sight at this season; which is heightened, and a better effect given to the whole, by neatly dressing off the ground among them; by new hoeing, raking, and rolling the walks and alleys; and by trimming their edgings, whether of grass, or of other plants, as box, thrift, daisy, or the like.

Of forming Grass Walks and Verges.

There are two ways of forming grass-walks, plats, or verges, viz. by sowing, and by laying down turf.

Where this is to be done to any considerable extent, it is evident that the former method is that to be chosen, on account of the labour and expence at-

tendant on the latter. This is a good season for either.

In preparing ground to be sown that is to be kept with the scythe, which is wished to have a fine pile and surface, and by no means to grow rank, it is necessary to be at some trouble. The natural ground should be spaded over, and be properly levelled; then a stratum of sand, or of very sandy earth, to the thickness of three or four inches, should be laid on; and over that another stratum of rich earth, three inches thick, in which to sow the seeds. The rich earth at top will encourage the growth of the seeds at first, and give a fine close pile and sward; and the sand below will prevent it from growing too rank afterwards, by checking the growth of the plants. In this way the natural sward of a common is imitated, which always produces the finest turf.

The seeds most proper for sowing are white clover, and true perennial rye-grass; which should be sown very thick, be raked neatly in, and then be well rolled down. Weeds should be carefully pulled out as they appear, and if there be any blanks or thin places among the plants after they have come up, a little more seed should be dusted in, that the sward may be as close and uniform as possible. It should be several times cut in the course of the summer, but never in hot, dry weather, as in that case the plants might be much injured by the drought catching their roots.

In the laying of turf for walks, edgings, &c. the ground should be properly levelled, and a stratum

of sand should be laid on, in the manner above directed; laying a single inch of rich mould above it, in which to bed the turfs. These should be chosen of the very finest that can be got on a common, or old poor pasture. They should be cut by the line, very exactly of a size and thickness, and should be as exactly laid down, that they may join quite close, and that the surface may be smooth, firm, and uniform, when well beat and rolled; which it ought to be repeatedly in the time of showers, and should be well watered in dry weather, till it take on a growth, and the joints grow perfectly close.

Towards the latter end of summer, it may be mown; which may be repeated occasionally, if the weather be moist; but avoid cutting it in dry weather, as the edges and joints would be apt, in that case, to turn brown. After the turfs have fairly united, if a verge to a walk, or a walk with water tables, the edges may be pared and dressed with the spade or paring-iron; and the whole may be kept as directed for other grass.

Of planting Edgings, &c.

New edgings of various plants may now be made, excepting those of box, which succeed best if planted the end of April, or in August; and old edgings may be *beeted* or be repaired. See February on that head, and April on laying box.

OF FLOWERS.

Of sowing Flower-seeds.

All kinds of hardy *annual* and *perennial* flowers

may now be sown. To those of the former, named last month, may be added Antirrhinum, China Assters, Chrysanthemum, French and African Marigolds, Hollyhocks, India Pink, Mallows, Marvel of Peru, Mignonette, Sweet Scabious, Sweet Sultan, Stock Gilliflowers, Sunflowers, tall and dwarf, Venus Looking-glass, Violets, &c. And to those of the latter, Campanulas, Carnations, Columbines, Cyclamen, Foxgloves, French Honeysuckle, Gentians, Globularia, Pinks, Rockets, Tree Primrose, Veronica, and Wallflowers.

The annuals may generally be sown in patches about the borders, where they are to remain; and the perennials, and such of the annuals as are intended for transplanting, may be sown either so or in beds; keeping each kind distinct, covering lightly, and watering them if the weather prove dry.

Of planting hardy Perennials.

Now also plant, if not done last month, all kinds of hardy perennials, either in patches about the borders, or in beds, according to their kinds, and to fancy. See many kinds enumerated last month; to which may be added others, according to taste, and a wish for variety in this department.

Care of choice Bulbs.

Let every part of the Flower Garden be put in trim order, as hinted above for the shrubbery. About the first of the month, let the covering of rotten dung, or saw-dust (see November), be cleared from off the beds of choice bulbs; afterwards care-

fully stirring the surface among them with a small wooden spatula or wedge, and dressing all smooth and neat about the alleys with the rake. If the season be early, many of the hyacinths, and polyanthus narcissuses, will be far advanced, and should be supported to neat small sticks or wires, painted green, in order to prevent them from being injured by high winds; tying loosely with bits of green worsted. The like should be done with the rare sorts of tulips, jonquils, narcissuses, &c. as they advance.

Those who are curious about hyacinths and tulips, and wish to have them flower in perfection, defend them from bad weather or too much wet at this time, by placing mats or canvas covers over them, suspended upon hoops; also, afterwards, in order to prolong the season of their beauty, thus shade them from the mid-day sun; exposing them to his rays in clear weather, only mornings and evenings, or in cloudy weather, the whole day.

There are different ways of constructing this kind of covering, or awning. Strong hoops, or poles of ash, hazel, chesnut or willow, are generally stretched over the beds, at the distance of thirty inches from each other; their ends being firmly fixed into the earth. Over these, double garden mats are spread; and their edges are kept down by stones or bricks, and sometimes by heavy deals, or by cuts of small trees. But people that are nice in this matter use oil-cloth for defending from heavy rains, and thin canvas, or sheeting, for screens against winds and the sun; and instead of coarse hoops, have a row of

stakes driven into the ground on each side of the bed, at the distance of thirty inches from one another, over which they stretch neat laths ; tying the edges of the canvas to the stakes, at bottom.

Auriculas.

Auricula plants in pots should, as soon now as possible, be dressed and be cleared of dead leaves ; reducing some of the old earth from off the surface, and a little way down the sides of the pots, and adding fresh earth ; which will cause them to put out fresh fibres about the upper parts of the roots, and greatly encourage their growth. For the kind of earth, see August. If not provided with an auricula frame, let them be placed in a completely sheltered situation, as they come into flower ; and let them be defended from bad weather, by suspending mats or canvas over them upon hoops, or otherwise, as shall seem fittest, removing these always in the day-time, except in wet or boisterous weather. Let them enjoy moderate showers ; and if the weather be dry, refresh occasionally with water.

Auriculas in a *stage-frame* * must be duly attended to now ; they must have fresh air admitted freely every day, and be moderately, and regularly watered. If it be wished to have them flower strong, and in full perfection, plants that push more than one stem, should be divested of all but the strongest. Some do not cut the stems, or pinch them off

* See a description of this frame in April.

but destroy the pips, or flower-buds, by pinching them off as they appear. If the tops of the stems be thus pinched off as they appear, the end will be equally well accomplished.

Of sowing Auricula and Polyanthus Seed.

Auricula and polyanthus seed may be sown at any time in the month. If of the finer sorts of auriculas, sow in a box of light, rich earth, covering very lightly, and place it in a warm, sheltered spot; attending to it with water in dry weather, and defending it from heavy rains. The reason for sowing in a box or boxes, is, that they may be shifted from place to place as the season advances; for after they are up, they may be more freely exposed to the weather. Till then, and when they have got a few rough leaves, they must be shaded from the full day sun. Indeed, these plants naturally like the shade, and should never be placed in a spot fully exposed to the sun. If they have the morning or evening sun *only*, they will thrive the better.

These plants will also do very well if sown in a light, rich border, at the bottom of a wall or hedge, having a north-east or north-west aspect. The seeds should be sown thinly, and covered lightly; and, as the season advances, they should be moderately supplied with water. They will be fit to prick out in June, and be transplanted in August, and in that case will get established before winter.

Those who are very curious in fine auriculas, sow in boxes, and place them in a slight hot-bed for a few weeks, or until the plants rise; and then move

them to a warm, but shaded situation ; afterwards taking care of them as above directed. By this means, the plants are considerably forwarded, and acquire full strength to stand the winter.

Care of choice Plants in Pots.

Double campanulas, rockets, stocks, and wall-flowers, or others, in pots, should be cleared of weeds, decayed leaves, and other rubbish ; and should be fresh earthed at top, as above directed for Auriculas. This is also a very proper time to plant out, into full-sized pots, any of those plants that need ; and the general directions given in August will be found to answer. I here mean such as were struck from cuttings last season.

Of making slips of Campanulas, Stocks, Rockets, and Wallflowers.

Slips of all these may be made about the end of the month, and they may be either planted out on a rich, shady border, to be afterwards transplanted, or may be put singly into small pots, to be repotted after they have struck root. If they are planted in this latter way, place them in the shade ; and in either case, let them be moderately supplied with water. See further of this in April.

Carnations and fine Pinks.

This is now a proper time to plant out these, either into the open ground, or to re-pot those intended for the stage. Carnations like a rich loam of a middling texture, though they will do very well in

lighter soils. Pinks will do better in lighter soil than carnations. But either will thrive in sound garden earth, moderately enriched with dungs, and mixed with a small proportion of lime, chalk, or marl. Earth for potted plants, may be thus composed: one-half strong brown loam, a fourth part rotten stable-dung, and a fourth vegetable mould of decayed tree leaves; to which add a tenth part sea or river sand, or very small gravel, with a small proportion of lime, chalk, or marl. The whole should be properly mixed and incorporated previous to using; and a stock of it should always be kept on hand.

Carnations and pinks raised last season, and potted out in August, (which see) should now be put into their full pots. These should be ten or twelve inches diameter at top, and twelve or fourteen inches deep. A handful of shivers or clean roundish gravel, should be laid at bottom, in order to drain off superabundant moisture; then fill the pot nearly half with mould. Take the plant carefully out of the other pot, reduce the ball a little, and single out the fibres, if anywise matted. Place it in the new pot, so as that it shall be just as deep in the earth as before; then fill in the mould all round, shaking the pot well, to settle it to the roots, and give a gentle watering.

After the whole are potted, they should be so placed as that they can be defended from bad weather, or too much wet, either by mats, canvases, or the like. In good weather, let them enjoy the free air and full sun, and be duly refreshed with water.

Those put out into the borders, or into beds, may be planted at fifteen inches apart each way, in order to give room for layering, if that be intended; otherwise at a foot apart. Pinks are seldom layered, and may therefore be planted at about twelve inches apart. Plant carefully, observing to spread out the fibres in a regular manner, and place the plant just as deep into the earth as it was before. Give a gentle watering, which repeat, till they have taken new root.

April.

OF SHRUBS.

Of planting Evergreens.

Now is the season, and in August, to plant all kinds of evergreen trees and shrubs, and the best time is towards the end of the month. But if the weather be favourable at the beginning, that is, mild and moist, by all means take advantage of it.

I shall here assign reasons, which are not generally understood, why the end of April and beginning of August are the most proper times for planting evergreens. If they be planted in the early spring months, they remain dormant, at any rate, till this

time, and their tender fibres, in that case, frequently perish ; besides, these are very liable to be injured by frost, or frosty winds, in the act of transplanting, and are more susceptible of such injury than the fibres of deciduous plants. Next, they now begin to vegetate, which is *the nick of time* for transplanting any plant, if it can be hit ; that is, just when the buds begin to swell, and unfold the new leaves. The roots are then also active, and if the plant can be suddenly lifted and replanted, it will hardly receive a check.

The success of transplanting very much depends on *how long* the plant is out of the earth. No doubt often on the size of the plant ; and it may be noted here, that *evergreens*, in general, succeed the better the smaller they be. That is to say, plants under two feet high are to be preferred to those of greater size. *Tall* plants require to have *a staff in their hands*, on which they will lean, and wait patiently till small ones grow over their heads. No doubt, sometimes for a particular purpose, it may be proper to transplant large plants, and if very carefully done, and if they be well watered and supported, they may succeed. But a plantation of any considerable extent, will acquire a body and figure sooner, by being formed with small plants, than with large.

To these reasons may be added, that we frequently have showery weather in May, and so by planting evergreens about the end of April, take advantage of such showers ; for no artificial is nearly equal to natural watering.

The reason why the end of July or first of August is next to be considered the best time (some think it preferable) for transplanting *evergreens*, is, that they then take on a second growth, and that we generally have showery weather at that season. Plants moved then, get fully established before winter, while those moved later in autumn do not; and so often perish altogether.

On the manner of arranging shrubs, and the distances at which they should be planted, I have already been explicit in Sect. I. and on planting, in January. I shall therefore only here add, that before planting, the ground should be well dug or trenched; and if that have been done last autumn, or in winter, it should now be spaded over. Also, if places have been left for the evergreens, among deciduous shrubs that have been planted some months, such places should be stirred up to a good depth and breadth.

If the weather prove dry, let them be well watered, which repeat, as necessity shall direct. In a plantation of considerable extent, it may be thought too much to say that they should all be *mulched*, as formerly directed for Fruit Trees; but for a few, and for the choice, high-priced sorts, it would very probably turn out to be a saving, both of time and money.

This is also a proper time to plant *evergreen hedges*, as Holly, Evergreen Privet, Yew, &c. which should generally consist of plants that have been two years nursed, and which may be planted at eight or nine inches apart, if stout and well rooted; but if

not so, plant at six or seven inches distant. Trench or dig the ground well, breaking fine; and give a moderate dunging. Small-rooted plants may be planted with the dibble; but otherwise, it is better to plant, by line, with the spade, that the fibres may not be crowded. If the weather be dry, the plants should be frequently watered, till they have taken fresh root, and occasionally, throughout the summer.

Pyracantha, or Evergreen Thorn, answers well for covering up an old wall, or the like; also, Evergreen Privet, Phillyrea, Holly, or Yew, for thick screens, either against the wind, or for hiding any disagreeable object. In either of these cases, it is of importance to get up the screens as fast as possible, and I need only hint, that pains should be taken in preparing and enriching the soil, previous to planting; mulching, and watering frequently in hot weather.

Of pruning evergreen, and tender Shrubs.

About the beginning of the month, it will be proper to go over the evergreen and tender kinds of shrubs (if not yet done,) to prune them of all wood killed in winter, and otherwise to trim them, as noticed more particularly on the pruning of shrubs in February; which see.

Of training evergreen Hedges.

Evergreen hedges may be clipt about the beginning, but not later than the middle of the month; as by that time they will begin to grow, and it is proper that this work be previously performed.

Some content themselves with clipping but once a-year, in which case, the end of July or first of August is a better time.

In trimming these, or indeed any hedge intended as a close fence, they should be dressed up to a thin edge at top, as otherwise they are apt to get full of gaps below; and the cause is obviously, that the under part, in square-cut hedges, is too much shaded by the upper part. Now, by sloping the sides, every part of the hedge is freely exposed to the air, nor is any part overdropped by another. A hedge, intended merely as a fence, need seldom be more than five feet high, or at most six. *Screen hedges* may be allowed to run to any height thought necessary for that purpose, neither is it requisite to trim them so often as *fence hedges*; once a-year, or in two years, may be sufficient.

In the training of any hedge, it should not be topped or shortened until it have arrived at a full yard in height; but it may then have a little taken off the points, in order to make it bush the better, and shoot of a more regular height afterwards. The sides, however, should be trimmed from the second or third year of planting, that it may grow the more complete, and close below; for therein consists the excellence of any fence. It should not, in topping at any time, while in training, be much cut in; as that would make it push the stronger at top, to the detriment of the sides. When *fence hedges* outgrow their limits, they must of course be cut either wholly, or partly down; but if they be toler-

ably well kept, it is seldom necessary to cut them down more than half to the ground.

Of planting Box edgings.

This is a proper time to plant box edgings, where wanted; and the middle, or end of the month, is to be preferred. Indeed they will succeed very well if planted about the beginning of May. If they be rooted plants, the best way is to *lay*, not *dibble* them. But I have planted many thousand yards of box, entirely slips, without any roots, which have generally succeeded as well as rooted plants. These I have sometimes had *dibbled*, and often had *laid*; but could never discover any difference in the success. The slips should be taken off singly, and the smaller and shorter the better; that is, slips from two to four inches in length, not cut, but gently torn off. They should be laid, or dibbled in, at an inch apart, and be frequently watered till they have struck root, and have begun to grow; after which they will require no further care.

Of cutting Box edgings.

Box edgings may also be cut about the beginning of the month, or in the end of July; which see. They should, however, be cut once a-year, and should be kept to two inches in height, and two inches in breadth at bottom; being tapered up to a thin edge at top; for nothing looks so ill as a large, bushy edging, especially to a narrow walk. The use of any edging is to separate the earth from

the gravel, and the larger they are allowed to grow, the less effectual they become; getting the more open below, as they advance in height. Such also, harbour snails, and other troublesome vermin.

Of hoeing and dressing off the Shrubbry.

Let every part of the shrubbry be dressed off now, if it have not been done, as directed in March; which see. Shrubs of all kinds will now begin to look gay and beautiful. This beauty may be very much heightened, or depreciated, according to the state in which the ground and walks are kept. Weeds are no tissue of such beauty. Ground, neatly and recently raked, serves as a foil to show it off to advantage.

Of mowing Grass Plats, Walks, and Lawns.

If the season be tolerably forward, it will be proper, by the first of the month, to have grass walks and edgings, lawns, or grass plats, that are usually kept by the scythe, put in order. This used to form a greater part of the labours of the gardener, than it now does; as much ground was formerly kept by the scythe, that is now either pastured, or being planted in shrubbry, is kept by the hoe.

There are few places, however, where mowing is not in practice, to a certain extent, and few gardeners that are not acquainted with the operation. I shall not, therefore, enter into the minutiae of the business, but briefly observe, that from about this time till October, or perhaps November, all pieces of grass that are wished to be kept short

and smooth, will require to be gone over once in ten, fourteen, or twenty days, according to the state of the weather, and the nature of the season, as whether it be wet or dry; sweeping off the worm-casts, rolling, and keeping all close and neat. In burning droughts, however, and particularly in dry soils, it is not advisable to cut, though the grass should be a little rank for a time; otherwise the sole, as it is termed, may be injured. The edges should be neatly trimmed, each cutting, with sheep-shears, or edging-shears, and be pared with the iron, as often as necessary.

When grass plats get overrun with moss, the best remedy is to fold, or hurdle in sheep upon them, till they pick the ground quite bare, and considerably poach the surface. Then dust in plenty of seeds, and roll them well; which frequently repeat, till a new sward rise.

FLOWERS.

Of sowing and planting various Flowers.

All kinds of annual and perennial flowers, mentioned last month, may yet be sown; and many kinds, then noticed, may be planted. The sooner in the month, however, particularly for the latter kinds, the better. See lists of these, on this head, in February and March.

Of making slips of choice Flowers.

If slips of Campanulas, Rockets, Stocks, and Wallflowers, have not been made, as hinted at last

month, it may still successfully be done. They may either be planted out to nurse, on a shady border, or may be put into small pots three or four inches in diameter, to be repotted, as directed in May. In the former case, the ground should be pointed over and broke fine; planting in lines, across four-foot beds, at six or eight inches apart, and three in line; keeping the earth just a little moist about them, till they have struck root, and afterwards watering more freely.

Those to be potted, should be planted in fine, light earth, one in each pot; and should be carefully watered and shaded till they have struck root. They may then be placed in a free, sunny situation, and must be frequently watered; perhaps once a-day, or in two days, according to the state of the weather. They will be fit for repotting in five or six weeks.

Of earthing and dressing Plants in Pots.

The choice Campanulas, Rockets, Stocks, and Wallflowers in pots, that have not been dressed and new earthed, as directed last month, should now have that done without loss of time. Attend to these, and all other flowers in pots, in the article water, and keep them free from weeds; stirring the surface of the earth with the point of a stick, at times, as it gets hardened; which greatly encourages the plant, and lets the water more freely down to its roots.

Auriculas.

Auriculas will now be coming full into bloom, and those that are not in a *stage-frame* must be carefully attended to, in order that they may be produced in full beauty, and that such beauty may be prolonged. They should, therefore, be shaded from the sun, from eight or nine in the morning till three or four in the afternoon, in clear weather; that is, if the situation in which they are placed be not fully shaded. They should also be effectually screened from rains, and from the wind; as the fine farina upon the bloom, which adds so much to their beauty, is easily displaced by either. They must be frequently, and moderately supplied with water; but must not be watered over head, lest the above-mentioned farina be washed off.

Auriculas, placed in a properly constructed *stage-frame*, require less trouble and attention than in any other way. In short, they need only a regular airing and watering. The sun can only hit them in the mornings or evenings, and never between the hours of eight and four throughout the day. If the frame be placed near a wall, house, or trees, on the west side of it, the plants can only then have the sun in the morning; and if it be placed near to trees or buildings to the east of it, then only in the evening.

The kind of frame I here allude to, is placed on four or six strong posts, according to its length, fifteen inches above ground. Supposing its floor level at that height, then the back is raised four feet and

a half, and the front, three feet three inches higher. It is thirty inches wide within, and nine feet, twelve feet, or fifteen feet long ; so that the glass sashes that cover it may be a yard broad. These are fixed with hinges to the top of the back part, and are moved by a strong iron spring in front, with notches, &c. so as that any quantity of air can be admitted at pleasure, and the sashes are, at the same time, quite firm and secure. Both ends, which are close, and the front part, are formed of thin boarding ; and the back is close or open at pleasure ; being two, three, or four thin folding doors, according to the length of the frame. The stage consists of four shelves ; five, six, seven, and eight inches broad ; each being elevated above the other ; two, two and a half, three, and three and a half inches : thus giving room for the plants in different sized pots, from those of the slips, to those of the flowering, and strongest kinds. In this manner, the surface of the plants, when placed on the stage, slope not as the glasses do, but the reverse ; and as the uppermost shelf is about two feet from the glass, none of them can be hit by the sun, excepting early and late in the mornings and evenings, as said above, when he shines obliquely upon them from the east or west.

