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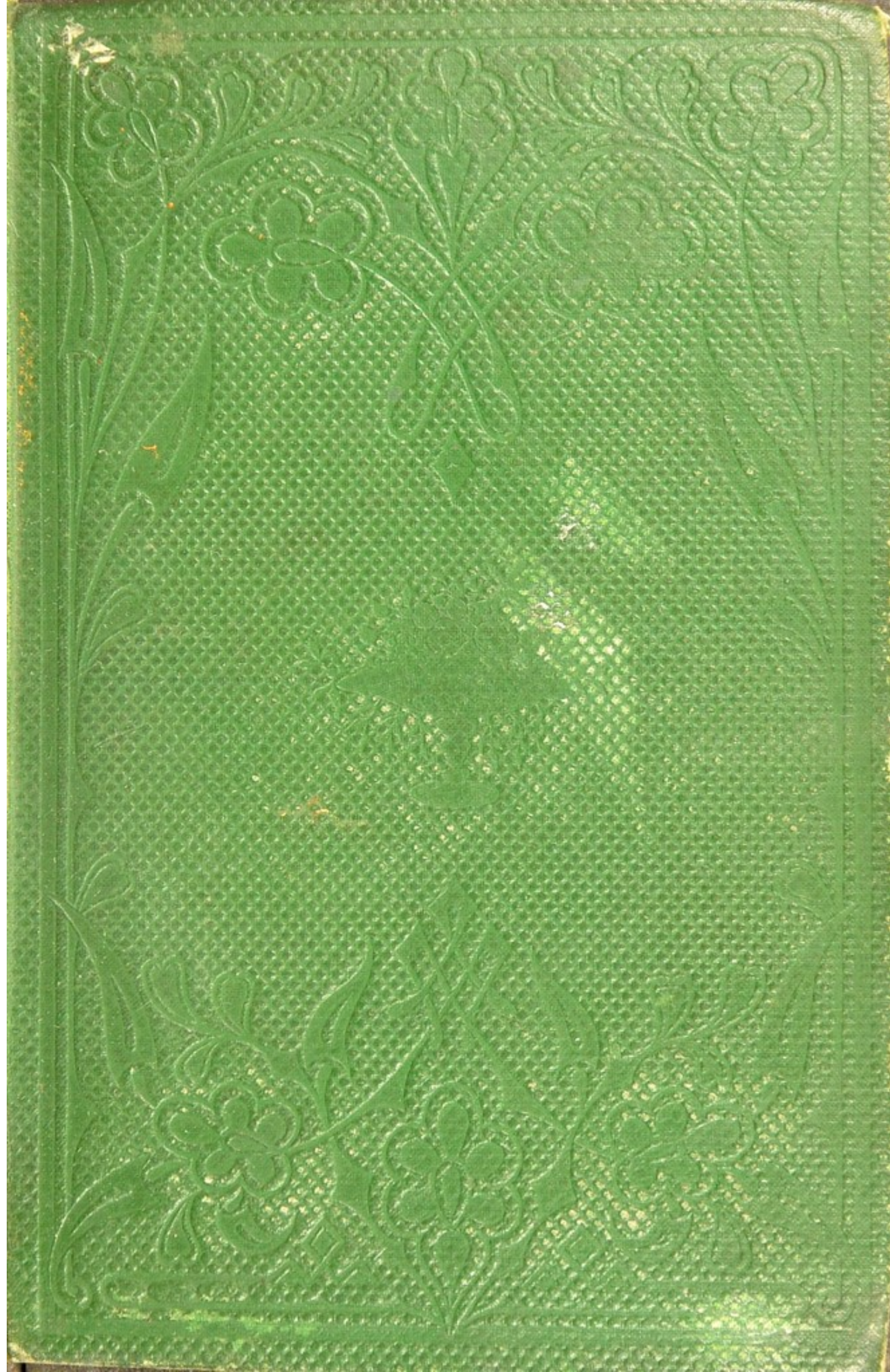
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OF
FRUITS AND VEGETABLES.

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THE CULTURE

OF

FRUITS AND VEGETABLES

BY

GEORGE ^{SE}GLENNY, F.H.S.

²AUTHOR OF

"THE GARDENER'S EVERY-DAY BOOK," "MANUAL OF PRACTICAL GARDENING,"

"THE PROPERTIES OF FLOWERS AND PLANTS,"

"THE HANDY-BOOK ON GARDENING AND GOLDEN RULES FOR GARDENING,"

"GARDENING FOR THE MILLION," ETC.

AND TWENTY-THREE YEARS EDITOR OF "GLENNY'S GARDEN ALMANAC."

LONDON
HOULSTON AND WRIGHT
65, PATERNOSTER ROW.

MDCCCLX.

Journal

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PREFACE.

THE great demand for reprints of many treatises that have appeared in the "Annals of Horticulture," and were acknowledged in their day to be the best that had issued from the press, has induced the publishers to bring out a uniform edition of all my works ; and I see so little to alter that the business of revision has not extended beyond the correction of a few typographical errors. It is rather gratifying to observe that every writer who has pretended to give the world something of his own upon any of the subjects of these treatises has failed to produce a new idea, and not one has ventured to contradict the lessons published so long ago. Nor have I, with every opportunity of omission or addition, thought it necessary to change the lessons or the language, which were only intended to be plain and practical.

That the works will be popular in their present form there is already abundant proof, in the demand for the separate Treatises as they appeared during the last few

months. It is not pretended that any of these are new. On the contrary, they are valued because most of them anticipated the present age, and are just as applicable to the practice of 1860 as they were to the period at which they were first published. It must also be noticed that many were out of print, and that the whole were scattered about among works no longer to be purchased. Their value in a collected form is greatly increased, and I hope and believe they will prove the most useful works that a young gardener, whether amateur or professional, can select for a limited library. I have, therefore, the greatest confidence in their usefulness, and so hand them once more to the friends of the rational science of gardening.

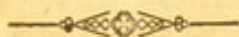
G. GLENNY.

LONDON, *March*, 1860.

The Cultivation and Management

OF

THE GRAPE-VINE.



THE grape is a delicious fruit when ripened, and a useful one when unripe, for it will make a wine superior to that from any other fruit, and not very inferior to foreign. It is therefore among the best that can be grown, where there is convenience. British wines are generally spoiled by the effort to make large quantities with small means; there is always in the very best receipt such a liberal supply of water recommended, that the result is sugar and water, flavoured with the fruit, rather than real wine. If we were to keep in mind that true wine is the fermented juice of fruit, and that all the water we put to it deteriorates it, we should be more sparing of the adulterating liquid. However, we only want to show that in the most unfavourable season, when the great mass of grapes will not perfectly ripen, we have a most useful means of making an excellent wine. Nevertheless, in a backward season the ripening may be a good deal hastened by liberally thinning the bunches as well as the berries; for the less a vine has to do, the better it will be done.

In the course of our practice we have arrived at several conclusions, which we think cannot be disputed, and upon these we found a system of culture which we shall endeavour to make as clear as possible. Our system is founded on the following facts:—

1. That the Grape-vine is a gross feeder, and will flourish in the richest and fattest of soil; but will also flourish in any pure, well-drained loamy soil, though not so strong.

2. That the Vine is impatient of stagnant or continued wet in the soil.

3. That the Vine is capable of producing a given quantity of fruit and wood in perfection, and that when it is allowed to exceed that quantity, the rusting, the shrivelling, or the non-ripening of the fruit, or other evils, or all, in their turns, are certain consequences.

4. That when a less proportion of fruit and wood than the Vine can mature be left on it, no evil consequences ensue, and therefore this extreme is preferable to the other, if we err on either side.

5. That the Vine bears on shoots of the present year, out of wood of the last year, and therefore care has to be taken that a sufficient quantity of last year's wood be preserved.