Polyanthuses.

This is now the time for choosing, and planting slips of fine polyanthuses. These may be planted out on a shady border of good earth ; planting them into nursery rows, six inches apart, and three or four in the row, and moderately refreshing them

with water, till well rooted. They will be fit to transplant in July or August, into any other situation; and will get established before winter, and flower freely next season. The choice sorts in pots may be treated, in all respects, in the manner of auriculas.

Polyanthuses that were sown in pots or boxes last season, may now be planted out, into nursery rows, as above mentioned; or may be planted out at once where they are to remain for good, as shall be thought most proper.

Care of Choice Bulbs.

If the finer sorts of bulbous flowers have not yet been stiked, dressed, and hooped over, for the purpose of screening and shading them, as hinted at last month, it should not now be delayed by those who are curious about, and anxious to have them blow in perfection. Anemones and ranunculuses will soon also require the like care. The screens of mats or canvas should always be put out at night; and, as a shade from the sun, in clear weather, from nine in the morning, to three or four in the afternoon; exposing them on still, cloudy days, but defending the flowers, at other times, from high winds and heavy rains.

These screens should be placed so high above the flowers, as not to be in danger of drawing them up weak. The stakes to which hoops or laths are fastened (see March,) should be at least a yard high above ground. In the time of high winds, and always in covering at night, be careful to fasten the

edges of the canvas close down to the ground, in order to prevent a draught of wind, which would very much injure the blossoms, particularly of anemones and ranunculuses.

Some who are curious in these flowers, are at the trouble and expence of erecting an awning over them, high enough to sit or walk under. If the cover be of thin canvas or sheeting, so as to admit the light pretty freely, the effect, in the time of sunshine, from the brilliancy of the colours, is uncommonly fine.

General care of Plants coming into Flower.

Let every part of the flower ground be put into trim order; and let such plants, about the borders, as are shooting up flower stalks that are tender, and in danger of being broken by high winds, be properly sticed and supported. In doing this, endeavour to conceal the sticks, &c. as much as possible, by dressing the stems and leaves in a natural looking manner, over them. Also let the patches or beds of seedling flowers, now rising, be occasionally refreshed with water, as shall seem necessary, and be cleared of weeds as they appear.

Adjust the edgings of the walks and alleys, if that have not been done, and clean the gravel, by hoeing, or by hand-weeding, as directed in the former months.

May.

OF SHRUBS.

Of planting Evergreens.

EVERGREEN trees and shrubs may still be successfully planted, and the more so, if the season be late; but it would be advisable to have that work finished as early in the month as possible, in order to take advantage of the rains that often fall about the beginning of it. Evergreen hedges, and box edgings, may also now be planted with success. Observe the directions given last month, on these subjects; and on mulching, watering, &c. according to the state of the weather.

Of hoeing and cleaning the Shrubbry.

Let the hints given last month on this subject still be followed. Indeed they should never be lost sight of, if it be wished to have this department of the garden always agreeable, and the shrubs and flowers set off to the best advantage. Weeds should be kept down in every department of the garden, but more particularly in the pleasure ground. The borders and walks should constantly be kept neat and

clean; else, where the *pleasure*? What can disgust more than weeds?

Of mowing Grass Walks, Lawns, &c.

Continue the care of all grass walks, edgings, &c. as directed last month, with respect to rolling and mowing them regularly; and dress the edges of walks or borders with the spade or edging iron, as they may require, in a neat manner.

OF FLOWERS.

Care of choice Bulbs, &c.

Still continue to shade the choice late bulbs, (and the anemones and ranunculuses as they come into flower), and otherwise attend to them, as directed last month, while in full bloom. If the weather be dry, the anemones and ranunculuses would be much improved by hearty and repeated waterings.

Auriculas.

It has been a common practice to pot auriculas, take off the slips, &c. immediately after the flowering is over. The reasons given by Mr Maddock for doing so at this time, are no doubt weighty, viz. "their remaining too long in a state of inactivity during the heats of summer; the season of all others, wherein they are most liable to contract a destructive disease." This disease is a loss of verdure; the plants becoming yellow, and sickly. It is generally induced by too much heat and drought, but may also proceed from improper soil. In order to guard against, and prevent it, the plants should, at

this time, be removed to a cool, shaded situation, till August, when they should be fresh potted. They may be placed on a floor of ashes or gravel, or on rows of bricks; and must be duly watered, according to the state of the weather.

It has been found, that about the end of July, or first of August, is the best time in the year for the operation of potting, on a double account, viz. If potted in April or the beginning of May, the plants are apt to flower in autumn, in a weak and imperfect state; and whether so, or not, their roots fill the pots entirely in the course of summer, exhaust the earth, and so are less strong and vigorous for flowering in spring, than if potted in August. If shifted then, they get just sufficiently established before winter, and by being fresh earthed and dressed, as directed in March, a vigorous growth of both roots and stems, commences with the season.

To this may be added, that the slips or offsets, being allowed to remain on the plants, get strength, and more immediately become fine plants, after being separated from the mothers, than if taken off in April or May; and so much trouble is saved in rearing of them. By their remaining *on* through the summer, too, the inactivity mentioned above, is in a great measure prevented; as in order to nourish and sustain them, the whole plant must be in a state of active vegetation. They must, therefore, as said above, be duly supplied with water, both at the root and over the leaves.

Although it is not proper to fresh pot them at this time, yet, for the sake of the slips, if the rear-

ing of auricula plants be an object, they should be fresh earthed at top, whenever they begin to put out radicals on the surface, which is generally about the time the flowers begin to fade. In doing this, observe the directions for fresh earthing in March; and bank it well up to the stems of the plants, that the slips may the better push fibres into it; at the same time dressing off a few of the bottom leaves, and any that are decayed.

Carnations and fine Pinks.

Carnations and pinks, either in pots, or in the open ground, must be duly attended to with water in dry weather; watering those in pots generally once a-day, and those in the ground once in two or three days, according to the state of the weather. If the surface of the earth in the pots be anywise hard, or incrustated, let it be stirred often, as already noticed.

If those in pots were placed in a situation shaded from the mid-day sun, (not, however, in a north aspect,) their flower-stalks would shoot slower, but stronger, in consequence. These must be supported to neat sticks as they advance; and if you would have few flowers, and large, rather than many, and middle-sized, cut off all but the uppermost flower-buds, as they appear. At any rate, in order to have carnations and pinks flower in tolerable perfection, more than two or three buds should not be allowed to remain on one stalk; that is, the uppermost, and one on each side at most.

Care of choice Plants in Pots.

Campanulas, Rockets, Stocks, Wallflowers, and other choice plants in pots, must now be duly attended to with water, as above hinted. Also, let the flower-stalks be neatly trained to sticks as they advance; stirring the surface of the earth frequently with a small stick, that it may the better admit water.

Those kept out of doors, to be carried into the house in succession, as they come into flower, should be plunged into the earth, and if placed in rather a shady situation, the season of their flowering might be prolonged.

If slips of all or any of these were made about the end of March or first of April, and were put into small pots as then hinted at, they will now require to be repotted into middle-sized pots. Plant them in rich earth, water, and place them in the shade for a few days; then plunge them into the ground as above. They will be fit for being removed into full-sized pots in July or August, and will get fully established before winter.

Making cuttings of choice Plants.

Cuttings of the above plants may now be made, and will be well rooted and ready to be transplanted in August. The young and recently made shoots are to be taken for this purpose, such as have grown to the length of three or four joints. They may either be planted into nursery rows on a shady border, or into small pots, as hinted at in April, respecting slips of these plants; which see.

The cuttings should be taken off with the knife about half an inch below the third joint ; and should be treated in all respects as directed for making cuttings of carnations and pinks in June, only allowing them an inch more of room in planting ; that is, if it be wished to have them made in the most expeditious manner, though they will do very well as above.

Of planting annual and perennial Flowers.

Many kinds of annuals and perennials, sown in March and the beginning of April, will be fit for transplanting about the end of the month ; and may either be planted in patches about the borders, or in beds, as fancy shall direct. Of these, the kinds improved by transplanting are Amaranthuses, China Asters, Columbines, French and African Marigolds, Foxgloves, Hollyhocks, India Pinks, Loves-a-bleeding, Mallows, Mignonette, Prince's Feather, Scabious, Stocks, Sunflowers, Sweet Williams, Wallflowers, and others. They should be planted out in a showery time, if possible ; or should otherwise be frequently watered till they have struck root.

Of thinning patches of Annuals.

The patches of annuals, sown about the borders, where they are to remain without being transplanted, should be regularly thinned out, where they have risen too thick ; afterwards giving a hearty watering, to settle the earth about those left.

Stick, or otherwise support, all flowers that need ;

destroy weeds; rake and dress the borders and walks, as necessity shall point out, and as more fully directed in the two last months; which see.

June.

OF SHRUBS.

Of training climbing Shrubs.

THERE is little else to be done in the shrubbry at this time, than to keep the ground and walks neat and clean, and attend to lately planted evergreens in respect to watering. Climbing plants, as Honey-suckles, the Ayrshire Rose, Trumpet-flower, &c., and all shrubs trained against old walls, out-houses, or in any other way, such as different species of Clematis, Common Passion Flower, Pyracantha, Jasmines, Gum Cistus, Green, Variegated, and Five-leaved Ivy, or the like, should be carefully supported, and be trained as they advance in growth.

Of taking off suckers from Shrubs.

Many flowering shrubs put out strong suckers from the root, such as Lilacs, Syringa, and some of the kinds of roses, which take greatly from the

strength of the mother plant; and which, if not wanted for the purpose of planting next season, should be twisted off, or otherwise be destroyed.

Of making beds of Roses.

Some who are curious in roses, particularly in Moss-roses, like to grow them close in beds or borders, instead of single detached plants; and in that way, if well managed, they may justly be called *beds of roses*; as the whole surface is a close and beautiful mixture of flowers and leaves. In order to have them the more perfect in this manner, the shoots must be layered close down to the ground as they advance; arranging them regularly and closely together, and allowing their points only, with the buds upon them, to stand up. They are kept down, in the first instance, by hooked pegs, in the ordinary manner of layering; but after they have struck root, these are removed. In order to make them the more characteristically *Moss-roses*, the surface of the earth is concealed by a covering of *moss*, which is renewed occasionally.

Others grow a mixture of many kinds of Roses in the above manner, and in different figures, as ovals, circles, &c. which they edge or fringe with other plants, as French Honeysuckle, Scarlet Lychnis, Sweet Williams; or sow an edging of Mignonette, Dwarf Larkspur, or Dwarf Lupines, round them; which gives the whole a very gay and beautiful appearance, from the variety and brilliancy of the colours.

OF FLOWERS.

Of lifting choice Bulbs.

The choice kinds of bulbous flowers that are now past flowering should be taken up, be gradually dried, and be laid by till the planting season. These are Hyacinths, Polyanthus Narcissuses and Tulips; which should be taken up every season, immediately after they have done flowering. Some take up Crocuses, Snowdrops, Jonquils, Common Narcissuses, Crown Imperials, Irises, and all other bulbs, also each season; and others content themselves with lifting these only every second or third year, in order to single out their clustered roots, or for the purposes of propagation. Jonquils, indeed, should only be lifted every second or third year, as they never flower well, if at all, the first season after planting.

In all cases choose dry weather for lifting them in, and dry them gradually in a shed or loft, into which a free circulation of air can be introduced; often turning them, and spreading them thin, to prevent them from moulding. Likewise separate the offsets from them; rub off the fibres, and the outer coat or skin; and when quite dry, and past taking further harm, pack them in boxes, baskets, or hampers, each sort by themselves, and store them in a dry, airy place, till October, when they should again be planted.

Anemones and Ranunculuses should be lifted after they have done flowering, and their leaves begin to fade; should be carefully dried as above no-

ticed ; and should then be laid by, in boxes or baskets, till the planting season.

Auriculas and Polyanthuses.

If the choice Auriculas and Polyanthuses in pots have not been removed to a cool and shady situation, as directed last month, they should not now be delayed, on account of the summer heats setting in, which may prove very prejudicial to the plants. Form a floor of gravel or ashes for them, and place the pots on bricks or tiles, in nice compact order. Let them have regular, and pretty free supplies of water in hot weather ; and if the earth about them get hard or encrusted, let the surface be stirred with a small stick or wedge, in order to aid its descent to the roots of the plants. Water both roots and tops, without reserve, and always in the evening. Continue this care till August, when directions concerning Auriculas and Polyanthuses will be resumed.

Carnations and Pinks.

Seedling Carnations and Pinks of this year's sowing may now be pricked out, either into nursery-beds, or, if wanted in that way, into small pots, afterwards to be repotted. In either case, plant them in rich, light earth ; carefully water them ; and shade them from the sun till they have struck fresh roots. Those in beds may be pricked in at three or four inches apart, and should again be transplanted in August into the beds where they are to flower next season, as directed in March for the layers of last year, which see. Those pricked

into small pots will also be fit for shifting into larger, about the end of July or first of August.

Of making pipings of Carnations and Pinks.

About the end of March, or first of July, according to the forwardness of their growths, is the time for making *pipings* or *cuttings* of carnations and pinks; which is the most expeditious method of propagating these plants, though carnations, in particular, are often propagated by layering. These pipings or cuttings are of the present summer's growth, and are the upper part of shoots, consisting of three joints. A piping is separated at the third joint, by being gently pulled out of its socket; and a cutting is separated by the knife, about a quarter of an inch below the second joint. They will do very well in either way, but the latter is the method most preferred for carnations.

Having collected a quantity, their tops being shortened with the knife or scissars, and a spot of fine light earth, rather in a shaded situation, being prepared and smoothed, thrust them in gently, half an inch deep, and at two inches apart. Settle the earth to them by a moderate watering; and carefully shade them from the sun, from nine till three o'clock, for ten days or a fortnight, till they have struck root. Repeat the waterings, very gently, once in three or four days; keeping the surface just a little moist.

If they were covered with hand or bell glasses, and if these were kept close down upon them till they have struck root, the success would be greater,

and they would sooner be fit to prick out into nursery-beds, or be put into small pots. Observe to pick out any that die and get mouldy, as they appear; and to stir the surface among them with the point of a stick, whenever it gets anywise hard, or encrusted.

Of laying Carnations.

Laying of these flowers being a more troublesome, though not a more successful method of propagation, and being also now seldom practised, it is unnecessary to point out the minutiae of performance. It may be enough to say, generally, that the shoots to be layered should be singled out all round the plant or stool, the leaves trimmed and shortened; a little fresh earth spread on the surface; the shoots slit lengthwise, from the middle joint, up to, and quite through that next above it; then hooked down with small pegs, and covered with a little of the earth. Their points being inclined upwards, by previously making a small hollow under each, sufficiently opens the slit, immediately above which, at the first joint, the new roots spring. The shoot should just be covered with the earth, but not deep. Give a gentle watering, which frequently repeat; and in five or six weeks the layers will be fit to be parted from the mother plant. They must then be taken up with care, and with as good roots as possible; and may either be planted into nursery-beds, or into small pots:

Care of choice Carnations.

Continue to take proper care of the choice carnations and pinks that are coming into flower, by watering them, and training them as they may require. See general directions on this head last month; and further of these in July.

Of planting seedling Flowers.

Now transplant, if not done last month, the seedling annual and perennial flowers there enumerated, either in patches, or into beds by themselves, as also there noticed.

The stocks, rockets, wallflowers, &c. intended for the house, should now be planted from the seedbeds, into pots of four inches diameter, filled with rich, lightish earth. Immediately water them, and place them in the shade for a few days, or till they have taken fresh root; then plunge them into the ground, in an open situation, and water them occasionally, as they may require. They will be fit to be shifted into full-sized pots in August, and will get well established before winter.

Likewise thin out the patches of annuals, sown where they are to flower, if still too thick; and stick, or otherwise support the flower-stalks of all that may need; repeat the necessary waterings; hoeing and raking the borders and walks as may be requisite.

July.

OF SHRUBS.

Of planting Evergreens.

ABOUT the last week of the month, and the first week of August, is perhaps the most successful time in the year for planting evergreens. On this subject I have fully enlarged already, and beg to refer the reader to this head in April. Now is a proper time to plant and clip evergreen hedges, as also there alluded to; and to plant and trim box edgings, as then fully directed.

Of clipping deciduous Hedges.

Those who make it a practice to clip deciduous hedges twice a-year, should, at the beginning of the month, go over them also. See April for remarks on the formation of all sorts of hedges, whether as fences or screens.

Of training climbing Shrubs.

Continue the general care of shrubs and climbing plants, as directed last month; also to twist off, or

otherwise destroy the useless suckers rising about the roots of many shrubs; to hoe and clean the borders, walks, and edgings, as they may require, and as often hinted at in the former months.

FLOWERS.

Carnations and Pinks.

The choice stage carnations should now be removed from the situation they were placed in, as directed in May, to the stage where they are to flower. Previous to placing them on the stage, let the pots be properly cleaned, and stir up the surface anew with the point of a small wedge, adjusting the flower stems to their sticks.

Any of the flowers not opening fair, should have the pod slit with a penknife, or with sharp-pointed scissars, in two or three places round the edges, and a little way down, in order to aid the petals in expanding; as otherwise large flowers often open in an irregular manner, and so are very deficient in beauty. This care to have them break regularly, must be repeated from time to time; never slitting the pod much at once, but always leaving as much of the bottom part entire as may be sufficient to keep the petals regularly together. The pod being tied round in the middle, with a small bit of mat, or green worsted, would keep it more correct.

As the flowers come into full blow, and if it be wished to preserve their beauty and delicacy to the latest, they must be shaded from the mid-day sun. The stage, if a raised one, must for this purpose be

so constructed with a canopy roof, as that a shade or awning can be drawn over it at pleasure. This curtain may be of thin canvas, and contrived to move, by the help of pullies and cords, so as that all, or any part of the stage can be shaded from the sun. If oiled, it would also answer for defending heavy rains, but in that way it is not so agreeable a shade to sit under; and on this account, some have one of each, or at least an oil-cloth for the top part, to draw on in wet weather.

Others content themselves with placing the pots on flat stages or benches, and shading or screening the flowers with mats, or canvas covers, as hinted at for choice bulbs, in April. In either way, they should generally be shaded, in sunny days, from ten till two o'clock; and on all occasions, should be defended from heavy rains and high winds. They should also be regularly and moderately supplied with water, generally once a-day.

Carnations, whether cultivated in this way, or in the open borders, are subject to the attacks of insect enemies. These are the green-fly, earwigs*, and

* Earwigs and slugs are fond of the points of the young shoots of carnations and pinks, and are very troublesome in places where they abound. To prevent them from getting to the fine stage plants, the posts, or supports of the stage, are sometimes insulated in water, being set in cisterns, or pans. If a pencil, dipt in oil, were drawn round the bottom of the posts once in two days, neither of these insects, nor ants, would attempt them. Few insects can endure oil. The smallest drop of it is instantly fatal to many kinds.

slugs above ground ; and in the soil, the wire-worm, which sadly annoy the roots. I have given ample directions for the destruction of all but the last named, in the Fruit Garden for April and July. I do not know a remedy for the wire-worm, except by carefully searching for it in the earth ; which is hardly practicable for plants grown in the open air, to any considerable extent. If that in the pots be infested with them, it should be changed entirely, as soon as may be convenient, and soil from a place distant, and quite distinct, should be used instead of it.

My father cultivated carnations most eagerly, to a very great extent, and with as much success as most people. About the year 1785, he had a most admirable collection ; and excelled all his neighbours in the real *clove-gilliflower*. A year or two afterwards he unfortunately changed the situation of his valuable collection, from the borders in front of an extensive range of hot-houses, to several large mounds of soil, brought from a certain field, to be used in composition for melons, peaches, grapes, &c. This earth was laid up in the back-garden to meliorate ; of which there was a supply for many years. He had taken some of it for his potted carnations, and found they did remarkably well in it ; and so was induced to shift the whole stock, as above stated. He had not discovered that this soil swarmed with the wire-worm. They increased to such a degree, that in two years he lost three-fourths of his stock ; shifted the remainder back to their original situation ; but unfortunately some of the soil had also

been trenched into the borders, and so ultimately was lost his entire collection. The worm I here mean is about three quarters of an inch in length, yellow, small and wirey, with a black head. The soil was a strong loam, and I have since observed that this worm often abounds in such.

Carnations and choice pinks in the open ground must also now be attended to : be regularly watered in hot-weather, the flowers trained, and assisted in the opening, as above directed, according to necessity. Pipings and layers of these may still be made; of which, see June.