6. That so long as a proper quantity of last year's wood be preserved, and not too much be left to push fruit and wood, a Vine will bear; and therefore, although there may be some modes of pruning more neat than others, and some more easily managed, so long as the Vine has not too much space to cover, too much fruit to mature, or too much wood to produce and maintain, the actual style of pruning and training may be suited to the place on which it has to grow.

7. That the roots of the Vine cannot be disturbed, nor reach into sour, cold, or poor soil, without deteriorating almost immediately the fruit and the present year's wood.

8. That the length of barren stem, before the branches are allowed to start, is immaterial, and therefore, that a Vine with its bearing wood on the roof of a house, and a bare stem all up the front, will give as fine fruit as a fellow Vine, with its bearing wood within a foot of the ground.

PROPAGATION FROM CUTTINGS.

Grape-vines are propagated in many different ways. To raise them from cuttings, get, at the fall of the year, when autumn pruning takes place, long cuttings of the present year's wood, the nearer the *old* wood, and the closer the eyes, the better. Let these be "laid in," that is, the lower ends laid three or four inches under ground, with the long ends lying on the surface, and cover them with a foot of dry litter, to protect against frost, until March. Towards the end of March, take up the shoots, cut the lower end close up to the lowest sound eye or joint, and then cut it off half-way

between the third and fourth joints ; this lowest cutting, from each length, will prove the best, and, unless you really want more, you may throw the rest away, though every three eyes or joints the whole length would make a plant. The cuttings may be planted in rich ground, in a sloping direction, with the top eye or joint just above the soil, and the two eyes below it. The cuttings thus planted, whether in the place they are to grow in, or a place from which they are to be afterwards removed, require the same attention. If more than one shoot appears, the weakest must be rubbed off, and only one—the strongest—be allowed to grow. This must be supported by being nailed to the wall, or tied to a stake, as the case may be ; and, that all the strength may be thrown into the main shoot, the points of the lateral or side shoots must be taken off, and frequent waterings must be given. Some persons recommend watering with soapsuds or liquid manure ; but if the ground has been properly made, it is useless, though if necessity has compelled you to put the cuttings in poor soil, liquid manure will assist ; and the best is made from sheep's-dung ; the next best from decomposed neat's-dung ; but if neither can be had, the dung from a decayed melon-bed. To keep this manure in readiness, put a pailful of dung into a tub with nine pailfuls of water, and stir it well up every day before you use it. Never let the ground be dry until the shoots are a foot long ; but let it be understood, that if we were going to plant a wall, or a row for espaliers or stakes, we should plant two cuttings within a foot of each other at every place we wanted a vine ; and when they had made their growth, if both succeeded, which in nine cases out of ten they would, we should remove the weakest, and let the strongest remain ; and by all means should use a cutting in preference to a plant.

PROPAGATION BY GRAFTING.

The Grape-vine may be grafted upon last year's wood, with last year's wood of the same thickness ; or inarching the present year's green shoot upon the present year's shoots. The former is done thus :—Select a scion with one eye, and cut it in the form of a wedge. For a stock, select a shoot of the preceding year, about the same thickness as the scion, and cut it over a little above the second eye from the old wood. With a sharp knife cut it down the centre nearly