Of lifting choice Bulbs.

If any of the bulbous flower-roots are yet in the ground, and if it be intended to lift them, that work should not now be delayed. See full directions on this head last month ; and also of carefully drying and storing them against the planting season.

Of lifting Anemones and Ranunculuses.

When these flowers have done flowering, and their leaves have begun to decay, they should be carefully lifted, dried, and be stored in boxes or baskets, each kind separately, till the planting season. It is proper to sift the earth in which the roots of the rare sorts have been planted, that none of them may be lost ; which is necessary on account of their minuteness, and the value of even the smallest offset.

General care of border Flowers.

Still be careful of all kinds of border-flowers, whether in respect to watering those lately transplanted, or to supporting and training such as require it; cleaning and trimming the borders and walks as already often hinted at, and destroying weeds wherever they appear. Likewise, mowing and dressing grass-edgings, if such there be to the walks or parterres.

August.

OF SHRUBS.

Of planting Evergreens.

CONTINUE to plant, if not done as directed last month, evergreen shrubs and hedges; and for full directions on the subject, see April. Finish the planting, however, in the first week, or by the middle of the month at farthest; otherwise the plants may not get sufficiently established before winter.

Of cutting Evergreen Hedges.

Evergreen hedges and box-edgings may still be

cut, if not yet done; but the sooner in the month, the better. Indeed this work should be performed at all events before the plants begin their second growth; and unless in late seasons, and in cold situations, it had better be done about the end of July, as there noticed. For the manner of forming and training all kinds of hedges, see April.

Of pruning Evergreen Shrubs.

This is a good season in which to prune many evergreen shrubs; which may be regularly thinned out, headed down, or be trimmed, according to necessity. Many of the larger growing kinds that have been planted in confined places, or too near to the edges and walks, that require to be lopped, in order to give room, or to relieve other plants, had better have that operation performed on them this month, than in October or November; a thing then often erroneously done, and by which the plants are frequently much hurt the ensuing winter.

OF FLOWERS.

Of Carnations and Pinks.

Continue to take care of the choice kinds of Carnations and Pinks, as fully directed in July.

Of transplanting seedling Carnations and Pinks.

Now plant out the seedlings that were pricked out in June, into beds, or into pots, according as it may be intended they shall be managed. Those intended for the borders may be planted as directed in March, which see; and also for the soils proper

for carnations. Those intended for the stage, or the house, may be planted into pots six inches diameter, and may be shifted into full pots about the first of next March. If strong and vigorous at this time, and if they be intended for the house, they may be put into full pots at once. These should be twelve inches diameter, and about twelve or fourteen inches deep.

Of transplanting Pipings and Layers.

The carnation and pink pipings, made about the end of June or first of July, will require to be planted out, either into nursery-beds, or into small pots, about the middle or end of the month, according to the progress they may have made. If planted out in beds, choose a warm border or other well exposed situation; plant at five or six inches apart, water, and shade them from the sun for a few days, or till they have taken new root. Those put into pots, (of four or five inches diameter,) may be placed in the shade till they have struck root, and may then be placed in a warm, sheltered situation from the winter; or may be otherwise treated, according to conveniency.

The layers, if any were made in June or the beginning of July, will now be fit for taking off; but first examine the state of their roots, in order to make sure work, and see that they be well furnished with fibrils. They may be treated, in every respect, as directed above for the pipings.

Auriculas.

Now is the proper time to make slips of the fine

stage auriculas, and, the earlier in the month, the better. Let them be carefully taken off, trim away a few of the bottom leaves, and plant them into pots three inches diameter, and four deep. Out of these they must be shifted in February, (which see,) into full sized pots, about six inches inside diameter at top, and eight inches deep. The pots must be in this proportion, deep, in order that a few small shivers, or a handful of clean, roundish gravel, may be laid at the bottom of each, to drain off the superabundant water. This should be done with all potted auriculas, as they do not like stagnated water about their roots.

Indeed this rule ought to be invariable for all potted plants. Nothing is more pernicious to plants than stagnant moisture, whether in pots, or in the open ground; and unless for *aquatics*, draining should be carefully studied, and practised, as far as the case will admit. It needs but a single comparison to be convinced of the propriety of thus draining the earth of plants in pots; which may be made by any one, and will be manifest in a very short time. There is another advantage in laying a handful of clean gravel at the bottom of the pots, as above directed, namely, it prevents worms from crawling through the hole, into the soil, at least in a great measure; and it is well known that worms very much alter and impoverish earth in which they abound, in passing it through their bodies.

The mother plants should be taken out of their pots; the balls reduced to about half their sizes; and the matted roots singled out, and properly trimmed;

paring away the stump, and retaining only the fibres. Then replace them into the same pots, if they be of the dimensions above mentioned; observing first to lay a few shivers, or some gravel at bottom; shaking the pots well, in potting, to firm the earth about them; and settling all with a moderate quantity of water. The slips should also be moderately watered; and the whole ought to be carefully shaded till they have struck fresh root.

After the plants are all potted, they may be replaced in the situation they have stood in all summer, and may there remain till next month, or till the first of October.

Auriculas will do very well in hale, rich, lightish earth; but better in soil thus composed: a third part brown loam, a third vegetable earth of decayed tree-leaves, a third part rotten cow-dung; to which add a tenth part of sharp sand, or small gravel. A quantity should always be kept ready, and it should never be used without being a year old, and being completely incorporated. In lieu of vegetable earth of tree-leaves, peat earth, that is, the surface sward of moss or moor, (not that from the pits), may be substituted.

Polyanthuses.

Polyanthuses will flower in great perfection in such soil; or in good garden earth, mixed half with peat-earth, and a moderate quantity of dung. The choice sorts in pots, may be treated in all respects as auriculas.

Of transplanting Polyanthuses.

The slips of the choice kinds made in April (which see), may now be transplanted into the beds or borders where they are intended to flower next spring. Allow them eight or nine inches between the plants each way; and if you pot them, place them in such as those for the auriculas, mentioned above; using gravel, or shivers, in like manner. The seedlings pricked out from the March sowing in June, may now also be planted out for good, into beds, as above.

Of transplanting Stocks, Rockets, &c.

The seedling stocks, rockets, wallflowers, and others, potted out in June, which see, may now be shifted into full pots, of eight or ten inches diameter. Water and shade them for a few days; then place them in a well exposed situation, till taken into the house. Plant them in rich, sound earth, not over stiff.

The March or April made slips of these, and of campanulas, that were potted out in May, may also now be put into full pots, as above. And the cuttings made in May, should either be planted out into nursery-beds, or into small pots, about the first of the month; to be again transplanted in October; or in February, if not then well rooted.

Of making slips of various Flowers.

Slips of many kinds of fibrous-rooted hardy perennial flowers may now successfully be planted, either out for good, or into nursery beds, or rows. See many kinds enumerated in February, to which

may be added others, according to fancy. If planted into nursery beds about the beginning of the month, in a favourable situation, many of them would be fit for transplanting about the end of September or first of October, and in that case would be well rooted before winter. Others, if not fit, might be delayed till February or March.

Of saving Flower-seeds.

Those curious about saving flower-seeds, must now attend to them. Many kinds will begin to ripen apace, and should be carefully sticed and supported, to prevent them from being shaken by high winds, and so partly lost. Others should be defended from much wet, such as Asters, Marigolds, and generally those of the class Syngenesia; as, from the construction of their flowers, they are apt to rot, and the seeds to mould, in bad seasons. Whenever they are thought ripe, or indeed any others, in wet weather, they should be removed to an airy shed or loft; gradually dried, and rubbed or beat out at conveniency.

Of cleaning the Ground and Walks, &c.

Continue to destroy weeds whenever they appear, and to dress off the borders, walks, edgings, &c. whether of gravel or of grass, as already often directed, in a neat and handsome manner. A garden *well* kept is *easily* kept. If weeds once get the upper hand, it is no trivial matter to subdue them. This object, therefore, should never be lost sight of for a moment.

September.

OF FLOWERS.

Auriculas and Polyanthuses.

ABOUT the end of the month, it will be proper to remove the choice auriculas and polyanthuses to their winter quarters; that is, to the stage-frame; or, if not provided with one, to a dry, warm situation, where they may be screened and defended from bad weather, by canvases or oil-cloths.

If placed in a stage-frame, it must be turned with its front due south, that the plants may enjoy the full light through winter. They must be freely exposed to the air in good weather, and have occasional, and moderate supplies of water.

If not provided with a frame, place the plants, as directed in June, in a compact manner; and so as that they may be readily defended from bad weather, when necessary. Remove the covers, however, at all times in good weather, even through winter. Frost, unless very severe, will not hurt them. Bleaching rains, and snow, are more injurious. Decayed leaves should always be displaced, and every symptom of mouldiness prevented, if pos-

sible. The surface of the earth should be frequently stirred, as often already hinted at ; at least whenever the soil at top begins to appear anywise green or mossy ; stirring carefully, and so as not to hurt the fibres.

Carnations and Pinks.

All potted carnations and fine pinks must, about the end of the month, be placed in their winter quarters ; that is, in a dry, warm situation. What has been said above, respecting auriculas, will apply here, and a repetition is unnecessary.

General care of Flowers in pots.

The choice kinds of potted plants should, towards the end of the month, be placed in a warm situation, either under a wall or hedge, or closely together, in such a way as they may be guarded from bad weather, when necessary. If the soil be not naturally dry, a bed of sand may be formed, in which to plunge them. They should be sunk, quite to the rims of the pots ; previously dressing them, and stirring the surface of the earth, as above directed for the pots of auriculas.

If the whole surface, after they are regularly plunged, were covered to the depth of two or three inches with old tanner's bark, or saw-dust of timber not resinous, none but severe frosts would hurt either the plants or the pots. By the help of mats, oil-cloth, or canvas, they might be defended from very severe weather, or too much wet. Those plants tall, or in danger of being hurt by high winds,

should be neatly dressed to sticks, with strands of fresh matting. Here they will be in store, and in readiness for removal to the house at pleasure.

Of transplanting perennial Flowers.

The slips of hardy perennials, made about the end of July or beginning of August, will be fit for transplanting about the end of the month. Such as are weak, and not well-rooted, may be delayed a few weeks, or till February. At this time also may be transplanted, any seedling perennials, sown in spring, or the early part of summer, which have, or have not been pricked out. The manner of planting must depend on fancy; and for the method, the reader is referred to this head in the preceding months.

Of digging borders, &c. in the Flower-ground.

Let all vacant places be dug over, such as the spots where patches of annuals have grown; and prepare patches for Crocuses, Snowdrops, Narcissuses, or the like, about the borders, or where it may be intended to plant them in that way. Also, get ready the beds, for all sorts of bulbs, which will fall to be planted next month. Hoe and weed all beds or patches of perennials, and otherwise clean the walks and ground, as they may require; cleaning away decayed annuals, flower-stems, or dead haulm.

October.

OF SHRUBS.

Of digging the Shrubbery.

THE borders should now be cleared from all decayed flower-stems, haulm, &c. and the whole ground of the shrubbery should be dug over, as soon as may be convenient, that it may be in a measure followed by the action of the weather throughout winter. The surface should, for this purpose, be left quite rough. For full directions respecting digging among shrubs, and on the propriety of doing so by different instruments, according to their age, see February.

Of planting deciduous Shrubs and Hedges.

Towards the end of the month, most kinds of deciduous shrubs will be fit for transplanting. In dry, absorbent soils, autumn planting is to be preferred to spring planting; but only on that particular account; for otherwise, it is best to plant just before vegetation commences. For the method of arranging shrubs, and the distances at which they should

be planted, see Section I. Also January, February, and April.

Deciduous hedges may also now be planted ; and blanks in young hedges planted in spring may be made good with stout, well-rooted plants. These voids should always be well dunged, in order to encourage the growth of the plants put in ; that they may, if possible, overtake the other plants in the hedge, so as the whole may rise a regular fence.

OF FLOWERS.

Of planting various Bulbous Flowers.

About the middle of the month, the general planting of *bulbs* may commence ; from the middle of October to the middle of November, being the best time in the year for that business.

Bulbs, in general, like a light, or sandy soil ; and for the choice kinds, it should be well prepared and enriched. But the common sorts, planted in patches about the borders of the flower ground or shrubbry, must of course fare as other flowers do. Previous to planting, however, the patches should be well stirred up, and the earth made fine, to the depth of a foot or fifteen inches. The same should be done along the edges of the borders where crocuses and snowdrops are meant to be planted in a row.

Crocuses, and *Snowdrops*, may be planted at six or eight inches off the box, four or five inches asunder, and two inches deep. In beds four feet wide, they may be planted in rows across them, at six or seven inches asunder, three or four in the row, and two inches deep. These small roots may be planted

with a blunt dibble, the ground being previously made quite loose and fine; or they may be placed in flat drills, which is a better method. Alternate beds, or alternate pieces on the same bed, of different-coloured crocuses, have a very fine effect early in spring, and are the more pleasing on account of the rarity of flowers at that time.

Fritillarios, Irises, Narcissuses, and Common Tulips, may be planted in patches of three or four roots in each, at eight or ten inches apart in the patch. The groupes or patches may be distributed as fancy shall direct. In planting these, a spadeful should be lifted and be laid aside; then stir and break the earth fine, to the depth of a foot; place the roots and cover them with the earth laid aside, to the depth of four inches. This is a better method of planting, than by the dibble; as in using it, the roots cannot be so securely placed, there generally being a hollow left under them.

These, also, may generally be planted in beds four feet wide, with alleys of eighteen or twenty inches between them. The ground should be dug or trenched, to the depth of eighteen inches, and broken as fine as possible; or if it be shallower, to its full depth. Mark off the beds and alleys, and from the former, skim off three inches of the surface, into the latter. Then place the roots, either in lines, lengthwise, nine inches asunder, and six in line; or at seven or eight inches square; pressing them gently down with the hand. Cover them evenly, to the depth of four inches, which will make the alleys two or three inches lower than the beds. The beds should be

gently rounded, from the middle to either side; but this should be done before placing the roots, that they may all be alike covered; else those at the sides would be too shallow, and those on the centre too deep. After all is finished, the surface should be raked smooth, and gently rounding, as said above, to shoot off the wet; the middle being raised about three inches higher than either side.

Of choice Tulips.

For the choice sorts of tulips, however, a better and richer soil may be prepared, and they may be allowed more room than above the roots. Tulips like a sound, rich earth, rather light than otherwise; and if it be wished to have them flower in perfection, the ground, if not naturally good, should be enriched with compost of earth and dung, well incorporated. It should be made good, to the depth of fifteen or eighteen inches; then place the roots, as above directed, allowing them ten inches between the lines, and seven or eight in line; or place them at nine inches square; or they may be placed a quincunx, at ten inches apart. These distances to be reckoned from centre to centre of the roots; and the depth, in all cases, to be four inches.

If it be intended to *screen* these flowers in spring, as directed in April, the alleys between the beds should be thirty inches, or a yard-wide. Observe, before placing the roots, to form the bed roundish, as above directed; and also in the dressing it off afterwards; making the middle about three inches higher than the edges.

Hyacinths.

The choice Hyacinths may be planted very much as above directed for Tulips, with respect to distance and depth ; but they require a very different kind of soil. It should be many degrees lighter ; in short, a rich sand. If sea-sand can be procured, so much the better ; but otherwise, use clean pit-sand, or small river gravel. A mixture of neats, or hogs dung, with that of the stable ; a large proportion of vegetable earth of decayed tree-leaves, being well decomposed ; and an ample quantity of sand, may, with common garden earth, be made to form a good soil for the Hyacinth, thus : good earth, one-third ; sand, a third part ; dung, as above, a sixth ; and vegetable earth, a sixth part.

Polyanthuses and Italian Narcissuses.

These may be planted, in all respects as hyacinths, above described ; but they do not require so much room, by an inch or two. They like a soil exactly similar to that for hyacinths.

Of Jonquils.

Double and single Jonquils may be planted at five or six inches apart, and three inches deep. They like a stronger soil than the above, more resembling that for tulips ; but they will do very well in a medium soil between that for tulips and for hyacinths. Jonquils do not flower so well the first, as the second or third season after planting ; and therefore should

always be let stand two or more years in the ground. See June.

Many other bulbous flowers might be added to these treated of above; but as the culture is so very similar, it would only be wasting time to say more of them, than that they should be allowed *distance* according to their kinds, and should be planted deeper or shallower, according to the size of the roots. A covering of two inches for the smallest, and of four for the largest, will generally answer; and so in proportion.

I shall here enumerate a few of the different kinds: Autumn Crocus; Crown Imperial; Bulbous Fumitory; Grape, Musk, and Wood Hyacinths; Lilies, the White, Orange, Sword, Martagon, and Asphodel; Star of Bethlehem, many varieties; Summer Snowdrop. Fancy will best direct the manner of their arrangement. They may be planted in small patches, in larger groups, or in beds.

Anemones and Ranunculuses.

Some plant these before, and some after winter. They will do in either way; but if the soil and situation be not very unfavourable, that is, cold, bleak, and wet, the best time is now, or in the beginning of November. In a bleak situation, or a wet soil, delay planting till February. The treatment of these flowers is so similar, that, in order to prevent repetitions, I have here classed them.

They like a rich loamy earth best. In light soils they often languish in spring and early summer droughts, and sometimes do not show their flowers

fully. To garden earth, therefore, of a middling texture, should be added some strong clayey or loamy soil; and it should be well enriched with the cooler dungs; that is, of neats, or hogs. The whole should be well mixed and incorporated, to the depth of fifteen or eighteen inches. The roots may be planted in four-foot beds, with broad alleys, as for the choice tulips. Form the surface level, in order to detain, rather than throw off moisture; and throw up the alleys, about two inches deep. Then draw flat drills, exactly two inches in depth, at six inches apart, across the bed. In these place the roots, claws down, at the distance of four inches from each other; covering carefully, so as not to displace them, and so as that they may be buried an inch and a half, as near as possible. Finish all with the rake; but the surface of the beds should be quite level, and not rounded, as for bulbous flower-roots.

Of trimming and dressing the Flower-ground.

After the plantations of bulbs, &c. are finished, every part of the flower-ground should be put in order. Most annual flowers will, towards the end of the month, have passed the season of their beauty. We then, being no longer charmed by it, ought not to be distressed, or disgusted with its decayed remains. Therefore, remove all decayed annuals, flower-stems, or haulm, and trim off the borders and walks in a neat manner; dressing this department in its winter garb; which will not require to be changed, till spring return.

November.

OF SHRUBS.

Of planting deciduous Shrubs.

IN light, absorbent soils; all kinds of deciduous shrubs may now be planted, if the weather be favourable for the operation. But wet soils, in cold situations, should not be planted till spring. Nothing can be more hurtful to a plant than, at this season particularly, to bed its roots in mortar; by which the tender fibrils are ever afterwards cramped, if they do not actually perish in consequence. Even light soils, therefore, should not be planted at this time, if they be in a very wet state. The mould, at the time of planting, should be so far friable as not to adhere to the spade; which indeed is a good rule in planting at any season, or in any soil. For particulars on the arrangement and planting of shrubs; see Sect. I. January and April.

Of planting and beeting deciduous Hedges.

Deciduous hedges may also now be planted, and

directions respecting them will be found in January and in April. Young hedges, planted in spring, may be beeted up with stout plants, as noticed last month. Observe to dig and dung the voids well, in order to encourage the growth of the plants put in at this time, that they may keep pace with the others next season, and that the hedge may be equally good in all parts; which is a more important matter with regard to a fence-hedge, than if it be merely a screen.

Of digging the Shrubbry.

If this work have not been completed, as directed last month, let it be got forward without delay, that the ground may be the better fallowed by the action of the weather in winter. Observe to lay the surface up in a rough manner, as before hinted at, in order to answer this purpose more fully.

Of potting flowering Shrubs for forcing.

This is a very proper season in which to lift and pot shrubs for forcing, afterwards to be placed in the green-house, or in the drawing-room. Many kinds of flowering shrubs are potted for this purpose, and are forced with success in the stove, peach-house, grape-house, &c. Such as roses of many kinds; Persian and Common Lilacs; Syringa; Dwarf Almond; Mezereon, red and white; Honey-suckles; Hypericum frutex; Jasmines; and many others, according to fancy.

They should be lifted with good roots, and as much earth as will readily adhere to them; and

should be put into good sizeable pots or tubs, according to their kinds, and the respective sizes of the plants; using fresh, moderately rich scil in potting them, afterwards giving each a little water to settle the earth about their roots. The pots may then be plunged in any dry situation, up to their rims in the earth, and may be taken into the stove or other forcing-houses, in various successions, or otherwise, as shall be thought most proper, in order to prepare them for the green-house, or the parlour. Their treatment need not here be noticed, further than to observe, that while in the forcing-house, they should be liberally supplied with water, and should be placed in the most airy part of the house. When removed to the green-house, or to the drawing-room, their further treatment will there be found, in common with other plants.

Care of Grass and Gravel Walks.