to the old wood. Out of that half of the stock which is opposite to the eye or bud, pare with a penknife as much as is necessary to make it fit the cutting on the sides of the scion. Insert the scion with its eye opposite to that left on the side of the stock. Tie it up and clay it over in the usual manner, with this difference, that you cover nearly the whole of the scion with the clay, leaving only a small hole for its eye. Tie a little moss over the clay, upon which sprinkle a little water occasionally, to keep the whole in a moist state for some time. It is essential to leave the eye or young shoot on the top of the stock, and allow it to grow for a few days, when it should be cut off, leaving only one eye and one leaf to draw sap to the scion, till it be fairly united to the stock. This may be done when the stocks are about to break into leaf; but with more certainty of success, when the shoots of the stock have made four or five eyes of new wood. The plan of grafting the last year's wood underground, may, if preferred, be adopted with success. The inarching of the green wood is thus managed:—A plant of the variety required is procured in a pot, and set by the side of the vine to which it is to be united. Place the pot so that the shoot of the plant in it shall grow the same way as that on which it is to be inarched, then with a very sharp knife cut away one side of the shoot of the stock, about or near half through, then cut the side of the scion where it is the same thickness, and the two flat portions being fitted so that the barks of both meet, at least on one side, are tied together with bass, and protected for a time with damp moss, tied loosely round the place where they meet. This can be done at any part of the vine; but if it be proposed to sacrifice the original variety altogether, and replace it with the new, it should be inarched as near the bottom as possible, for which purpose the old vine should be cut very considerably in, to encourage shoots as low down the old wood as possible. Few people like to lose the crop of fruit the year they graft, but the more of the vine they cut away, the more likely they are to obtain shoots low down the trunk. When the graft has united, the tie must be undone, and the whole loosened; but it is still desirable to re-tie it and keep it on awhile rather less confined. This plan of inarching *with*, and *on*, the green wood, may be relied upon; all that can be required are one or more healthy plants, in pots, of the

varieties to be substituted, each with a good green shoot, the produce of the present season ; and a vigorous growing shoot proceeding from the old vine, to serve as a stock. We do not, however, recommend the plan, except when the other has failed, or we begin to think of grafting when too late for the other mode. We have sown the seeds of raisins at Christmas, inarched the seedling plant in May, and in two years afterwards had the fruit. The great object of grafting is to change the fruit of established vines ; and when the growth is healthy and vigorous, it is well worth attention, because it is evidently possible to calculate on fruit the very year the grafting is performed, if you happen to select a graft with a fruit-bearing bud. The grafting of ripened wood upon ripened wood affords the best opportunity that can be imagined for obtaining new varieties of fruit on old vines, without losing a season, because the old portion need not be removed any faster than the new supplies its place, and if anything happens that you miss the season, you can have recourse to the grafting of the green wood by inarching, which has this advantage,—if it do not take properly, your plant in the pot is not lost, but, on the contrary, the two or three eyes which are below the place cut will enable you to adopt the grafting with the ripened wood in the spring of the next year.

PROPAGATION BY LAYERING.

The layering of a vine, or indeed of any other tree or shrub, is performed by confining a portion of a branch below the surface of the soil, where it will, in the course of time, strike root from one or more of the joints or eyes so confined. Take the branch of a vine of the last year's growth, long enough to reach under the surface, remove the soil three inches, bend down the shoot so as to pin down and confine two eyes under the soil. This is easiest done by a stick, cut with a hook to it like a walking-stick, and about a foot long, thrust into the ground to hold the branch fast down. The eyes between the trunk and the ground should be cut away, so as to prevent their growing, and the eye next above the soil beyond where it is pegged down is depended on for the shoot that is to make the plant, and all beyond that should be cut away. The objection to this practice is, the disturbance of the soil to get up the plant after it is struck,

because the roots entangle with those of the parent vine. To obviate this, a pot may be sunk two or three inches below the surface, and the vine pegged down so that both eyes are compelled to strike into the pot which confines the roots, and by separating the plant from the parent at the end of August, and planting it where it is to remain, without breaking the ball or disturbing the root, the plant may not be much worse than a cutting; in either case, the plants keep growing, and the branches may be fastened to the wall, or to a stake or espalier frame, as the case may be, and must be occasionally moistened with liquid manure, till the leaves all but fall.

PROPAGATION FROM EYES.

The most common mode of propagation is from single eyes, which moreover has this advantage, that an eye can be sometimes obtained when enough for a graft or a cutting cannot; and in the case of new varieties, there is another advantage, because for every cutting, which must have two eyes, and ought to have three, two or three plants might be raised from single eyes, which are cut with not more than half an inch of wood to them. There is very little difficulty about the raising of vines from eyes. If they were cut with half an inch of the stem on each side, and were planted on the open ground, in rich soil like scarlet beans, we verily believe they would grow and do well: but the object of all cultivators is despatch. It is not enough to find a well-rooted vine plant, with a foot or two of stem at the end of a season, when by using other means they can be grown many times as strong. The preparation of the eyes consists merely of choosing full plump ones, in well-ripened wood, and cutting the wood up pretty close to each side of them; these may be placed in what are called large sixty-sized pots, of tolerably rich loam and decayed dung, well mixed and laid together for a time. These may be plunged in a moderate hot-bed, and grown fast; air and water must be given at proper seasons, and as soon as the pots are filled with roots, the plants may be removed to forty-eight-sized pots, without disturbing the balls of earth. There must be some crocks, or broken pieces of pot, put at the bottom to secure a drainage; and soil of the same description as that used at first is to be put round the ball of earth, and gently pressed down without bruising the fibres; these should be placed in the stove, if

there be one, and must not want water, as if they were once too dry it would check them. If the eyes are put in during the latter months of the year, they will have made some progress by the spring; and by the time the second pots are filled with roots, the plants may be transferred to twenty-four-sized pots, in the same way they were put from the sixties to the forty-eights: and after they have been in the house a few days, during which time they should be supported against the wall, or tied loosely to a trellis or some other place, that they may not be broken or bruised by their own weight, they will be ready for final removal for the season, which, however, should not be till the end of June, when the pots may be sunk close together, under a south wall, and the vines tacked loosely up the wall; and there they may be watched and watered when they require it, until the leaves turn colour, soon after which they will drop, and the wood will thoroughly ripen. All this time side shoots must be stopped at the first joint. Some cut these down and grow them another season, even if intended to plant out in a border; others use the first year's cane to carry through into the house; but here we have, at all events, plants fit to do anything with, raised from eyes in one season; and whether these be required for growing and fruiting in pots, or for planting on a border, to be carried through into a house to grow under glass, or to be planted inside a house, they are equally fit for their work. Many prefer raising plants from cuttings or layers, and although we do not think them equal in general to those raised from eyes, many very excellent plants, perhaps not inferior at all, have been, and many others are, constantly raised from both cuttings and layers. Plants from eyes are generally preferred for pot-forcing.

PROPAGATION FROM SEED.

There is very little object in raising vines from seed, because we can obtain vines of every kind of fruit that reaches this country; nevertheless, there are some who like to do such things, and it is a very simple operation. Obtain a wide-mouthed pot, and sow the seeds in compost of loam and dung, in equal quantities, in the month of February or March; place them in a common hot-bed, among cucumbers or melons, or in which annuals are being raised. They will grow rapidly; and as soon as they can be handled well, plant

them out in pots four inches across, one in the centre of each pot, and replace them. If this convenience cannot be had, sow them in the autumn on a warm border, and cover with a hand-glass. Those in a hot-bed will advance fast, and in May will be large enough to graft by inarching, which will rapidly hasten the fruiting. Those in the border will not be quite so forward, but they may be planted out at the foot of a south wall, well watered with manure water, and they will make a good growth the first season. They ought to be fastened as they advance, to prevent the wind from breaking them, and they may be then treated and trained like plants from eyes, as soon as they are large enough. There is not much hope of improved varieties in seedlings from the raisins or grapes we procure from abroad, because the same sorts are cultivated over a large space, and therefore there is no chance of any great mixture.

BORDERS FOR THE VINE.

In making the borders for vines, we have to keep in mind the necessity of complete drainage, and this must be effected by means adapted to the situation. If the border be next a house or wall, it ought to be ten feet wide, and the drain made at the edge furthest from the wall. The entire soil should be dug out three feet deep in front, and two feet six inches next the wall; a drain, six or eight inches deeper, should go along the front. The water must be got rid of somewhere. Upon the bottom of this excavation put one foot thickness of brickbats, stones, broken pots, and all kinds of rough stuff, taking care that the drain or gutter in front be covered over with tiles, or that none but large pieces that will lay loosely, or some open material that will keep a free current for the water, be laid in the hollow, and that the foot thickness which is covered over it be rough open stuff. This bottom secures a perfect drainage. Then make up your compost for your border, *if it must be all new*, with rich loam, turves, bones, leather cuttings, horn shavings, farriers' waste, waste rags, bits of carpet, or any other material, one-half being loam, and one-fourth decomposed dung, and the other fourth a mixture of all, or such as can best be got at. Animal substances, either fresh or in a state of decay, cannot be misapplied when put to the vine border, and they are better in large than small pieces—whole bones are better than bone