At this season, the worms are apt to cast very much; and if the grass walks be not kept well dressed, they are very uncomfortable to walk upon. They should therefore be well polled with a long pliable pole of ash or chesnut, to break and disperse the worm casts; and should be swept and rolled once in two or three days, or at least once a-week, while the weather continues open. This treatment will render them clean, and firm to the foot. Verges, and smaller pieces of grass, immediately in sight from the walks, should also have occasional dressings in the same manner, by which they will appear neat and pleasant.

Still continue the care of gravel walks, whether with respect to hand-picking, hoeing, or rolling, while the weather continues open. Gravel walks that are liable to be overgrown with moss, should be more frequently hoed than others, in order to destroy it, this being the chief season of its growth.

FLOWERS.

Care of choice Bulbous Flowers.

The beds of choice Hyacinths, Jonquils, Polyanthus-Narcissuses, Tulips, &c. planted last month, should, in the apprehension of a severe winter, be covered for their preservation. This is often done by canvases or mats, suspended over hoops, in the manner specified in March and April; but by being too much excluded from the action of the atmosphere, the roots are frequently injured. It is, besides, a method both troublesome and expensive, to cover and uncover them as they ought to be, in the course of a changeable winter. It is less so, and perhaps they may be as effectually secured by a covering, to the depth of two inches, of saw-dust not resinous, and fine sheer-sand, mixed in equal quantities. Or, they may be covered, to the depth of three or four inches, with one-fourth part sand, and three-fourths rotten stable-dung, well mixed together; which, besides preserving, would act as a manure to them.

Of planting Perennial Flowers.

Many kinds of hardy border flowers may now be planted, if the soil and the weather be dry. They should, however, be planted as early in the month as may be convenient; but if that cannot be done, it would be advisable to delay the business till February or March. See many kinds enumerated in these months.

Of potting Herbaceous Flowers for Forcing.

Many kinds of herbaceous flowers may now be put into pots, to be forced for the green-house or the parlour, in the stove or other forcing compartments. In the course of the kalendar, I have noticed the treatment of the choice kinds for this purpose, such as campanulas, carnations, rockets, stocks, &c. but many other plants may be potted at this time, if thought proper, and they will still succeed very well. Let them be carefully potted, and be treated as directed for those in other respects; plunging them in the earth, &c. as noticed in September, and taking them into the forcing-houses in divisions; for the purpose of having them flower in succession.

Care of choice Plants in Pots.

Frequently attend to the choice auriculas, carnations, stocks, &c. placed in their winter quarters in September or last month, and clear them from weeds, litter, or dead leaves. Likewise, observe to

stir the surface of the earth in the pots, if it become hard, or get covered with green mould. See more full directions respecting these plants in September, and of their treatment through winter.

Of dressing off the Flower-Ground.

If this have not been done for the winter, as hinted at last month, it should not now be delayed. All vacant ground should now be turned over, and the borders and walks should be properly trimmed; of which see October.

December.

OF SHRUBS.

Of planting Deciduous Shrubs and Hedges.

THE planting of deciduous shrubs may still go forward, provided the soil be dry, and the weather be open. See last month, and January, for particulars on this subject; also Section I.

Deciduous hedges may likewise be planted under the same circumstances, whether as fences or screens; of which see January and April.

Care of tender Shrubs.

Many rare favourite shrubs, whether in pots, or trained against walls, houses, &c. are liable to suffer in severe winters, if not sheltered by some means or other. Those in pots should be placed in frames, cold pits, or otherwise, in such a manner as that they may be defended from inclement weather by glasses, or by being hooped over, and matted when necessary. Perhaps as good a way as any, is that recommended for choice flowers in pots, in September, in cases where there is not the conveniency of a frame or pit.

Tender shrubs in the open ground, if in wet, spouty soil, should be mulched round with a little litter, in order to preserve their roots from the effects of intense frost, which takes the more severe hold of plants so situated. They should also be firmly staked, especially if new planted, that their stems may not be chafed by the action of the wind, just over by the surface of the earth, when encrusted by frost; a thing that often happens to tender barked plants, if placed in wet or stiff soils.

Tender shrubs trained against walls, houses, or the like, should also be mulched at root, and in severe frost, should be matted up for their preservation. For particular choice plants, a frame might be fitted to the wall, over which mats or canvas might be placed every night, and in bad days; for it is advisable to admit free air to such plants in good weather, especially evergreens, which otherwise would be blanched. See hints on the con-

struction of such a frame, in the Fruit Garden for April, article, *Defending Fruit-tree Blossoms*; which hints may either be followed, or may be improved, so as to answer the purpose here in view.

Of clipping and dressing Hedges.

Deciduous hedges of all kinds, whether fences or screens, may now be cut and dressed. This is very fit work for winter, and is generally reserved for frosty weather, when little else can be done. By turning to the article, *Training Hedges*, in April, the reader will find remarks on the formation of all sorts of hedges, and on training of them afterwards.

OF FLOWERS.

Care of choice Bulbs.

If the choice bulbous flower-roots have not yet been covered, as directed last month, that should not now be delayed, as the setting in of severe weather might very much injure them. These roots are liable to be destroyed by mice in winter, and if they abound in the garden, care should be taken to entrap them. When snow is on the ground, their roads are easily distinguished, and at such a season, they greedily take the bait. Some choose to destroy them by poison, which, however, is a dangerous method, and is often attended by disagreeable accidents.

General care of tender Flowers.

Attend to all tender plants in pots, which have been placed in frames, cold pits, &c. where they

may be defended from bad weather by glasses, or by hoops or mats. They should have air every good day, and, in moderate weather, should be entirely exposed to it; covering them up, however, in bleaching rains, snow, and in hard frost.

Of preparing Composts, &c.

Composts for many flowers may now be prepared, and may be trenched over, in order to be meliorated by winter frosts. For this purpose, the compost should be extended in long ridges, each kind separate, so as to give as much surface to it as possible; and it should be repeatedly turned in the course of the winter months, observing always to reverse the surface and centre of the ridges or heaps.

Any other work in this department, advised to be done last month, may be continued, or that directed to be done in January may be anticipated; provided the state of the weather be such as to permit its being executed with propriety. Many things may be done; but many things had better be left undone, than be ill done; of which sowing and planting are chief.

THE
GREEN-HOUSE
AND
CONSERVATORY.

THE HISTORY OF THE

WARRIORS

OF THE

THE
GREEN-HOUSE
 AND
CONSERVATORY.

SECT. I.

ON THE SITUATION OF GREEN-HOUSES AND CONSERVATORIES,

THE most proper situation for these compartments, in an extensive and well laid out place, is certainly in the Shrubby, or Flower Garden; and not, as they are very generally to be found, in the kitchen-garden, combined with the forcing-houses. In smaller places, no doubt, they must be situated so as to suit other conveniencies; and we often find them connected with the dwelling-house.

In this latter way, they may be very convenient, especially in the winter season, and may answer for keeping many of the hardy kinds of exotics; but it is seldom they can be so placed and constructed, on account of their connection with the building, as to

suit the culture of the finer sorts, and bring them to a flowering state. Such may rather be termed Green-rooms, as being connected with the house, and are foreign to my purpose here; which is to treat of the above compartments, as being a distinct branch of gardening; the more especially having, in a recent publication, the *Villa Garden Directory*, noticed the management of shrubs and flowers kept in the house.

Supposing, therefore, that the Green-house, and Conservatory, are to be detached from the dwelling-house or other buildings, and are to be placed in some convenient and sheltered situation in the Pleasure Garden, exposed to the south, south-east, or south-west sun, I shall offer, in the following sections, some remarks on their construction.

SECT. II.

ON THE CONSTRUCTION OF THE GREEN-HOUSE.

IN the construction of green-houses, fancy may be indulged, and a greater scope may be allowed to taste, than in the construction of forcing-houses. These are generally confined to one object, the production of certain fruits in perfection; which renders the observance of forms and dimensions in their construction more necessary than in that of the green-house, where a variety of plants of different habits are to be cultivated.

Nevertheless, in order that these plants may ge-

nerally thrive, there are certain rules to be observed, and errors to be guarded against, which I shall briefly point out.

Green-houses with upright fronts, and with perpendicular lights only, whether the columns that separate them be of wood, or of masonry, are the most objectionable; as the plants in such are always drawn up weak, and are distorted by continually stretching towards the light. Neither do they enjoy the genial effects of the sun, except in the winter months, when his rays, though feeble, strike horizontally on the windows, and for a few hours in the middle of the day perhaps, shine on the low plants, and those placed most forward. If such houses be very wide, they are the most objectionable on that account; as, in that case, the plants placed near to the back of the stage are never visited by the rays of the sun, and enjoy but little light to what they may require*.

But such green-houses may be, and indeed have been much improved, by taking off their leaden or

* Such, generally, were the primitive green-houses in this country, and such may still be found in almost every county; many of which look more like tombs, or places of worship, than compartments for the reception and cultivation of plants, which ought always to be light, airy, and cheerful. We sometimes find them so situated too, as that the rays of the sun can hardly ever beam upon the house, much less on the plants contained in it; being often set to improper aspects, and frequently shaded, or almost covered up by trees, or by tall shrubbery.

or slated roofs, and by substituting roofs consisting of wooden framing and glass, for the admission of sunshine and perpendicular light. But still they are so far defective, as that, by their great height, the plants are much more drawn than they ought to be, or would be, in a lower, and better constructed house.

Houses that are open on the front only, although they have sloping lights on the roof, are next to be objected to; as the plants in such are necessarily more drawn and distorted than as if the ends were also glazed. If such be not placed among other buildings, so as that they cannot be altered, they might be very much improved by pulling down the close ends, and by substituting glazed lights; which, if they be of a moderate height, would render them next best to such houses as are described below.

But a *complete green-house*, being quite detached from other buildings, should be glazed on all sides. It may be circular, oval, hexagonal, octagonal; or with two straight sides, and circular ends,—which I think the best form of any:—the next best, an octagon whose sides are not equal, but with two opposite longer sides, and six shorter sides; three and three opposite, forming, as one might say, an *angular oval*; the ends being angular, instead of round. In either of these last-mentioned forms, the stages and plants may, at least in my mind, be more tastefully arranged, than in any other. Granting either of these cases,

The house should be about thirty-six or forty feet long, eighteen or twenty feet wide, and ten, or

at most twelve feet high, above a given level-line for its floor. The parapet all round to be a foot or fifteen inches high, and the upright glasses placed on it, four, or four and a half feet at most. For it is of importance, for the sake of the finer kinds of plants, and in order to have all kinds grow bushy, and flower while young and small, (in which state they are certainly most attractive and pleasing,) to keep the roof glasses as low as possible;—just allowing sufficient head-room to the tallest person when walking in the alleys.

The furnace and stock-hole may be placed at either end, or at either side, as may be most convenient; and they should be sunk under ground, and be concealed*. The flue to be constructed in all respects as described in Section I. of the Forcing Garden, page 281.; to run parallel to, and be separated from the parapet by a three inch cavity; its surface being level with the top of the parapet, and being crib-trellised for heaths, Botany Bay, and other rare plants. A walk thirty, or thirty-six inches broad, to be conducted all round within the flue; within which to be placed the stages for the more common, and the taller plants; being raised

* The smoke, in this case, should be conducted by a funnel under ground, to some little distance, and should be voided by a stalk about two yards high; which would give sufficient draught to the furnace, and which might be concealed by a few thick-growing evergreen shrubs. If a tea-room or other building be near, the smoke may be conducted to, and be voided by its chimney.

in the middle, and falling to either side and end ; corresponding with the glasses, though of course not so steep.

A row of columns should be placed in the centre, in order to support the ridge of the roof ; to which climbing plants might be trained in various forms, and might be hung in festoons from column to column at top, or otherwise, as may be dictated by fancy. The front of the stage all round, should be raised about eighteen or twenty inches above the walk, in order to raise the whole of the plants placed on it sufficiently near to the glass : thus forming the walk into a deep alley ; the person walking in it having a narrow border of the finer and smaller plants on the one hand, and a bank of the more common and larger kinds on the other ; than which, when the plants are healthy and thriving, few scenes can be more pleasing.

The aspect of such a house should be towards the south ; that is to say, it should stretch from east to west, or as nearly so as circumstances will permit. It may have an entrance on the south side, or one at either end, as shall be most convenient and suitable to its connection with the walks of the shrubbery or parterre in which it is placed.

If a green-house must necessarily be attached to a wall or other building, it might be constructed very much as above ; with this difference, having one of the ends as it were cut off ; in which case, it should be placed with its circular end south, or towards that point, and the sides pointing east and west. This I should consider as the *second best*

constructed green-house, and in which, excepting in the above described house, the plants would enjoy the fullest share of sun and light.

In either of these houses, and also in that spoken of below, a sufficient number of the upright and sloping sashes should be made moveable, for the admission and regular circulation of air in the better seasons of the year; and ventilators (see Section I. of the Forcing Garden) should be placed at regular distances all round, for the purpose of airing and ventilating them in the winter months, or at times when it may not be safe to open the lights.

Such a house as either of these, would form a very complete receptacle for a handsome and pretty extensive collection. But for a full collection, and particularly in order to answer the purposes of propagation, a smaller house, that is, one lower and narrower, of whatever length, would be necessary, besides the above green-house. Such should be contrived, so as to have the plants quite near to the glass; being placed on flat, or flatish stages, answerable to their respective sizes; the flue running under the stage, and having a narrow, sunk alley behind, just wide enough to allow a person to sort and water the plants with freedom.

A house of this kind should have no upright glasses in front, as the foremost stages should be nearly level with the wall-plate, or sole of the rafters. The ends should be glazed, however, in order to admit the morning and afternoon sun; but the back, or north side may be close. It should not exceed nine or ten feet in width; nor should the back-wall be

raised more than four and a half or five feet above the level of the parapet. The door or doors may be placed at either end, or in the middle of the back-wall, if the flue be not returned in it. Indeed, with respect to the flue, it is better that it double under the stage; in which way it would have most power over the temperature of the house, with least waste of fuel.

SECT. III.

ON THE CONSTRUCTION OF THE CONSERVATORY.

VERY much of what has been advanced in the preceding section will apply here, particularly as to the length, breadth, height, and form of the green-house most approved. A conservatory in form of the other, or next best constructed green-house, would also answer very well; but in this respect, as in the construction of the green-house, much latitude is to be given and taken. It is necessary, however, in order that certain points may be specified, and in order to prevent repetitions, to condescend on some particular shape and size. I shall therefore suppose the house is to be of the form and dimensions of *the Complete Green-house*, described above; that is, with respect to its exterior appearance. First, then,

Instead of the flue being conducted by the parapet, it must be placed under the walk, having proper cavities at each side, to let the heat escape

through holes made in the earthen tiles with which it should be covered, as is done in many stoves. As climbing and other plants, such as passiflora, bignonia, &c. are to be, or should be trained up the rafters, and which should be planted inside the house; the parapet should be placed on pillars, (as the Grape-house, described in Section I. of the Forcing Garden), in order that their roots may have access to a border made outside the house for their better support. A narrow border, however, of about eighteen inches, should be made inside the parapet; in which these and other plants, such as double flowering myrtles, the neater sorts of geraniums, the Indian rose, fuchsia, Botany Bay plants, several bulbs, and other dwarfy showy things, may be planted.

This border takes place of the flues, as in the Green-house described above: the walk or alley may be of the same breadth, that is, thirty, or thirty-six inches; and,

The space in the middle of the house, occupied by the stage, becomes a pit for plants, such as oranges, lemons, shaddocks, palms, myrtles, olives, and many others; which pit should be laid dry and comfortable below, and should be about two feet deep under the level of the walk, or ground-level of the house. It should be separated from the flue by a retaining wall raised to the same height, and a three inch cavity, in order that the heat may escape by it from the flue, as observed above. A row of small pillars should be built from the bottom of the pit to its surface, on which the columns may be

placed that are to support the roof, and to which certain plants may be trained, as noticed in last section.

In order to give variety to this kind of conservatory, a cistern, of lead, or of masonry, may be placed at each end, or otherwise, as shall be thought more proper, in which to grow aquatic plants; as nelumbium, nymphæa, menyanthes, pontideria, &c.: thus making it to answer the double purpose of a Conservatory and an Aquarium.

In a house of this description, the flue being sunk, and being removed from the parapet by an intervening border for small plants, it would be right to fit green baize, or other *woollen* curtains or blinds to the upright lights, the better to insure the safety of the plants in winter. These should be so contrived as to shade the plants as little as possible when undrawn, by being kept tight to the sides by wires, or small rods, if curtains; or by being rolled close up under the beam, if blinds. In either case, they would be only necessary for two or three months in winter, and so should be contrived to remove at pleasure, that they might be laid aside in the spring.

Blinds or curtains for the roof-lights would not be necessary, particularly if the house be close glazed, and if the laps of the panes be puttied up; as the heat always floats, and every species of hot-house is warmest at top; more especially such as rise to a ridge from both sides, as this is supposed to do.

SECT. IV.

OF A GREEN-HOUSE AND CONSERVATORY
COMBINED.

BESIDES the above-described *distinct* Green-House and Conservatory, there is a sort of house contrived to answer the purposes of both, and to answer the purses of those who would have the greatest variety in this branch of horticulture at the smallest expence.

Such a house, if it be intended more as a green-house than as a conservatory, should be constructed in all respects as the complete green-house above described, with respect to its external appearance, (though varied perhaps in its dimensions,) the situation of the flue, and of the walk. But the space within the walk, occupied by the stage, should be partly converted into a pit for plants, or into two pits for plants, as may be thought best, thus: A pit in the centre, with a semicircular stage at each end, or a pit at each end, with a stage in the centre; the flue all round to be crib-trellised for heaths, and climbing plants to be trained up the columns, &c. as formerly hinted at.

But if the house be intended more as a conservatory than as a green-house, it should be constructed, internally, as the conservatory described in the last section, with the flue sunk under the walk, and a border between it and the parapet, for small plants;

the inner space being divided into a pit or pits, and a stage or stages, as above. Some who wish to make the most of this kind of house, besides having in it a pit, a stage for plants, &c. train vines up the rafters for the purpose of having a few late grapes. There is no impropriety in this, provided the vines be kept to the rafters, and be not allowed to spread too far over the lights, so as to shade the plants over much.

In this case, a deep, rich border, must be prepared outside, for the vines; for which the reader may see full directions, by turning to the article Grape-house, in Section I. of the Forcing Garden. The vines should be planted inside, in the narrow border behind the parapet; their roots having free access to the border without, the parapet standing on a row of pillars. The kinds of grapes fittest for such a situation, or for a house considered more properly as a green-house, in which also vines are often trained, are, the White Sweet Water, the White and Royal Muscadines, and the Black Hamburgh. These kinds grow more freely, and do better in a low temperature than any other, at least that I am acquainted with.

January.

THE GREEN-HOUSE.

Of the Temperature of the Green-House.

THIS compartment requires particular attention at this season of the year, in order to preserve the health of the plants in general, and carry the more tender kinds through winter. In the first place, then,

The temperature must be so regulated as to suit the nature of the plants in a general sense; the more delicate kinds should be placed nearest to the furnace or furnaces, on the crib-trellis above the flues, &c.; keeping the more hardy plants in the interior, or colder parts. A high temperature is not necessary for the generality of green-house plants; on the contrary, it might very much injure them, by causing them to push feeble shoots at an improper season,—a season in which they would neither acquire colour nor strength, for want of light and sunshine. Let the temperature, therefore, be so regulated by fire-heat, as that the mercury may stand about 45° , (the thermometer being placed in the

centre of the house,) at the times of regulation, suppose seven or eight in the morning, and eight or nine in the evening; working as steadily as possible, and being careful to guard against sudden changes in the weather.

Of the admission of Air to the Green-House.

Air must be introduced every day, if the weather be not over severe; but even in pretty hard frost, in the time of sunshine, and for two or three hours about the middle of temperate days, the house should be aired by the sashes, or by the ventilators, as directed in the Forcing Garden for January and February; which see. In continued dull weather, pretty strong fires may be made in the morning; in order to dry off damp, and to allow a freer circulation for a few hours, than usual.

This treatment should be repeated occasionally, and may be varied according to circumstances; but it is necessary to the preservation of many plants at this season, and so ought to be practised to a certain extent. At such times, and in better weather, air should be admitted so freely, as to keep the mercury in the thermometer down to 40° ; for if frost be just excluded for this short period, none of the plants can be hurt.

Of Watering.

Water must be given with great caution at this season. Few of the plants will require much, and some hardly any; but all must be attended to, and have water according to their wants. Those placed

nearest to the furnaces, above the flues, &c. may require a little once in two or three days, and others placed in cooler parts, only once a-week or ten days; the succulent kinds, perhaps but once in two or three weeks. But particular attention should be paid to the state of health, and of growth in which the plants respectively are, in the application of water at this season; otherwise much mischief may be done, and many plants may be ruined.

Plants in a state of absolute inaction, require little water at any season; and none at this period, further than merely to keep the earth about their roots from becoming perfect dust, by the occasional application of a very small quantity at root. Such should have no water over the foliage; nor indeed any of the others at this time, unless merely to clean them from insects; which, if they be not very dirty indeed, had better be delayed till next month, when the sun will begin to have more power and a better effect in drying their leaves.