dust or bruised bones—and if broken pots, tiles, or bricks are among the compost, it is all the better, as the roots run through it with greater facility; gravel or road scrapings are also good. This mass, being mixed and chopped up together, may be filled in upon the rough bottom, two feet six inches thick all over, which will raise the border about six inches next the wall, and the front will be level with the rest of the ground. All this supposes the soil to be less dry than it ought to be, and pretty nearly as unfavourable as it can be. But, suppose the soil to be high and dry, good loam, plenty of it, and already well drained. In that case, you have only to mix up with the loam, for two feet six inches downwards, by trenching, any or all of the ingredients we have mentioned, but, at all events, bones, broken pots, road drift, decomposed dung, leaf mould, or turves, from one-fourth to a half, and ten feet wide from the wall. If, however, the ground lies too cold and wet to enable you to dig down much, the best way then is to lay the rubbish bottom first mentioned at the depth that you *can* get rid of the water, which in some places during the winter months is the very surface itself, and then the border must be raised all above the surface. This should be remembered,—the vine ought to have, at the least, two feet depth of good soil, and ten feet in width, so that whatever you cannot sink of the depth you require, must be raised, and if necessary, bricked up to keep up the soil. Those who have a cottage or wall to grow a vine on, and hardly any room for the roots, must excavate the place as large as they can, make a fair drain to get rid of superabundant wet, and fill up their excavation with the same earth, mixed, as we have described, with other materials to the extent of one-fourth to one-half the whole quantity used to fill up with.

PLANTING.

Procure plants in pots, in preference to others. Any time before March, turn the plant—which will be several feet long, if only a year old—out of the pot with the ball whole; make a hole about two feet six inches from the wall, and deep enough to lay the ball in, almost on its side, and the upper edge of it full three inches below the surface; open the ground nearly to the wall, and with hooked pegs fasten down the plant three inches below the surface, turning it up within

half a foot of the wall ; then cut the plant down so as to have but two eyes above the soil. The object of thus laying in eighteen inches of the plant above the root, is to increase the supply of nourishment to the plant ; every eye under ground will form roots, and give vigour to the shoots. Water them regularly, and if the ground be not as rich as you wish, use liquid manure. As the two eyes shoot, if more than one shoot comes from each, the weakest must be pulled off, and the principal shoots left must be supported by being nailed to the wall with a shred of cloth long enough to go loosely round the stem, and allow of a nail being driven through its ends to hold it to the wall, until they are two feet long, or they earlier indicate which takes the lead—because only one shoot, and that the strongest, must be allowed to grow. The same precaution must be taken throughout the season, that the wind may not damage the shoots. All side, or, as they are called, lateral shoots, must be pinched off just above the first leaf they make ; and if there be any dry weather, the watering must be as regular and as abundant as the circumstances may call for. There must not be a crop, or plants of any sort, on any part of the border, larger than a radish or seedling vegetables for planting out, for the vine is selfish. The richest border has no more good than the vine can in time appropriate to itself, and any regular upper crops impoverish the soil, drive the roots of the vine deeper after nourishment, and deprive them of the warmth of the sun.

EARLY PRUNING.