By the help of a small bellows, most plants may be kept clear of dust; which is a mode of cleaning them, preferable to that of watering or sponging, at this particular season. This instrument should therefore be employed as often as occasion shall point out.

Be careful, however, to divest the plants of all dead or damped leaves, as they appear, and to wipe up spilt water; for damp induces damp, and decay follows of course.

THE CONSERVATORY.

Of the Temperature and Admission of Air.

Very much of what is stated above, respecting the management of the green-house, will apply here.

The temperature ought to be the same in either compartment, while fire-heat is necessary; and *air* should be admitted in the same manner, to an equal extent at least; the generality of the plants being supposed fully as hardy in this compartment as in the green-house.

Of Watering.

The quantities of water to be given, and the frequency of watering, must be regulated and varied, according to the state of the borders. If these be of a sufficient depth, and if they have been properly composed, (see Sect. III. and March, for this compartment) little water should be necessary at this time of the year. Individual plants, however, may require more water, and that oftener too, than others; and the border about their roots should be kept moist, or more dry accordingly; but it is safer to keep the borders rather dry than moist at this time.

The syringe should not be applied to the foliage at this season, for the reasons given above; and unless the plants be very dirty, or be much annoyed by insects, the leaves need not be sponged till next

month, when directions for that operation will be given.

Of screening the Plants in bad weather.

If the weather be severe, be attentive to draw the side-curtains at night, (see Section III.) lest the plants in the border behind the parapet be affected by frost ; but let them be undrawn betimes in the morning, for the free admission of light, which is the more necessary at this dark season. Blinds or curtains, as noticed in Section III. are very useful, and also very safe for plants situated near the upright glasses, in cases where the flue is removed to a distance from them ; and they may easily be fitted to the lights of any house not provided with them. Blinds, however, neatly mounted on rollers, and fixed under the beam, are to be preferred to curtains that draw to one, or to either side, being less liable to shade the plants, when rolled up in the day, than the curtains are, when drawn *.

* The patent window blinds of Mr James Thomson of Edinburgh, are the most complete thing of the kind I know, and might answer in every respect for the lights of hot-houses.

February.

THE GREEN-HOUSE.

Of the Temperature, and the Admission of Air.

THE directions given last month, respecting the *temperature*, and *airing* of the house, are to be continued; with the difference of admitting air more fully as the season advances, and according to the power of the sun on the glasses, which will now begin to be considerable. In tolerably mild days, in the time of sunshine, air may be admitted by the sashes, so as to keep down the mercury to within a few degrees of the fire-heat medium, 45° , as noticed last month; and in worse weather, by the ventilators, to about 50° .

Of Watering.

Water must still be cautiously given, as noticed particularly last month, especially to plants not in an active state, and to all those of a succulent nature. Plants beginning to vegetate and shoot, however, must have a more liberal supply, and should

be attended to every three or four days, or oftener if needful. Such as are placed on the flues may require a little every day, or every two days, on account of their drier and warmer situation; but all the plants, in whatever situation placed, should be regularly looked over, and have water, less or more, as they may stand in need of it.

Bulbous flowers in pots, as Hyacinths, Polyanthus-Narcissuses, &c. will require regular and free supplies of water; more especially those farthest advanced, and coming into flower. Such as are in glasses, should have the water changed once in four or five days, or perhaps only once a-week, which must be regulated according to the state of their growth; never, however, allowing their fibres to knot or cluster, which they always do, if the water be not regularly changed.

Of cleaning the Plants of Insects.

The plants should be revised for the purpose of cleaning them from dirt collected in winter, and from insects;—about the middle or latter end of the month is a proper time. The best way is to do this individually, and not collectively, as often superficially done, to very little purpose. It is certainly better to clear the plants completely at once, though it should cost a day's work or two, than to be always cleaning, and still never be clear from insects of one kind or other.

Those plants which the coccus or scaly insect chiefly annoys, as myrtles, oranges, olives, and other hard, smooth-leaved kinds, should be carefully wash-

ed, stem, branch, and leaf, with soap and soft water; using a bit of woollen rag tied on a small stick, and observing to wash or rub well into every angle of the stem and branches. If any of the plants have been trained to sticks or poles, these should either be completely washed, as above, or be new painted; and in dressing the plants to them again, observe to tie with fresh worsted or matting: for the eggs and larvæ of the insects are as apt to be lodged on these, as on the foliage or branches. Every plant, when it has been gone over with the soap-suds, should be well syringed with pure water, or otherwise be washed quite clean, in order to prevent the accumulation of dirt on the leaves, which would else be encouraged, on account of the glutinous nature of the soap.

Other plants, of softer, downy foliage, as geraniums, ononis, phlomis, &c. are subject to the attacks of the green-fly. Such should, therefore, if affected by that insect, be placed in a hot-bed frame, &c. (they may be placed upright, or be laid on their sides) in a compact manner, where let them be fumigated for half an hour with tobacco. The frame should be well matted up, or be covered with an oil-cloth, in order to prevent the smoke from escaping, as much as possible. After the plants have remained here an hour, they should be well syringed, to clean them of dust collected in winter, and of the dead insects. Then shake them well, in order to prevent the water from lodging on their leaves, and to prevent the bad effects of damp, which otherwise might hurt them at this early period. Replace them

on the stages, &c. as before; observing to place their worst, or mis-shapen sides towards the sun, that they may be drawn into proper form again.

I think this method of fumigating the plants in an empty frame, or the like, preferable to that of fumigating them in the green-house as they stand, (unless the whole, indeed, were infected,) on a double account,—it can be more effectually done, and at less expence for tobacco.

THE CONSERVATORY.

Of the Temperature, and the Admission of Air.

With respect to the temperature and airing of the conservatory, there should be no difference between it and the green-house at this, or indeed at any other season; except for a few weeks, perhaps after a house is planted, of which see next month. The reader is, therefore, requested to keep this in mind, in order to prevent unnecessary repetitions.

Of Watering.

What was said last month, with respect to the application of water to the plants in this compartment, will suffice for this; with the difference of this remark, that as the season advances, and as the plants begin to shoot, water must be more freely, and more frequently applied. The borders, however, should by no means be kept in a moist state as yet, but rather the contrary; as a mass of cold, damp earth, might chill the roots of many tender plants in a

greater degree than as if they were growing in pots.

Neither should the syringe or engine be yet applied to the foliage ; but it may towards the latter end of the month or the beginning of March ; as the sun will then begin to be powerful, and have the effect of evaporating the moisture lodged on the tender or more downy leaves, which otherwise might sustain injury.

Of cleaning the Plants of Insects.

About the middle or latter end of the month, the plants may be revised for the destruction of insects, as above directed for the plants in the green-house. Those affected with the coccus or scaly insect, must be carefully washed with soap and water ; observing to wash the leaves with pure water afterwards, and to shake the whole plant well, in order to dislodge moisture from the branches.

If the green-fly prevail in the house, or indeed on any of the plants, recourse must be had to the fumigating bellows and tobacco, which is the best, and most speedy remedy ; also, for the thrips, if it be found on the shoots or leaves of any of the tender plants. In these cases, the house should be fumigated, in all respects as directed for the cherry-house, in the Forcing Garden for February, p. 340, which see ; and which should always be repeated on their re-appearance, or very soon afterwards.

These fumigations may be performed, with safety, at any day in the year ; and washing with soap suds, for the destruction of the coccus and chermes,

at any time from the middle of February till October, on the more tender plants. On myrtles, oranges, and the hardier kinds, if very dirty, it may be done at any time.

March.

THE GREEN-HOUSE.

Of the Temperature of the Green-House.

LITTLE fire-heat will now be necessary, if the weather be moderate. The days lengthen fast, and if frost be just excluded in the night, it is enough. The sun will keep up a sufficient degree of heat in the day, without the aid of the flues. A small fire made about five or six in the evening, will generally keep the mercury at, or about 40° , till morning; except perhaps in uncommonly bad weather, at which times the operator must be on his guard, and by help of the furnace, must ward off danger.

Of the admission of Air to the Green-House.

Air should now be freely admitted every day by the sashes; giving large portions in sunshine, from

ten till two or three o'clock; generally opening them a little way about eight or nine, and shutting up about four or five. Thus giving and reducing air by degrees, as frequently hinted at in the Forcing Garden for March and April: observing to divide the quantity admitted equally in all parts of the house, as there also particularly noticed, that there may be a free and regular circulation among the plants.

Of Watering.

Water must now be more freely applied than heretofore directed, to all kinds of plants; especially to the shrubby kinds beginning to take on a fresh growth, and to bulbous-rooted flowers coming into bloom; both of which will require water every two or three days, in pretty ample quantities. Others may need a little but once in four or five days, as yet; the succulent kinds perhaps only once a-week. But as said before, the plants should all be regularly looked over, and have water as they may seem to demand it, according to their respective habits.

Of shifting or Potting the Plants.

The plants should generally be revised for this purpose twice a-year; that is, about the middle of March, and the middle of August; a week or two sooner or later, according to conveniency. Individuals, no doubt, may be shifted at any time; but the above periods are the best, and most advisable seasons for a general revision. Some plants may

require fresh potting twice or thrice a-year, and others perhaps only once; but by turning any plant carefully out of its pot, and examining the roots, the matter may readily be determined. If the roots be much clustered, or matted about the sides and bottom of the ball, the plant evidently requires to be re-potted; for it could not flourish long in such a state. The potting of individual plants, however, is seldom so urgent a matter in the winter months, but that it may be delayed till about this time; and hence the reason why I have not noticed this subject in the two preceding months.

It is not always necessary to put plants into larger pots than such as they may happen to be in, though it is frequently so. But if this were invariably to be done, when their roots have filled the pots, they would ultimately require pots or tubs out of all ordinary bounds. A healthy, young plant, in a small or middle-sized pot, may certainly be shifted into one considerably larger, according to its nature, or the size to which it is to be allowed to grow. A plant come to full size, and in a large pot or tub, that requires fresh potting on account of its roots being matted, or on account of sickliness, may be replaced into the same or a similar pot; and if on account of sickliness, it may, perhaps with propriety, be put into one considerably smaller.

In either of these cases, the ball must be reduced to a moderate size, perhaps to a half, or one-third of its former bulk; singling out the matted roots, and trimming away all that are mouldy or decayed,

In preparing the new pot for it, place first a handful of shivers, or clean round gravel at bottom ; then as much earth as will raise the surface of the ball to within about an inch of the rim of the pot, more or less, according to its size. Place the plant with its stem exactly in the centre of the pot, and fill in the earth all round, which should be broke fine ; frequently shaking the pot to settle it well down between its sides and the ball, that there may be no cavity left. The whole should be filled to within half an inch of the brim, if a middle-sized pot, and to within an inch, if a large one ; this being sufficient room to hold water, as the whole will subside a little afterwards.

A few broken pot shivers, or a little clean gravel, the size of garden-peas or horse-beans, should uniformly be laid in the bottom of all pots ; than which, nothing is more conducive to the health of the plants, they being thus drained of extra moisture.

Plants that require to be shifted into larger pots than those they may be in, for the extension of their growth, and which are not matted at root, but whose pots are just full of fibres, should be carefully taken out ; it being proper, in this case, to keep the balls entire. To answer this end, the earth should be made in a state neither wet nor dry, by previously giving water to, or withholding it from such plants, as are intended to be shifted ; as in such a state the ball will keep better together than in any other. Observe the method of potting, as directed above ; and let the new pot be so much larger than the ball,

as that there may be a coating of fresh earth round it, as well as underneath. For plants above the middle size, or whose pots exceed eight inches in diameter, this coating of new earth should be about an inch thick; that is to say, if the old pot be seven, the new one should be nine inches diameter, and so in proportion, for pots of different sizes.

In all cases of potting, the new mould should be rather in a dry state than otherwise, at the time; in which state it divides easily, and can be filled better in about the fibres, than when it is anywise wet. After potting, however, the whole should be settled by a moderate watering; and the plants should be shaded from the full sun for a few days, either by an awning, or by mats, placed over the lights; or otherwise as maybe thought most proper. Plants, however, that have been most reduced at root in the shifting, require to be more carefully shaded than others; and they may be collected into a corner of the house for a few days, or be placed in a deep frame, for that particular purpose.

Of Composts for various Green-House Plants.

Whatever is said on this subject, must be considered as being general. It would require more room than can be spared in this volume, to allow of entering particularly into a detail of the many different soils, required by the many plants, of even an ordinary collection. Those who eagerly cultivate green-house exotics, must study to have a stock of earths on hand, of many different qualities; of which may be formed, at pleasure, composts to suit

different plants. Also, dungs of various animals, reduced to mould; so as that they may readily be commixed with other molds: with lime, chalk, or marl; fine sand, and small gravel, both free of earth. And above all, vegetable earth of decayed tree-leaves, perfectly decomposed; which seems to be, if not the *primum mobile*, the *secundum mobile* of vegetation*.

It may safely be said, that any plant will live, and that most plants will flourish, in a mixture of loam and vegetable earth. The greater part of green-house shrubs will do well in soil thus composed: three-fourths brown loam, the sward of a pasture; and one-fourth vegetable mould; to which add about a twentieth part rough, clean sand, or small gravel. In lieu of vegetable mould, use peat earth, without sand or gravel, however, as there is always enough of sand in it naturally. It is the best substitute for vegetable mould of tree-leaves, for the bulk of green-house plants; particularly those from Botany Bay and America.

Though the greater part of the plants generally kept in this compartment will do well in such compost as the above, yet there are many kinds that thrive better in particular soils, a few of which I shall here notice:

Geraniums, in general, like a sound earth, that

* The reader may see the method of preparing this earth, by turning to the Forcing Garden, Section II., *On Soils for the Pine-Apple*.

may be termed neither stiff nor light, and moderately rich. But there being many varieties in this genus of plants, the soils for them should be considerably varied in quality. The rank growing kinds, should be kept in poorer earth than those of more humble growth, otherwise they soon grow out of all ordinary bounds, and become very unshapely. Some of the bulbous-rooted kinds from the Cape of Good Hope, are more impatient of moisture than others, and should therefore be put into a more friable soil.

Heaths like a moor earth best, in which is a large proportion of clear shining sand; such as is to be found on the surface of a moor or common, where heaths naturally grow. They will grow pretty freely in other kinds of soil, particularly in such as have a large proportion of vegetable mould intermixed, but they will not flower in perfection in other than native moor earth, as above defined; to which manure of any kind should not be applied.

Myrtles like best a loam of a middling texture, fresh, but not enriched with dung; otherwise they are apt to grow out of bounds, as observed above of geraniums. The double flowering kind, however, and the orange-leaved, require a soil somewhat richer and lighter.

Olives will do well in such, or in what may be termed a sandy loam, moderately rich; to which may be added a small quantity of lime or marl.

Oranges, lemons, &c., like a strong brown loam;

fresh, and in which may be intermixed a small proportion of lime, chalk, or marl.

All the succulent tribes should be put into poor, rubbish soil; such as a mixture of road scrapings, sandy earth, and lime-gravel.

Green-house bulbs, as *Amaryllis*, *Antholyza*, *Agapanthus*, *Crinum*, *Ixia*, &c. thrive best in soil thus composed: one-third brown loam; one-third moor earth; a sixth part vegetable mould of tree leaves; and a sixth part rough river sand, or very small gravel.

Of Pruning and Training Green-House Plants.

Very little pruning is necessary for the generality of these plants, if they be properly treated; and if care be taken to turn them frequently round towards the sun, in order to make them grow equal on all sides: a matter of very much importance, especially in ill-constructed green-houses,—such as have only glasses in front, and these upright. But there are individuals that naturally grow in a straggling manner, which require to be trimmed, in order to keep them within due bounds; and others that look better, and also flower better, if kept down by occasional *heading*, and by under-potting.

Such of course should be trimmed; but not in a formal manner, as if sheared. Nor, unless they be in a sickly state, should they be very much pruned at a time. Sickly plants, from which it is desirable to have a stock of new wood produced, may certainly be cut close in, in order to make them shoot more freely. Their recovery and progress would be much

forwarded, if they were afterwards placed, for a few weeks, in a mild bark or dung heat, in a stove or hot-bed, where they might be duly watered, and have plenty of air admitted to them.

With respect to training the plants to sticks and poles (a thing often done too indiscriminately), it is only necessary for such as are feeble, or of a trailing kind; for all plants that stand upright of themselves, look better without such help. Many plants are disfigured by poles and sticks, that have no need of them. Such as have, should be dressed to them in a free and natural manner; observing to conceal, rather than to exhibit the sticks, &c. to view.

Of arranging the Plants on the Stages, &c.

The plants being potted and trimmed, should again be replaced on the stages, except such as require to be particularly shaded in a corner, &c. as hinted at above.

The reason why the shelves of the stages in the green-house are elevated one above another, is not merely that the plants may be the better exhibited to view, but also that they may have an equal share of sun and light. It naturally falls to be observed, then, that they should be placed, the smallest on the lower shelves, and the largest on the upper ones, by which they may still more equally enjoy the beams of the sun. This must be understood of the plants in general; for there are some that require to be placed in the shade of others, at particular times, and according to their natures.

The heaths, in general, and several other of the small, and more ornamental genera and species, should be placed on the crib-trellis above the flues, in groups by themselves: by which they are the better contrasted with the other tribes, and appear in a more striking point of view. This method of grouping the plants may be practised on the stages also, to a certain extent, if thought right, by sorting or sizing those of any particular genus that is numerous. But this is a mere matter of taste, and can have no effect on the general welfare of the plants. It is of greater importance to arrange the whole, so as to have the appearance of a regularly sloping bank, or a hanging wood in miniature.

The plants, however, should in no case be crowded, but should stand quite free, and as it were, detached from each other; shewing their respective outlines or forms; which, if they be healthy, and be well managed in the arrangement, has a very charming effect.

I believe few good gardeners place flats or saucers under their green-house plants, as formerly used to be done, and as still practised (no doubt with greater propriety) in rooms, for preserving the furniture and floors from spilt water. It is generally admitted, that it is a bad practice for the welfare of the plants, on account that their roots are much injured if the flats be not emptied of the superabundant water, soon after it filters into them. This emptying being a troublesome and inconvenient matter, where a large collection is kept, the flats are generally disused, and the water is allowed to fall to the ground.

*Of raising Annuals for furnishing the Green-House
in Summer.*

The greater part of the plants being set out in May or June, it is necessary to provide furniture for the Green-house in the summer months. Such generally consists of exotic annuals, as Balsams, Cockscombs, Globe and Pyramidal Amaranthus, &c. ; which should be sown in pots, pans, or boxes, filled with fine light earth, and should be placed in a cucumber or melon frame, or in a slight hot-bed made on purpose, about the middle or latter end of the month. The seeds should be sown moderately thick, should be covered lightly, and should be duly attended to with respect to watering and airing; and the plants, when fit, should be pricked singly into pots of three inches diameter, filled with rich light earth, afterwards to be shifted into larger pots, as will be further noticed in the succeeding months.

Two or three weeks after these seeds have been sown, a few more for a succession should be sown; particularly of balsams, which do not continue so long in flower as the others. As they should be treated in all respects as above, and afterwards to be noticed on this head, it will be unnecessary to say more of them.

THE CONSERVATORY.

Of Planting a Conservatory.

This operation may be performed at almost any time in the year with success, it being supposed

that the plants are in pots ; yet I think the beginning or middle of March the most eligible time, and shall therefore introduce the subject here.

The reader is necessarily referred to Section III. on the Construction of the Conservatory. It is supposed the site of the house is naturally dry, or that it has been rendered so by draining ; the pit and borders being paved, or being floored in a complete manner, by some kind of composition, so as to prevent the roots of the plants from getting down to bad soil ; and that the pit and borders are about twenty inches or two feet in depth.

The kind of soil I would recommend, of which to fill the pit, and make up the borders, both inside and outside, is, a perfectly homogeneous composition of, three-fourths brown loam, the fresh sward of a pasture ; and one-fourth vegetable earth of decayed tree-leaves. If the loam be very fine, and be free from small stones or gravel, it will be advisable to add a considerable proportion of smallish gravel or very coarse sand, perhaps a twentieth or a thirtieth part ; but if the loam be pretty stony, this will be unnecessary. Large stones, however, should be separated from the soil ; retaining none bigger than a pigeon's egg or so.

Such a soil will answer most of the plants that should be placed in this compartment ; but partial spots may be formed for certain kinds, by making pits or holes suitable to their sizes, and filling them with proper composts, respectively for the plants, according to their natures. See some hints on this subject, above, in the article *Composts for Green-house Plants*.

The kinds of plants for the pit are :

<i>Aletris capensis.</i>	<i>Justicia Adhatoda.</i>
<i>Amaryllis</i> , different species.	<i>Lantana odorata.</i>
<i>Aucuba Japonica.</i>	<i>Laurus Camphora, Indica.</i>
<i>Calla Æthiopica.</i>	<i>Lithospermum Oriental.</i>
<i>Camellia Japonica.</i>	<i>Metrosideros</i> , different species.
<i>Clethra arborea.</i>	<i>Myrtles</i> , many species.
<i>Crinum Americanum.</i>	<i>Nerium Oleander.</i>
<i>Cycas revoluta</i> , and other palms.	<i>Oranges, Lemons, Shaddocks.</i>
<i>Daphne odora.</i>	<i>Pittosporum corriacum.</i>
<i>Dillenia scandens.</i>	————— <i>undulatum.</i>
<i>Geraniums</i> , many species.	<i>Protea</i> , different species.
<i>Illicium floridanum.</i>	<i>Sophora</i> , different species.
	<i>Thea bohea, viridis.</i>

With many others ; which may be introduced according to fancy ; keeping the large growing plants in the centre, the smaller towards the sides, and the bulbous-rooted kinds near to the walks. They should not be planted over thick ; but sufficient room should be allowed, in order to show off each distinctly.

The kinds of climbing plants to be planted in the border behind the parapet, and to be trained up the rafters, &c. are :

<i>Bignonia pandora.</i>	<i>Glycine rubicunda, bimaculata.</i>
<i>Capparis spinosa.</i>	<i>Jasminum grandiflorum.</i>
<i>Clematis florida</i> , var.	————— <i>azoricum</i> , and others.
<i>Cobbea scandens.</i>	<i>Maurandia semperflorens.</i>
<i>Convolvulus</i> , different species.	<i>Passiflora quadrangularis,</i>
<i>Dolichos lignosus.</i>	————— <i>cærulea, &c.</i>

And several others, which may be planted and trained as fancy and taste may direct.

But, besides these climbing plants, many small showy kinds may be planted in the borders, between the parapet and the walk; such as:

<i>Celsia</i> , different species.	<i>Heaths</i> , many species, & var.
<i>Cistus</i> , many species.	<i>Heliotropium Peruvianum</i> .
<i>Coronilla</i> , different species.	<i>Hermannia</i> , different species.
<i>Fuchsia coccinea</i> .	<i>Myrtles</i> , double flowering, &c.
<i>Geraniums</i> , the smallish kinds.	<i>Polygala</i> , different species.
<i>Gnidia</i> , different species.	<i>Rosa Indica, semperflorens</i> .

It is hardly necessary to add, that all the kinds should be carefully planted; their roots being singled out, if matted in the pots; and that they should have a moderate quantity of water after planting; it being presumed, that this is not the work of a novice in gardening.

Of the Temperature of the Conservatory.

After planting, if the weather be not very mild, it will be proper to make a moderate fire in the evening, so as to raise the mercury to about 55° , in order to promote the growth of the plants, and their striking new roots. This may be continued till the weather becomes so far mild as that the mercury shall stand at, or about the above point in the night; from which time fire-heat will be unnecessary till October or November.

Of the Admission of Air to the Conservatory.

Encourage a free circulation of air in good weather, from eight or nine, till three or four o'clock;

admitting it so freely, in sunshine, as to keep down the mercury to about 60° ; observing to give and reduce air by degrees, as directed above (in this month) for the Green-house.

Of watering and shading the Plants.

According to their different habits the plants should be attended to with water; but it will be improper to make the borders very moist;—they had better be kept only moderately so, for a few weeks, or till the plants get established; as otherwise their roots might be chilled, and many of the tender kinds might languish.

The plants will not generally require to be shaded; but only those whose balls have been necessarily reduced a good deal, and others, perhaps, of tender foliage. Over such, temporary shades of paper, linen or canvas, should be placed, when the sun is hot, till they have struck new roots, and get established in the soil.

April.

THE GREEN-HOUSE.

Of the Admission of Air to the Green-House.

THE plants will now begin to take on a vigorous growth, as most of them will have made fibres into the fresh earth after shifting. In order to strengthen their shoots then, and to prevent the free growing kinds from being *drawn*, large portions of air should be admitted every day; in fine clear weather, from seven or eight in the morning, till four or five in the afternoon, and in cloudy or colder days, from nine or ten perhaps, till two or three; observing always to divide the quantity admitted regularly, as often already hinted at.

Of turning round the plants towards the Sun.

In order to prevent the plants from being drawn out of shape, they should be occasionally turned round towards the sun. The fast growing kinds require more attention in this respect than the others; and whenever their shoots are perceived to be stretching towards the light, the pots should be turn-

ed half round; by which they will grow more upright, and become much more handsome. But all plants require this care less or more, in order to keep them in good shape, and healthy; and to prevent unnecessary pruning, sticking, and training.

Of Watering, &c.

The plants must now be regularly attended to in this particular; especially such of the shrubby kinds as are in a free-growing state; which should be looked over daily, and have water according to their wants. Others may require water but every second or third day, and the succulent kinds perhaps only once in four or five days, according to the state of the weather. But the house should be duly looked over, and no plant should be allowed to droop or flag for want of water. The surface of the earth in the pots, if anywise hard, should be occasionally stirred with the point of a small stick, in order the better to aid the descent of water to the roots.

The plants should now be syringed occasionally, perhaps once in three or four days, in order to refresh the leaves, and clean them from dust. Plants of soft or downy foliage, that are liable to be affected by the red spider, should be taken aside, and be more forcibly syringed than others. This may be done in the morning about eight o'clock, or in the evening about five.

If the green-fly, or the thrips, appear on any of the plants, they should be taken out, and be fumigated in a frame, &c. by themselves, as directed in

February; which see. Plants affected with the coccus may be washed with soap and water, at any time, as also hinted at in February.

Of the Annuals intended for Furnishing the Green-House in Summer.

The annuals sown in March, (which see), will require to be shifted into larger pots than those they were pricked into, about the middle or latter end of the month, according to their forwardness. But it should be observed to repot or shift them in good time, that is, before their pots get very full of fibres, otherwise some kinds are apt to start into flower, which would be trifling and insignificant. They should be shifted into pots of about five or six inches in diameter, at this time; and next month, (as will then be noticed), into full-sized pots, in which to flower.

The balsams should be put into very rich, lightish earth: that is, one half loam; one fourth vegetable mould; an eighth part rotten cow-dung; and an eighth part fine sand. The cockscombs, and the globe and pyramidal amaranthuses, should be shifted into a soil considerably stronger; that is, three fourths loam; an eighth part vegetable mould; and an eighth part rotten cow-dung. The dung, in either application, should be reduced quite to earth.

The plants must be replaced into a slight hot-bed, a flued pit, a mild stove, peach or grape-house, &c.; where they may be properly cared for, till the green-house be made ready for their reception, by the removal of its plants to the open air, next month

or in June, according to the state of the weather; which see.

THE CONSERVATORY.

Of the Temperature, and the Admission of Air.

With respect to the temperature, if the weather be not very unfavourable indeed, fire-heat should not now be necessary. The observations, however, made on this subject last month, may be recurred to, if the weather should be adverse; the directions then given being, in that case, followed up.

Air should now also be freely admitted, as there noticed; increasing the quantity as the season advances; so as to keep the mercury or spirits in the thermometer down to about 65° in sunshine.

Of Watering, &c.

After the plants have struck root, (see last month,) and have begun to take on a fresh growth, they will require more ample supplies of water. The border, therefore, about the several plants, should be kept so far moist as to suit their respective habits; but by no means over much so. It must be considered there is a large proportion of soil as yet unoccupied by any roots, which, if kept too wet, would have the effect of chilling them, and of retarding the progress of the plants in general.

These observations are applicable to a new planted conservatory. The borders in one established, will, at this season, when the plants are taking on a vigorous growth, require to be duly, and more am-

ply supplied with water ; especially in such where the roots of the plants have filled the whole pit, and have reached to the bottom of the soil in the borders. Water must be given, in such a case, so plentifully as to reach the extreme fibres of the plants, both with respect to latitude and depth.

The plants may now also be refreshed over the foliage, either by the syringe or by the engine, once in two or three days ; scourging such as exhibit any appearance of the red-spider *with force*, in order to prevent its ravages and baneful effects.

If the green-fly or the thrips make their appearance, recourse must be had to fumigations, in the manner formerly directed ; of which see February. In order to clean the plants of the coccus, if troubled with it, they may be washed with soap and water ; and that at any season ; of which see also February.

Of training the Climbers.

The climbing plants should be regularly and neatly trained to the rafters, as they advance. They should not be allowed to spread *much* over the sashes, otherwise they would shade those in the borders too much. The rafters, for this purpose, should be fitted up with two or three rows of wires, longitudinally, to which the shoots might be dressed.

May.

THE GREEN-HOUSE.

Of the Admission of Air.

THE sun having now very great influence, the sashes should be opened by six or seven in the morning, and should stand open till the same hours in the evening, except in bad weather, in the time of high winds, or in heavy rains. The house should generally be opened to its full extent about nine or ten, and should stand so till three or four o'clock.

Of Watering, &c.

The plants must be regularly attended to with water, and be syringed, &c. as directed last month, so long as they remain in the house.

Of setting out the Plants.

About the middle, or towards the latter end of the month, according to the state of the weather, the bulk of the plants, that is, the hardier kinds, may be set out; and those more tender, in a few

weeks afterwards. They should be placed in a shaded situation, as behind a wall, high hedge, or among tall shrubs, for two or three weeks; in order to harden them by degrees, and enable them to stand the full force of the sun's rays the better. While here, they must be duly attended to with water; and if the situation be exposed to high winds, the larger plants should be sunk, or be half-sunk into the earth, the better to secure them from being upset.

Some appropriate and lay out a spot in the shrub-ry or flower-garden, on purpose, for the reception and arrangement of these plants; and others form exotic shrubbies with them, by plunging them about the borders, or in the alleys between the beds of bulbous flowers, in a sort of random manner. In this respect, every one may indulge his fancy. There is no impropriety in the one mode, or in the other; at least in so far as regards the hardier sorts. Others, as the young and finer kinds of heaths, many small delicate plants, the succulents, &c. are perhaps better treated by being placed on a floor of dry gravel or ashes, or on one composed of a mixture of both, in a sheltered situation; where they can be more particularly attended to, according to the state of the weather. Were they plunged in the ground, they might be injured by too much moisture in the time of heavy rains or floods; but by being collected into a small compass, as above, they can readily be attended to with water, or be defended from heavy rains, as they may require it.

Previously to arranging the plants, in either of

the above-mentioned methods, they should be carefully revised; and any that need, should be fresh potted, as directed in March. Others should be fresh-earthed at top; by removing a little of the old soil; stirring up the surface a little with the point of a small stick, but not so deep as to injure the roots; and by filling the pot with fresh mould, to a proper height, according to its size.

Tall plants, and all those of a straggling kind, should be carefully supported by the help of poles or sticks, in order to resist the bad effects of high winds; a matter evidently more necessary now, than when they were in the house. Yet stout, low plants, require nothing of the kind; I only mean such as are in danger of being broken or hurt by the wind.

Of the Annuals raised for furnishing the Green-House in Summer.

These plants should now be shifted into their full pots; that is, the balsams should be put into pots ten or eleven inches diameter at top, and twelve or fourteen inches deep; and the globes, &c. should be put into pots two inches less, respectively as to width and depth. The same kinds of earth, as advised at last shifting of these plants, should now be used; and a handful of broken pots, or roundish gravel, should be placed in the bottom of each pot, to serve as *drainings*.

They may afterwards be placed on the stages, &c. in the green-house, which is now supposed to be ready for them, being emptied, or nearly emptied, of

its proper plants. Most people, however, reserve a few particular plants, or kinds, to mix with the annuals, for the sake of contrast; and others who have stove plants, take a few of the hardier sorts of them to intermix with these, and fill up the green-house the better in summer. The manner of their arrangement is entirely dependent on fancy and taste; of which I need add nothing to what has been observed in March, on that head.

The plants, however, of all kinds, must be duly watered, according to their respective natures; and the house must be regularly aired, as heretofore, though, perhaps, not so fully, on account of the stove exotics, if any of these be placed in it.

THE CONSERVATORY.

Of the Admission of Air.

The house should now be opened by seven in the morning; have full air about nine or ten; have the air reduced about three or four; and should be shut up about five or six in the evening: all according to the state of the weather; observing to shut up in the time of heavy or continued rains, that the borders be not drenched with wet, which might injure many of the small and tender plants.

Of Watering, &c.

The reader is referred to what was said on this subject last month, whether as to watering the borders of a new planted, or an established conservato-

ry. There is no deviation to be advised, except that, as the season becomes more hot, and as the plants begin to push more freely, they must have larger supplies of water at root. They may also be more frequently syringed, or watered with the engine over the leaves; generally, now, every second evening.

The surface of the borders should be kept open by the rake, in order to aid the descent of water more rapidly to the roots; and also that the rays of the sun may have their full effect upon, and meliorate the soil.

June.

THE GREEN-HOUSE.

Of setting out the more tender Plants.

By the middle of the month, the more tender and delicate kinds of green-house plants may be set out. They should be placed in the shade for a week or two, as observed of the hardy sorts in May, in order to inure them by degrees to bear the fuller rays of the sun; afterwards placing them in a spot by themselves, as there also noticed, or arranging them in

manner of the others, as shall be thought most proper. *Care of the Plants set out in May.*

The plants set out last month, must be duly attended to with water; whether plunged in the earth, or placed on a floor of gravel, &c. as then noticed. Those plunged in the earth will not require water so often as those not plunged; but they should be looked over once in two or three days, in dry, hot weather, and should have water according to their wants. They should always be watered in the evening; for if watered in the morning, the water is soon dried up, or partly so, by the heat of the sun. If dews be falling in the evenings, they need not be syringed, nor be watered over head; but otherwise, if this were done, it would tend to their advantage. However, many people let the hardy kinds, plunged out in the above manner, take chance of the weather in this respect; and do not even water the plants at root, except in very severe droughts.

But the plants not plunged, must be duly refreshed, both at root and over the foliage, (excepting succulents, if these be set out), every evening at least. They should first be watered at root, that each may have the quantity proper for it, according to its nature; and then the whole should have a dewing over the leaves from the rose of the watering-pot. This should generally be done about five or six in the evening, and regularly in dry weather. But in extremely hot weather, it will be necessary to look

over the plants in the fore-part of the day, and by watering at root, prevent any that seem languid from drooping.

The succulent kinds will hardly require any water, except in very sultry weather, as the dew and natural moisture of the night air is sufficient to sustain them. I have known these to have no water given them for a whole summer, and yet they looked healthy at the end of it. Indeed, in wet seasons, they should be kept in the house.

Care of Plants in the House.

The plants left in the Green-house, and the annuals, &c. placed there last month, must be attended to, with respect to *airing and watering*, much as already noticed.

The house should be opened early, and should stand open till seven or eight in the evening. In mild serene weather, it may even stand open all night; though not to its fullest extent, if there be many stove exotics placed in it.

The plants should be daily looked over, and have water according as they may require it. In very hot clear weather, they should even be looked over twice a-day; as the balsams in particular, that require a deal of water, and others in a free growing state, might otherwise be found drooping. The whole should be syringed every evening, or every second evening at the least, after having given the proper quantity of water at root. This is particularly necessary for the balsams, on account that they

are very subject to the attacks of the red spider; for which there is no other known remedy.

They are also liable to be troubled with the green fly and with the thrips; for which a remedy is to be found in fumigation, as often already noticed.

THE CONSERVATORY.

Of the Admission of Air, Watering, &c.

There need be little added to the observations made respecting this compartment last month, with regard to *airing* and *watering*; excepting that, as hinted of the Green-house above, it may stand open all night in fine weather; shutting up, however, in continued rains, that the borders may not be surcharged with moisture. At other times, observe the directions for watering given in April and May; and also, with respect to the suppression of insects.

Of training the climbing Plants.

These will now be growing vigorously, and ought to be carefully dressed and trained as they advance in growth, otherwise they will spread too far over the lights, to the detriment of the plants in the pit and borders. They should be kept to, or nearly to the rafters, as hinted at in April; should be trained to the columns, in the centre of the house (see Section III. on the construction of the Conservatory); should be neatly, though not *stiffly* dressed to them, so as to form festoons or wreaths; or otherwise, as fancy and taste shall better direct.

July.

THE GREEN-HOUSE.

Care of the Plants in the House.

THE directions given on this head last month, are to be followed throughout this. It may be further necessary to remind the reader of observing to turn the plants round towards the sun occasionally, in order to prevent them from being drawn to one side, and from becoming unshapely. Also, occasionally to stir the surface of the earth in the pots, if it becomes hard or encrusted, that it may the more readily receive water; and to keep the plants clear of dead or damped leaves, which should be the more particularly attended to in moist weather.

Care of the Plants out of doors.

To the directions given respecting these last month, I need add nothing further at this time, except that, towards the middle, or latter end of the month, when the weather becomes wet, and the floods or heavy rains commence, (which they gene-

rally then do,) the more delicate kinds of plants not plunged, the succulent tribes, and all that might be hurt by too much moisture, should be laid over on their sides for the time; thus preventing the earth in the pots from being saturated with water, and the roots of the plants from being injured.

THE CONSERVATORY.

Of the Admission of Air.

The house may now stand open night and day, and that to its fullest extent, in mild serene weather. In worse weather, however, it should be shut up at night; and always in the time of heavy rains, in order to defend the borders from too much wet.

Of Watering, &c.

In sultry weather, the borders must be plentifully supplied with water, especially those in an established house, where the plants have arrived to a large size; whose roots are perhaps spread over the whole surface, and have reached to the bottom of the soil. In such, the borders should now be moderately watered every evening, or plentifully every second evening, first by the watering-pot; afterwards syringing the foliage well, or watering it with the engine, if necessary for the suppression of the red spider.

Of Pruning luxuriant Plants.

Many of the luxuriant growing plants, shooting perhaps too much to one side, (as to the south,) or such as may be interfering with others less so, should be pruned of their superfluous shoots; doing this in a cautious manner, however, and never pruning much at a time. The plants should never seem as if they had been pruned; therefore, cut cunningly, and, as it were, steal a branch or shoot here and there, that the general outline of each may appear natural. They should be no further pruned than merely to keep every plant distinct; moderately thinning out such as have a tendency to grow very thick or bushy.

Of training the Climbers.

Continue to trim and to train the climbing plants, as hinted at in April, and in June. Many of these free-growing kinds will be shooting vigorously, and should be gone over frequently, perhaps once a-week; trimming them of their superfluous shoots, and regularly dressing in those retained, that the plants in the pit and border may not be too much shaded.

August.

THE GREEN-HOUSE.

General care of the Plants.

THE plants, whether within or without doors, plunged or otherwise, must be duly attended to, in every respect, as directed in the two preceding months, till about the middle of this, or previous to the operation now to be advised; which is that

Of potting or shifting the Plants.

I observed in March, that about the middle of that month, and about the middle of August, are the two seasons most proper for generally revising the plants, for the purpose of shifting or fresh-potting them. Some, in order to save trouble, choose to do this at two periods of the season very different, viz. at setting out the plants, in May or June, and at taking them in, in September or October. My reasons for deviating from these rules are, first, that by shifting the plants in March, in the opening of the season as it were, they make fresh roots, while yet in the house; and so can better endure

the weather when put out : and secondly, that by shifting again in August, the pots get full of roots before winter ; which they do not, if potted so late as October ; and so are chilled, or are liable to be chilled, by having a body of cold, unoccupied earth about them in winter.

With respect to the manner of potting, the kinds of compost for the different plants, &c. the reader is referred to March ; where full directions will be found.

After shifting, the plants should be placed in the shade, unless the weather be cloudy and showery, which it often is about the beginning or middle of this month ; in which case, they may be replaced in the manner they were before being potted, without any further trouble. But if the weather be dry and hot, they must be watered, and should be shaded as when set out of the house ; by being placed behind a wall, hedge, or among tall shrubbery, as noticed in May ; where they should remain for ten or twelve days, and then be replaced in their former situations, till taken into the house.

Of Watering, &c.

From this time, even in dry weather, the plants unplunged will not require so much water as formerly : on account of their having a fresh body of soil about their roots, which will so far keep them cool and moist ; and also, on account that the nights are now considerably lengthened, and more humid. They should be looked over, however, every second day, and have such a quantity of water at root, as

they may respectively require; but the dews will sufficiently refresh the foliage, and syringing or watering over head will be unnecessary.

The plants, plunged in the ground, unless the weather be very dry indeed, will require no attention with respect to watering. They should be carefully supported by poles or sticks, however, according to their sizes, that they may not be loosened in the pots by the action of the wind; which they would otherwise be liable to, as being recently potted, the earth will not yet be firm about their roots.

Care of the Plants left in the House.

The plants left in the house also, that is, the shrubby kinds, should be revised, for the purpose of shifting such as need; which may be done in all respects as directed in March. Those much reduced in the balls, or in danger of flagging in consequence of being repotted, should be shaded for a few days; afterwards replacing them on the stages, and attending to both them and the balsams, globes, &c. as formerly.

The house should now be shut up at night; but it must be opened betimes in the morning, and have full air through the day, in good weather; shutting up in heavy rains, however, in order to defend the plants from too much wet.

THE CONSERVATORY.

Of the Admission of Air.

From the middle of the month, the house should be shut up at night, unless the weather be uncommonly fine. Air should be plentifully admitted through the day, however; opening the sashes by seven in the morning, and letting them stand so till five or six in the evening; only shutting up in the case of much wet.

Of Watering, &c.

From the middle, or the latter end of this month, the quantity of water advised to be given last month may be considerably lessened; as the nights now get cool, and the growth of many plants will begin to abate. If the borders, from this time, be moderately watered once in three days, it will be sufficient; nor need the plants generally be syringed oftener, though individuals may, if annoyed by the red spider. The keeping down of this mischievous insect, should never be lost sight of for a moment, and there is no mean equal to that of water, if properly applied. The rough or downy leaved plants should be most carefully syringed; being sure to hit hardest on the under sides of the foliage, in order to break his webs, and dislodge him, if possible.

THE GREEN-HOUSE

September.

THE GREEN-HOUSE.

Of taking in Tender Plants, Succulents, &c.

ABOUT the middle of the month, sooner or later, according to the state of the weather, it will be proper to take in many tender plants, that otherwise might sustain injury; as the nights get cold, and frosts or cold dews now begin to fall. The succulent kinds should also be taken in, the weather being now too cold and humid for their remaining longer out of doors without being injured.

Previous to placing the plants in the house, they should be properly dressed, and the pots should be cleaned from dirt or a green mouldiness that often adheres to them in damp seasons; as will be more particularly noticed next month. Any of them that were not shifted last month, when the plants were generally revised, may be shifted at this time if thought necessary, before taking them in. The stages, for their reception, must be cleared of such of the annuals as have done flowering, as the early balsams, &c. or by returning the stove plants to

that compartment, if any of these have been placed in the green-house in summer.

Of the Admission of Air, &c.

The quantity of air hitherto admitted must be considerably lessened, and some regard must now be had to the state of the thermometer. In good weather, the sashes may be opened about eight in the morning, and full air may be given about ten; reducing it again about two or three, and shutting up about five o'clock. In sunshine, admit air so freely as to keep the mercury down to about 65° , and at other times to 55° ; which is a sufficient temperament for the plants at this season. If the house be kept too hot, the plants are apt to take on too free a growth, after being brought in; which is not to be wished for; as in that case they would be less hardy, and less fit to endure the winter. The late-made shoots would be feeble, they would become languid, and might go off by damp.

Of Watering, &c.

Moderate quantities of water will now be sufficient for the plants in general, once in three or four days; though individuals may require to be watered oftener, and more plentifully. The succulent kinds will not require to have water given them oftener than once in eight or ten days, nor even then, in large portions; the humidity of the air being nearly equal to their wants. But the frequency of watering, and the quantity to be given to these, or to the other kinds, must be regulated much by

the state of the weather. As the house should be kept rather cool than otherwise, in order to prevent the shrubby plants from growing too freely, as noticed above, so water should be given rather sparingly to these; though not so sparingly as to affect their healths, or bring on stuntedness.

If the weather continue fine, the plants may have a dewing by the syringe once in three or four days; but if it be moist or rainy, this will be unnecessary. The natural humidity of the air, in this latter case, will sufficiently refresh the foliage. Individual plants, affected by the red spider or other insects, should be taken aside, and be syringed or washed, in order to clean them, as hinted at in February.

Care of the Plants still left out.

The plants out of doors, must be properly attended to, while there, whether plunged or otherwise. Those plunged, indeed, will require least attention; chiefly that of preventing them from being dashed by high winds; for, if the weather be not uncommonly dry, they will require no water. The others must have water, less or more, according to the state of the weather, if it be moderately fine; but if very wet or boisterous, the pots will rather require to be emptied of water, or to be laid over on their sides, as hinted at in July, in order to prevent the earth from being too much moistened, and the roots of the plants from being injured.

THE CONSERVATORY.

Of the Admission of Air, &c.

This matter may be regulated, in every respect, as directed above for the green-house; now also having regard to the state of the thermometer, in the manner there noticed.

Of Watering, &c.

Water may still be further withheld from the borders, than advised last month. It will be often enough to give them a moderate quantity once in four or five days. Particular plants may require more water than others, and oftener. Of course they should have it; and the border immediately about their roots, should be kept more moist than the other parts in general.

In dry weather, continue to syringe the foliage once or twice a-week; but in moist weather, it will be proper to desist; as downy-leaved or bushy plants might be injured by the water lodging too long upon them, and their leaves might damp away in consequence.

Of destroying Insects.

In the above case, of its being improper to syringe the leaves of certain plants, and yet if they abound with the red spider, some other means must be used to get rid of it.

The next best means to continual watering, for

the destruction of this insect, that I know of, is to brush the under surfaces of the leaves with a soft brush,—what is called a sash-tool by painters. In doing this, care must be taken not to bruise or injure the leaves. It may readily be done, however, by taking the foot stalk of the leaf to be brushed between the thumb and finger of the left hand, spreading the leaf back into the palm, and drawing the brush once or twice gently across it, towards the right hand. The larger leafed plants are the more easily done, and with less risk of injuring them; but any plant, by sufficient pains-taking, may be cleansed so. It may be remarked, that a new tool, one that has never been dipped in oil, is to be preferred to one that has been used, either in painting, or has been much worn by brushing furniture, or the like. The looser and the better separated the bristles of the brush are, the better they catch hold of, and break the webs of the insect.

It may be proper now also to examine the plants carefully for other insects, as the coccus, chermes, &c. and if any be found on them, to wash them with soap and water, as directed in March. It is advisable to have the plants made quite clean about this time, or next month at the latest, that such washings may not be necessary in winter.

October.

THE GREEN-HOUSE.

Of taking in the Plants.

ABOUT the beginning or middle of the month, according to the state of the weather, it will be proper to take in the rest of the plants, lest they might sustain injury by the falling of early frosts. The pots should first be properly cleaned from earth, mouldiness, &c. especially those that have been plunged. They should then be top-dressed, or be fresh earthed, as directed in May; and the plants should be trimmed, and be pruned of straggling shoots, or dead flower-stems; dressing such as need to poles or sticks (as noticed in March,) in a natural looking manner, not stiff and formal; nor sticking others than such as do not stand pretty upright of themselves, for if they do, they look better without this aid, which certainly adds nothing to their beauty. Plants affected with the scaly insect should be washed with soap and water, and others should be fumigated, if necessary, as directed in March.

The annuals must now of course be cleared out of the house, which should be properly cleaned in every part; carefully washing the stages, crib-trellis above the flues, shelves, &c. with soap and water, in order to destroy insects, or their eggs, that might be lodged about them. Then let the plants be placed and arranged, either as noticed in March, or as better taste shall direct.

Of the Admission of Air, and the Temperature.

The reader is requested to turn to this head for last month, and to observe, that, as there stated, it is still important to keep the house cool and well aired, in order to prevent the plants from taking on a free growth; which they would be very apt to do, were it kept over close at this time. The stages being now completely filled, as is supposed, it is further to be observed, that a free circulation of air among the plants is the more necessary. The quantity of air admitted, should therefore be equally divided in every part of the house.

Unless the weather prove severe about the latter end of the month, which it sometimes does, fire-heat will not be necessary till November. If the mercury or spirits in the thermometer stand at 40° , the plants will be safe; but if the mercury fall below that point, recourse must be had to the help of the furnace, and a small fire will secure the plants from danger.

Of Watering, &c.

The plants in general must have moderate, but by

no means large supplies of water, and that only at root, once in five or six days, or even seldomer, if the state of the weather be moist. Particular plants may require more water, and oftener than others; while once in twelve or fourteen days will suffice the succulent kinds. None should now be syringed over the leaves. If the plants have been properly cleaned at putting them into the house, syringing will not be necessary for that purpose; and it is not now necessary to their healths, the air being abundantly humid. If dust begin to accumulate on the leaves, let it be blown off by the bellows, as directed in January; which see.

Of potting Bulbous Roots for the Green-House in Spring.

Any time most convenient in this month, a quantity of bulbous flower-roots should be potted, for forcing into flower in the stove, peach-house, grape-house, &c.; afterwards to be placed in the green-house, the better to furnish it out in winter, and early in spring.

The kinds generally potted for this purpose are, Hyacinths, many varieties; Jonquils, double and single; Persian Irises; the Italian Polyanthus, and Poet's Narcissus; and several small early Tulips, as the Duc Vanthol, Claremond, and Pottebacker. They should be planted in rich, light earth, in pots four or five inches diameter at top, and six or eight inches deep, according to the respective sizes of the roots; placing them so deep as to be covered an inch, or an inch and a half. These roots are not generally plant-

ed in pots so deep or large as here specified ; but in such, and especially if put into fine rich mould, they flower very strong and full. It may be observed, that the jonquils, both double and single, should be kept two years in the pots, as they do not flower well, if at all, the first season. It is therefore necessary to have as it were a double stock of them on hand ; potting a certain number of roots every year.

These roots are generally placed under the stage in the green-house after potting, and are taken into various forcing-houses, as above noticed, in classes or divisions ; so many every three or four weeks, in order to bring them into flower in regular succession. I have no objection to their being placed under the stages, or in any other situation in the green-house, provided care be taken to keep them moderately dry, and to keep them free of spilt water, or drops from the other plants, by which they are often much injured. It is a better method, however, to plunge them in a cold pit or frame, among a little dry-bark or saw-dust, or in a mixture of these with sand ; where they can be properly attended to, and can be defended from too much wet, or severe frost.

THE CONSERVATORY.

Of the Temperature.

In fresh weather, so long as the mercury stands as high as 40°, fire-heat will be unnecessary ; but when it begins to fall much below that point in the night, and when the frosts commence, which they

often do towards the latter end of the month, it will be proper to light fires in the evening, and to continue them. Work so as to keep the mercury, at the ordinary times of regulation, evenings and mornings, at about 45° ; a degree or two over or under being a deviation not material.

Of the Admission of Air.

Continue to admit air every day, as freely as the state of the weather will allow, from about nine in the morning, till three in the afternoon; admitting it so freely, in sunshine, as to keep down the mercury to within four or five degrees of the fire-heat medium.

Of Watering, &c.

Little water will now be required by the plants in this compartment, as their growths will generally be stopped for the season. The borders, however, may have a moderate quantity of water once a-week; so as just to keep them in a state neither too moist nor too dry, that the roots of the plants in general may neither be parched, nor be saturated. Particular plants may have water oftener, and more plentifully, according to their natures, as frequently noticed in the former months, on this subject.

It will now be proper to leave off using the syringe or engine for the season; as the natural humidity of the air will be equal to the refreshment of the foliage, and it is presumed the plants have been properly cleaned for the winter, by washing, &c. as directed last month.

Of Training the climbing Plants.

It will be proper to give these their last dressing for the season, about the middle or latter end of the month; when they should generally be gone over, and be pruned of unnecessary shoots, be shortened back, or be thinned, according to necessity, and the manner in which they are respectively managed. They should then be neatly trained in; clearing the rafters, trellises, or columns, of all tendrils, old ties, &c.; and previously washing them and the stems of the plants with soap and water, if the scaly insects have been prevalent upon them, or if they have been much annoyed by the red-spider in summer.

November.

THE GREEN-HOUSE.

Of the Temperature.

THE air of the house should now be kept to about 45°, in the night, by help of the furnace and flues. This point is to be reckoned the fire-heat medium for the season; allowing a degree or two of vari-

ation for the accidental changes of the weather, but at the same time working as steadily as possible.

Of the Admission of Air.

Let air be admitted every day, as freely as the state of the weather will allow; either by the sashes, as heretofore, or by the ventilators, as advised in January and February. To these months, (on this head, particularly to the former, the reader is referred for full directions; and to the important method of drying off damps, in continued dull weather; a matter very conducive to the health of the plants, and but too little attended to by many.

Of Watering, &c.

Water must now be given in a very sparing manner. Few of the plants will be in an active state of vegetation; and consequently they should be supplied in very moderate quantities, and at pretty long intervals; perhaps once in eight or ten days. Some may require water oftener; and many kinds may only need a little once in two or three weeks; as all the succulents, and such as may now be termed *dormant*. Enough, however, has been said on this subject in the former months, to guide even a novice in this matter. The experienced gardener requires nothing further than a hint; and I would remind him of being careful not to spill water, in watering; or if he does, instantly to wipe it up.

Nothing is more pernicious to these plants in winter than damp. They should therefore be carefully divested of damped leaves as they appear, and

every mean should be used to expel humidity, or foul air; such as clearing the outsides of the pots of green mould, and stirring the surface of the earth with a stick, as frequently noticed before; keeping the walks and floor dry by frequent mopping, if pavement, or by raking, if sand or gravel.

Of turning round the Plants to the Sun.

— This matter is not so important at this time, perhaps, as in spring, on account that the plants are not now making many shoots, or stretching so visibly towards the sun, as at that season. Yet it is so far necessary to turn round many plants, as that they may be perceived to bend even their leaves towards the light, although they be not in a growing state. Such should therefore be carefully turned round towards the sun, once or twice in the course of the winter, that they may take more natural shapes, and that their leaves may hang or spread the right way, regularly on each shoot.

Care of tender Plants.

As the weather becomes severe, it will be proper to secure many tender plants against accidents, by placing them on the crib-trellis above the flues, near to the furnace, or in the hotter parts of the house. The falling of very severe frost, when not suspected, and when the furnace is perhaps not sufficiently charged over night to repel its effects, might ruin many plants, if this precaution be not taken.

Of blowing Bulbous-rooted Flowers in Water.

Some choice Hyacinths, Jonquils, Polyanthus and Italian Narcissuses, small early Tulips, &c. may now be put into glasses, and may be placed either in the Green-house, the Conservatory, or in a Stove, in order to bring them forward for the green-house, or for the drawing-room, as shall be determined on. They may be taken in, in different successions, as noticed of those planted in pots for this purpose last month. The glasses should be filled with soft water; and after the roots begin to spring, the water should be changed once in five or six days, or at least so often as to prevent the points of the fibres from knotting or becoming foul, which if they do, they immediately sit up, and the growth of the whole plant will be very much retarded.

THE CONSERVATORY.

Of the Temperature, and the Admission of Air.

These two particulars are to be regulated by the observations made above, respecting the green-house; from which there should be no deviation in this, or in the following month.

Of Watering, &c.

The borders should now be kept rather in a dry state than otherwise, and a small quantity of water once in ten or twelve days will suffice. Every mean should be used to expel damp, as observed above of

the green-house. The borders should therefore be frequently raked for this purpose, and all damped leaves or decayed shoots should be picked off as they appear.

Of screening the Plants in severe weather.

Towards the latter end, or indeed any time in the month, if severe frosts occur, so as anywise to endanger the plants placed in the borders between the parapet and flue, be attentive to draw, or to let down the curtains or blinds at night, as noticed in January, and described in Section III. which should now be fitted to the lights, in order to be ready for the defence of the plants.

December.

THE GREEN HOUSE.

Of the Temperature.

THE weather will now probably be severe, and particular attention to keep the temperature of the house steady and regular, will be necessary. As noticed last month, the medium point at which to keep the mercury, is 45° ; that is, at the ordinary

times of regulation, which should now be at seven in the morning, and eight or nine in the evening.

In a severe and changeable season, it is no doubt a difficult matter to keep to a point of the scale; and in the green-house, it is of less importance to do so, than in forcing-houses. Yet care should be taken not to deviate so far downwards, as to admit frost into the house, which would be fatal to many plants. The mercury, if possible, (supposing the scale to be hung in the centre of the house,) should never be let fall below 40° . If the house be well constructed, and if the furnace and flues have a proper command over the temperature, it is then supposed that the coldest part of the house would be about 37° , and the hottest about 43° . But this might be proved by shifting the thermometer; or, by keeping one in the coldest part of the house, and keeping the mercury or spirits in it at 35° , as the lowest point, the plants would be safe.

Of the Admission of Air.

Even in severe frost, in the time of sunshine, the plants should be aired for an hour or two every day; doing this however by the ventilators, if the house be provided with them; but otherwise, by opening a few of the sashes at top only, to let the rarefied air escape more readily. In fresh weather, let the fires be made rather brisk in the mornings, in order to allow of admitting air pretty freely for two or three hours about the middle of the day; of the importance of which, and for more full directions, see January on this subject.

Of Watering, &c.

On the subject of watering, I need add nothing to the observations made last month; to which the reader is referred, and, for further observations, to January. Likewise, to the important matter for the welfare of the plants in general, that of carefully divesting them of damped leaves, cleaning the pots of green mould, stirring the surface of the earth, &c.; in short, being careful to expel damp by every practical means.

THE CONSERVATORY.

Of the Temperature.

What is said above, respecting the temperature of the green-house, will equally apply here. If the air of no part of the house be allowed to fall below 35° , the plants will be safe from the effects of frost. But as the tender plants in this compartment cannot be removed, and be placed in any situation more safe than another, as is advised above for the tender plants in the green-house, it is necessary to take the greater care that the climate shall not fall too low. The aim ought to be, to keep the mercury at or about 45° , if the thermometer be placed in the centre of the house; or at 40° ; if placed in the coldest part of it. Be careful to screen the plants in severe weather, by using the curtains or blinds, as noticed particularly in January.

Of the Admission of Air.

In severe weather, admit air by the ventilators, and in fresh weather by the sashes; observing to make fires in the morning, in dull weather, in order to allow of admitting air more freely, for the expelling of damp, &c., as above noticed. Continue frequently to stir the surface of the borders with the rake, to pick off decayed leaves, and to take every pains to extirpate damp or foul air.

Of Watering, &c.

From what is said above, it would seem as if very little water should now be given. Indeed, the borders in general should not be watered more than twice in the course of this month, and perhaps once may suffice; but this must be determined by the state of the weather, and by the state in which the borders may be by previous management. Individual plants may have a little water given to them oftener, if necessary; but the borders, taken in a general sense, should be kept in a state much more dry than moist. The greater part of the plants are now inactive, and therefore require but very little water. As the spring returns, and as their growths advance, the fostering hand of care will prevent the wants of nature.

Of the Admixture of Air

In warm weather, when air in the ventilator, and in fresh weather by the valves, observing to take a fresh air in the morning in dull weather, is not so apt to admit of admixture or more fresh, for the expelling of damp, &c., as above noticed. I have also frequently seen the surface of the boards with the water, in lack of decayed heat, and to take every opportunity to stir up damp, &c., and air.

Of Water, &c.

From what is said above, it would seem as if very little water should now be given. Indeed, the best in general should not be watered more than twice in the course of this month, and perhaps once may suffice; but this must be determined by the state of the weather, and by the state in which the plants may be by previous watering. In such cases plants may have a little water given to them, if necessary; but the best, taken in a general sense, should be kept in a state much more dry than most. The greater part of the plants are now dormant, and therefore require but very little water. In the spring months, and in their growing season, the quantity of water will be more than the want of it.

LIST
OF THE
ENGLISH AND LINNEAN NAMES OF
PLANTS,
MENTIONED IN THE COURSE OF THE WORK.

All the plants are to be considered as hardy, excepting those to which G. (Green-house) is added.—Where it appeared necessary to distinguish the duration of particular species, this is denoted by the letters a. (annual); b. (biennial); p. (perennial).

<i>English Name.</i>	<i>Linnean Name.</i>
Adonis, <i>a.</i>	Adonis autumnalis, &c.
Alaternus, Common; gold and silver blotched ditto,	Rhamnus Alaternus, et var.
Aletris, G.	Aletris Capensis.
Almond, Dwarf,	Amygdalus nana.
Amaranths,	Amaranthus tricolor, &c.
————— Globe, G.	Gomphræna globosa.
Angelica,	Angelica Archangelica, a- tropurpurea.
Aniseed-tree,	Illicium floridanum.
Antholyza, G.	Antholyza Cunonia, &c.
Antirrhinums, <i>a.</i>	Antirrhinum triphyllum, spe- ciosum, &c.
Apple-tree,	Pyrus Malus.
Apricot-tree,	Prunus Armeniaca.
Arbor vitæ, the Chinese,	Thuja orientalis.
————— the common,	————— occidentalis.
Arbutus, several species,	Arbutus Unedo, Andrachne.
Artichoke, common,	Cynara Scolymus.
————— Jerusalem,	Helianthus tuberosus.
Asparagus,	Asparagus officinalis.

Asters, many species, <i>p.</i>	<i>Aster spectabilis, amellus, &c.</i>
——— China, vars. <i>a.</i>	——— <i>Chinensis.</i>
Aucuba, Blotched-leaved, G.	<i>Aucuba Japonica.</i>
Auricula,	<i>Primula Auricula.</i>
Azalea, Scarlet, &c.	<i>Azalea coccinea, &c.</i>
Bachelor's-buttons,	<i>Ranunculus acris, fl. pl.</i>
Balm,	<i>Melissa officinalis.</i>
——— of Gilead, G.	<i>Dracocephalum Canariense,</i>
Balsams, var. G.	<i>Impatiens Balsamina,</i>
Basil, Sweet,	<i>Ocimum Basilicum.</i>
——— bush,	——— <i>minimum.</i>
Bay, Royal, G.	<i>Laurus Indica.</i>
Beans, many vars.	<i>Vicia Faba.</i>
Beet,	<i>Beta vulgaris.</i>
Bell-flower, Pyramidal,	<i>Campanula pyramidalis,</i>
Borage,	<i>Borago officinalis.</i>
Box-tree, common and varie-	<i>Buxus sempervirens, et</i>
gated,	var.
Briar or Sweet Briar,	<i>Rosa rubiginosa.</i>
Burnet, Great,	<i>Sanguisorba officinalis.</i>
Cabbage, many vars.	<i>Brassica oleracea.</i>
Cauliflower,	var. <i>capitata alba.</i>
Savoys,	— <i>Sabauda, &c.</i>
Brocoli,	— <i>Botrytis.</i>
Calla, G.	<i>Calla Æthiopica.</i>
Campanulas, <i>p.</i>	<i>Campanula medium, pyrami-</i>
	<i>dalis, &c.</i>
Camphor-tree, G.	<i>Laurus Camphora.</i>
Candytuft, <i>a.</i>	<i>Iberis umbellata, &c.</i>
Caper-tree, Common, G.	<i>Caparis spinosa.</i>
Capsicum,	<i>Capsicum annuum.</i>
Caraway,	<i>Carum Carui.</i>
Cardinal's Flower, G.	<i>Lobelia Cardinalis.</i>
Cardoon,	<i>Cynara Cardunculus.</i>
Carnations, vars.	<i>Dianthus Caryophyllus.</i>

Carrot,	<i>Daucus Carota.</i>
Catchfly, <i>a.</i>	<i>Silene Lusitanica, quinque-</i> <i>vulnera, &c.</i>
———— double,	<i>Lychnis Viscaria, fl. p.</i>
Celery,	<i>Apium graveolens.</i>
Celsia, G.	<i>Celsia Cretica, &c.</i>
Cherry-tree,	<i>Prunus Cerasus.</i>
Chervil,	<i>Scandix Cerefolium.</i>
Chives, or Cives,	<i>Allium Schoenoprasum.</i>
Cistus, several sp. G.	<i>Cistus roseus, formosus, Cre-</i> <i>ticus, &c.</i>
Chamomile,	<i>Anthemis nobilis.</i>
Chrysanthemums, <i>a.</i>	<i>Chrysanthemum coronarium,</i> <i>tricolor, &c.</i>
Chrysanthemum, Indian, G.	<i>Chrysanthemum Indicum.</i>
Clethra, Tree, G.	<i>Clethra arborea.</i>
Cobbea, Climbing, G.	<i>Cobbea scandens.</i>
Cockscombs, G.	<i>Celosia cristata.</i>
Columbines,	<i>Aquilegia vulgaris, Canaden-</i> <i>sis, &c.</i>
Convolvulus, <i>a.</i>	<i>Convolvulus tricolor, &c.</i>
Convolvulus, G.	<i>C. Canariensis, Cneorum,</i> <i>floridus, &c.</i>
Coriander,	<i>Coriandrum sativum.</i>
Coronilla, Seven-leaved, G.	<i>Coronilla glauca.</i>
Cowslip, American,	<i>Dodecatheon Meadia.</i>
Cranesbills, border,	<i>Geranium Phæum, striatum,</i> <i>&c.</i>
Cress, common,	<i>Lepidium sativum.</i>
———— Black American,	———— <i>Virginicum.</i>
———— Indian,	<i>Tropæolum majus,</i>
Crinum, Broad-leaved, G.	<i>Crinum Americanum.</i>
Crocuses,	<i>Crocus vernus, flavus, &c.</i>
Crown Imperial,	<i>Fritillaria imperialis.</i>

Cucumber, (hot-beds,) <i>G.</i>	<i>Cucumis sativus.</i>
Currant-bush,	
Red and White,	<i>Ribes rubrum, et var.</i>
Black,	—— <i>nigrum,</i>
Cycas, <i>G.</i>	<i>Cycas revoluta.</i>
Cyclamens,	<i>Cyclamen Europæum, Coum,</i> &c.
Cypress, the upright,	<i>Cupressus sempervirens.</i>
Daisies, red, white, and pro- liferous,	<i>Bellis perennis, vars.</i>
Daphne, Sweet-scented, <i>G.</i>	<i>Daphne odora.</i>
Dillenia, climbing, <i>G.</i>	<i>Dilennia scandens.</i>
Dolichos, woody, <i>G.</i>	<i>Dolichos lignosus.</i>
Endive,	<i>Cichorium Endivia.</i>
Evergreen Thorn,	<i>Mespilus pyracantha.</i>
Fennel,	<i>Anethum Fœniculum.</i>
Fig-tree,	<i>Ficus Carica.</i>
Foxgloves,	<i>Digitalis lutea, ferruginea,</i> &c.
French Bean,	<i>Phaseolus vulgaris.</i>
Scarlet Runner,	—— <i>var. coccinea.</i>
White Runner,	—— <i>var. alba.</i>
Fuchsia, Scarlet, <i>G.</i>	<i>Fuchsia coccinea.</i>
Garlick,	<i>Allium sativum,</i>
Gentians, <i>p.</i>	<i>Gentiana lutea, purpurea, &c.</i>
Gentianella,	<i>Gentiana acaulis.</i>
Geraniums (Pelargoniums)	<i>Pelargonium tricolor, inqui-</i> <i>nans, &c.</i>
<i>G. numerous.</i>	
Germander, different sp. <i>G.</i>	<i>Teucrium Marum, Polium,</i> &c.
Gilliflower, Stock, <i>b. vars.</i>	<i>Cheiranthus incanus,</i>
Globe, or Globe Ama- ranth, <i>G.</i>	<i>Gomphræna globosa.</i>
Globularia, the common,	<i>Globularia vulgaris, &c.</i>

Glycine, G.	Glyciné rubicunda, &c.
Gnidia, G.	Gnidia simplex, &c.
Gooseberry-bush,	Ribes grossularia.
Gourds,	Cucurbita Melopepo, &c.
Gromwell, yellow-flower-	Lithospermum Orientale,
ed, G.	
Gum Cistus,	Cistus ladaniferus.
Hazel, the common, and fil-	Corylus Avellana, et var.
berd,	
Hawk's-beard, <i>a</i> .	Crepis rubra, barbata, &c.
Heaths, or Erica, numer-	Erica formosa, ampullacea,
ous, G.	&c.
Heliotrope, G.	Heliotropium Peruvianum.
Hepatica,	Anemone Hepatica.
Hermannia, G.	Hermannia odorata, &c.
Holly, common and varie-	Ilex Aquifolium, et var.
gated,	
Hollyhocks, vars.	Althæa rosea.
Honeysuckle, French, <i>b</i> .	Hedysarum Coronarium.
—— garden, vars.	Lonicera periclymenum, gra-
	ta, &c.
Horse-radish,	Cochlearia Armoracia.
Hyacinth,	Hyacinthus orientalis.
Hydrangea, Tree,	Hydrangea arborescens.
—— Shrub, G.	—— hortensis.
Hypericum frutex,	Spiræa hypericifolia.
Hyssop,	Hyssopus officinalis.
Iris, Persian,	Iris Persica.
—— Bulbous,	—— Xiphium.
Ivy, different vars.	Hedera helix, et var.
—— five-leaved,	—— quinquefolia.
Ixia, many species, G.	Ixia rosea, villosa, &c.
Japan-rose, G.	Camellia Japonica.
Jasmine, common,	Jasminum officinale.

Jasmine, Yellow Indian, G.	<i>Jasminum odoratissimum</i> .
———— Catalonian, G.	———— <i>grandiflorum</i> .
———— Madeira, G.	———— <i>Azoricum</i> .
Jonquil,	<i>Narcissus Jonquilla</i> .
Lantana, sweet-scented, G.	<i>Lantana odorata</i> .
Larkspur, <i>a</i> .	<i>Delphinium Consolida</i> , <i>Ajacis</i> .
Laurel, the Portugal,	<i>Prunus Lusitanica</i> .
———— broad-leaved,	———— <i>Lauro-Cerasus</i> .
Laurustinus,	<i>Viburnum Tinus</i> .
Lavender,	<i>Lavandula Spica</i> .
Lavatera, <i>a</i> .	<i>Lavatera trimestris</i> , &c.
Leek,	<i>Allium Porrum</i> .
Lemon-tree, G.	<i>Citrus medica</i> .
Lettuce,	<i>Lactuca sativa</i> .
Lilac, purple, white,	<i>Syringa vulgaris</i> , var.
———— Persian, vars.	———— <i>Persica</i> , var.
Lily, Belladonna, G.	<i>Amaryllis Belladonna</i> .
———— <i>Jacoea</i> , G.	———— <i>formosissima</i> .
———— Mexican, G.	———— <i>Reginæ</i> .
———— of the Valley,	<i>Convallaria majalis</i> .
———— Blue African,	<i>Agapanthus umbellatus</i> .
London-pride,	<i>Saxifraga umbrosa</i> , &c.
Love-apple,	<i>Solanum Lycopersicum</i> .
Love-lies-a-bleeding,	<i>Amaranthus caudatus</i> .
Lupines, <i>a</i> .	<i>Lupinus luteus</i> , <i>albus</i> , &c.—
Lychnis, Scarlet,	<i>Lychnis chalconica</i> .
Malabar nut, G.	<i>Justicia Adhatoda</i> .
Mallows, <i>a</i> .	<i>Malva crispa</i> , <i>Hispanica</i> , &c.
Marigold, common,	<i>Calendula officinalis</i> .
———— French,	<i>Tagetes patula</i> .
———— African,	———— <i>erecta</i> .
Marjoram,	<i>Origanum Majorana</i> .
———— sweet pot	———— <i>Onites</i> .
Marvel of Peru, <i>p</i> .	<i>Mirabilis Jalapa</i> .
Maurandia, climbing, G.	<i>Maurandia semperflorens</i> .

Melon, (hot-bed,)	<i>Cucumis melo.</i>
Metrosideros, G.	<i>Metrosideros floribunda, &c.</i>
Mezereon, red, white,	<i>Daphne Mezereum, var.</i>
Mignonette,	<i>Reseda odorata.</i>
Mushroom,	<i>Agaricus campestris.</i>
Mustard,	<i>Sinapis alba.</i>
Myrrh,	<i>Scandix odorata.</i>
Myrtles, vars. G.	<i>Myrtus communis, fl. pleno.</i>
Narcissus, common,	<i>Narcissus poeticus.</i>
———— for flower-glasses,	<i>Narcissus tazetta, &c.</i>
Nectarine-tree,	<i>Amygdalus Persica, var.</i>
Olive-tree, G.	<i>Olea Europæa.</i>
Onion,	<i>Allium Cepa.</i>
Orange-tree, G.	<i>Citrus Aurantium.</i>
Parsley, common,	<i>Apium Petroselinum.</i>
———— Hamburg,	———— var.
Parsnip,	<i>Pastinaca sativa.</i>
Passion-flowers, G.	<i>Passiflora cœrulea, quadrangularis, &c.</i>
Peach-tree,	<i>Amygdalus Persica.</i>
Pear-tree,	<i>Pyrus communis.</i>
Peas,	<i>Pisum sativum.</i>
Pennyroyal,	<i>Mentha Pulegium.</i>
Peony-rose,	<i>Pœonia officinalis, tenuifolia, &c.</i>
Peppermint,	<i>Mentha Piperita.</i>
Phillyrea, broad-leaved,	<i>Phillyrea latifolia.</i>
———— narrow-leaved,	———— <i>angustifolia.</i>
Phlomis, diff. sp. G.	<i>Phlomis purpurea, lychnitis.</i>
Pine-apple, vars. (stove,)	<i>Bromelia ananas, var.</i>
Pinks, <i>p.</i>	<i>Dianthus hortensis, &c.</i>
———— Indian, <i>a.</i>	———— <i>Chinensis.</i>
Pittosporum, G.	<i>Pittosporum coriaceum, &c.</i>
Plum-tree,	<i>Prunus domestica</i>

- Polygala, several sp. G. *Polygala myrtifolia*, &c.
 Polyanthus. *Primula elatior*, &c. var.
 Poppies, Garden, *Papaver somniferum*, var.
 Potato, vars. *Solanum tuberosum*.
 Primroses, *Primula elatior*, *Helvetica*, &c.
 Primrose, Tree, *b.* *Oenothera biennis*.
 Prince's Feather, *Amaranthus hypochondriacus*.
 Privet, the evergreen, *Ligustrum vulgare*, var.
 Protea, different sp. G. *Protea pulchella*, *rosacea*, &c.
 Pumkin, *Cucurbita Pepo*.
 Purslane. *Portulaca oleracea*.
 Quince-tree, *Pyrus Cydonia*.
 Radish, *Raphanus sativus*.
 Ranunculuses, Garden, *Ranunculus Asiaticus*.
 Raspberry-bush, red, white, *Rubus Idæus*.
 &c.
 Rest-Harrow, diff. sp. G. *Ononis crispa*, *viscosa*.
 Rhododendron, diff. sp. *Rhododendron maximum*,
Ponticum, &c.
 Robinia, or Rose Acacia, *Robinia hispida*.
 Rocambole, *Allium Scorodoprasum*.
 Rockets or Dame Violets, *b.* *Hesperis matronalis*, fl. pl.
 Roses, common, *Rosa centifolia*.
 — (for green-house,) — *Indica*, *Chinensis*, &c.
 — Moss, — *muscosa*.
 — Japan, G. *Camellia Japonica*.
 Rose-bay, G. *Nerium Oleander*.
 Rose-Campion, — — — *Agrostemma Coronaria*, *Flos-*
Jovis, &c.
 Rosemary, *Rosmarinus officinalis*.
 Rue, *Ruta graveolens*.
 Sage, Garden, — — — *Salvia officinalis*.
 — (for green-house), — — — *coccinea*, *Cretica*, &c.

St John's Wort, many sp. G.	<i>Hypericum Canariense</i> , re-
	<i>flexum</i> , &c.
Salsafy,	<i>Tragopogon porrifolius</i> .
Savory, summer,	<i>Satureja hortensis</i> .
———— winter,	———— <i>montana</i> .
Saxifrage, double white,	<i>Saxifraga granulata</i> , fl. pleno.
———— Pyramidal,	<i>Saxifraga Cotyledon</i> .
Scabious, Sweet, b.	<i>Scabiosa atropurpurea</i> .
Scorzonera,	<i>Scorzonera Hispanica</i> .
Scurvy-grass,	<i>Cochlearia officinalis</i> .
Sea-Cale,	<i>Crambe maritima</i> .
Shaddock-Tree, G.	<i>Citrus Decumana</i> .
Shallot,	<i>Allium Ascalonicum</i> .
Skirret,	<i>Sium Sisarum</i> .
Sophora, G.	<i>Sophora microphylla</i> , &c.
Spanish Chesnut,	<i>Fagus Castanea</i> .
Spearmint,	<i>Mentha viridis</i> .
Spinage,	<i>Spinacia oleracea</i> .
Spurge-laurel,	<i>Daphne Laureola</i> .
Snowdrop,	<i>Galanthus nivalis</i> .
Sorrel,	<i>Rumex acetosa</i> .
Strawberry,	
Scarlet,	<i>Fragaria Virginiana</i> .
Chili,	———— <i>Chiloensis</i> .
Hautboy,	———— <i>elatior</i> .
Wood,	———— <i>vesca</i> .
Alpine,	———— <i>alpina</i> .
Pine-apple,	———— <i>ananas</i> .
Strawberry-tree,	<i>Arbutus Unedo</i> .
Sultan, Sweet, a.	<i>Centaurea moschata</i> .
Sunflower, a.	<i>Helianthus annuus</i> .
Sweat Pea,	<i>Lathyrus odoratus</i> .
Sweet William,	<i>Dianthus barbatus</i> .
Tansy,	<i>Tanacetum vulgare</i> .

Tarragon,	<i>Artemisia Dracunculus.</i>
Tea-plant, G.	<i>Thea Bohea, viridis.</i>
Thorn, the common,	<i>Pyrus Oxyacantha.</i>
—— the evergreen,	<i>Mespilus pyracantha.</i>
Thrift, or Sea-Pink,	<i>Statice Armeria.</i>
Thyme,	<i>Thymus vulgaris.</i>
Trumpet-flower, G.	<i>Bignonia pandora, &c.</i>
Tuberose, G.	<i>Polyanthes tuberosa.</i>
Tulip, common,	<i>Tulipa Gesneriana.</i>
—— Pottebacker, &c.	————— vars.
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Turnip,	<i>Brassica Rapa.</i>
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Valerian, Garden,	<i>Valeriana Phu.</i>
—— Greek,	<i>Polemonium cœruleum, vars.</i>
Venus' Looking-glass,	<i>Campanula Speculum.</i>
Veronica, <i>p.</i> many species,	<i>Veronica Virginica, incana,</i> <i>maritima, &c.</i>
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Vervain, Three-leaved,	<i>Verbena triphylla.</i>
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Double,	—— <i>odorata, fl. pl.</i>
Violet, Dog's tooth,	<i>Erythronium Dens Canis.</i>
Virgin's-bower,	<i>Clematis Florida, &c.</i>
Wall-flower,	<i>Cheiranthus Cheiri.</i>
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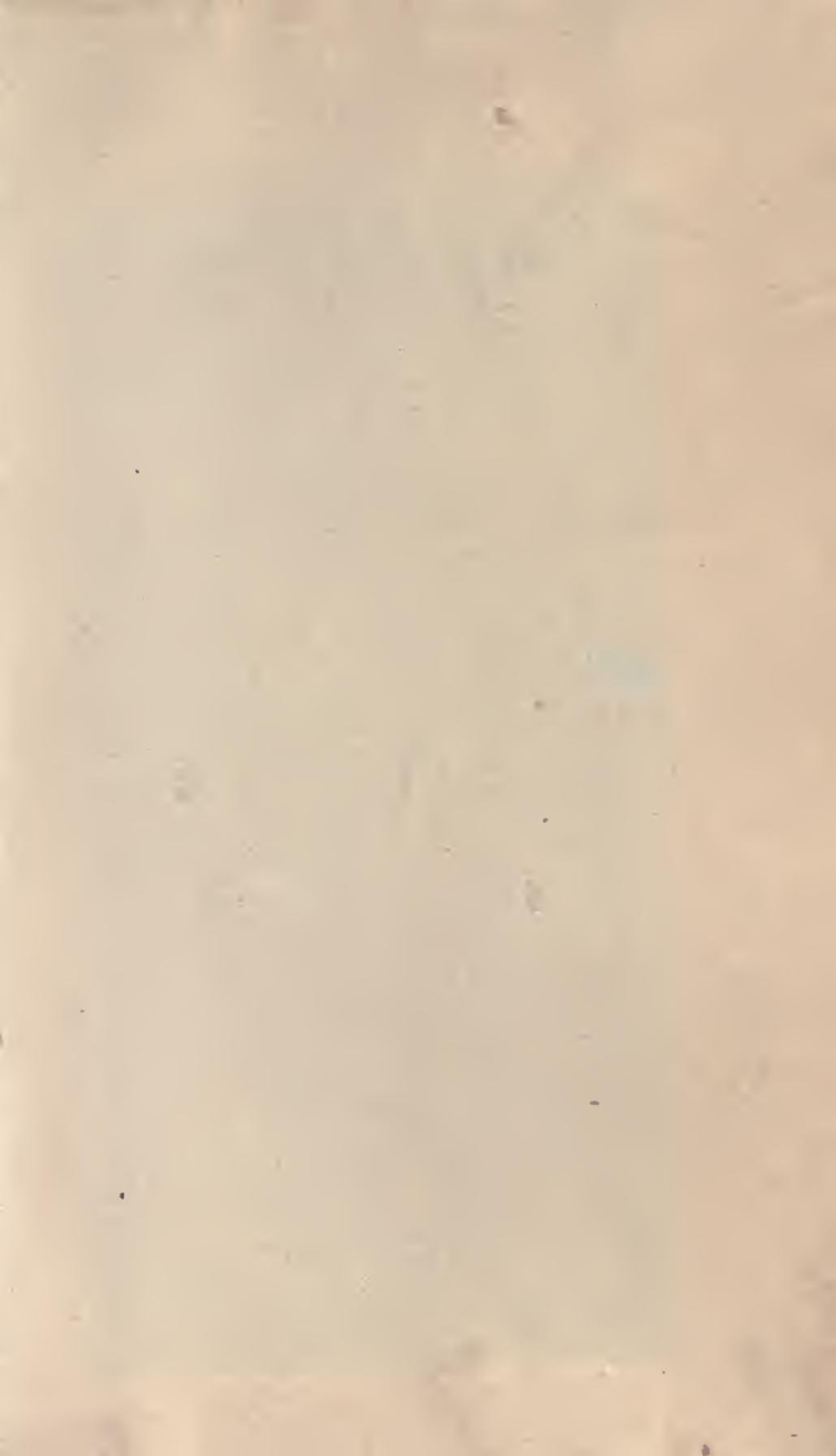
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