The principal object the first year is to let the vine make all the growth it can in the main stem, and to take away all side shoots, that they may not take the nourishment from the main branch. The object of pruning the vine is, to provide for the certainty that the plant is capable of producing a given quantity of wood and fruit in perfection, and that where it is allowed to provide for more than that quantity, it does not produce them in perfection ; that, in fact, allowing more wood and fruit to grow than ought to grow, engenders that host of evils which many persons experience, but which few know how to avoid. The difficulty is, to know exactly how much it can do, that you may not lose any great amount of crop ; but we recommend everybody to err on the safe side. In pruning, regard must be had to the

place the vine has to grow on. People do not often build walls for vines, or we might tell them the best way to build. Vines are generally grown, because there is an opportunity offered by a vacant space on a house or wall, or other building. If you have to cover a wall that is only a few feet high, you cannot begin to cover it too low; if, on the other hand, you have a building of which the lower part is already covered with trees, you must let the stem of the vine grow singly, until it has reached the height it ought to branch from; at all events, whether it be for the one or the other—the training close to the ground, or the training up high to reach the place it is intended to cover—the first summer treatment must be alike for the two different modes of pruning and training:—no lateral shoots must be allowed to remain on, except just the length of one joint, or the first leaf, and the main shoot may go travelling onwards as high as it will. In September pinch off the top: in November cut it down to the lowest two eyes. The stronger of these is to grow, the weaker is to be cut clean out close to the main stem. Treat it the same the next season, taking off the fruit, if any appear, and pinching off the tops of lateral shoots, just by the first leaf: fasten the main shoot every few inches it grows, to save it from the effect of the wind, which might otherwise break it, and thus spoil a season. If the object is to keep a long stem, and not to train it near the ground, the entire growth must be allowed; but if the vine is to be cut down again, the top should be pinched off in September. The third season of its growth it must be cut down to four eyes, two on each side; the strongest of the branches on each side, that grow from these eyes, is to be left for training, the others to be cut out. The plan of leaving three in case one be lost, although generally practised, and by many recommended, is bad, because it may be, that the single one gets damaged or lost on one side, and the two strong ones on the other, and it is by no means desirable to depend on bending one over to the opposite side.

Having then selected the strongest shoot on each side, they are to be trained horizontally, right and left, perfectly level. The under buds must be cut out completely. The next season the alternate shoots are to be allowed to grow, and the others must be pinched off, and the fruit of the former must be taken away directly it can be laid hold of, that the shoots

may make all the growth that the strength of the vine will allow. Those which are pinched off might be allowed to bear a bunch or two without doing mischief, as the vine will be pretty well established ; but it is better to let all the vigour go into the growing shoots. As the branches grow, they must be nailed to the wall straight upwards, and not be checked until September, when the tops may be taken off to strengthen the wood.

THINNING THE FRUIT.

If you have allowed any grapes to grow on the short or stopped shoots, thin out the grapes from the bunches that may appear, so as to leave ample room to swell ; cut out all the small ones, and those which are inside. This can only be done by very pointed scissors, and the grapes must not be handled, except by the stems. It is not once thinning that will do. As soon as they are as large as small peas, the first thinning may be made, and great care should be taken to remove the smallest, if there be a difference, among those which are inside. When they have swelled a little more, so as to show better the grapes which are taking the lead, you should go over them again, still taking those which are least wanted to make the bunch handsome, and which seem most likely to be stunted or hidden by the others.

PRUNING AND TRAINING.

The pruning of vines, and consequently their training, must be founded on principle. All the fruit is borne by the present year's shoots, which come from last year's ripened wood ; consequently, there are unerring rules to guide us in the selection of the shoots we are to leave, and those which may be cut away. Suppose we neglect the growth of this year's shoots which bear no fruit, we should find, when the autumn pruning time came, that we had no bearing wood to leave. To simplify, therefore, the process as much as possible, we might reduce the entire buds on a vine to just the number that we want branches, and while we cut one half close down to form wood to bear next year, we could train the other half to bear fruit the present year. Then, the strongest shoots that come from those cut down must be encouraged to grow up for the following year, and if a bunch of grapes appear on either of these, it must be taken off, all the side shoots must

be reduced to one joint, or leaf, and the whole strength be concentrated in the main stems or branches, which must in the meantime be fastened to the wall or house as they proceed, in the same way as we have directed for the first and second years' growth. Suppose, therefore, the two shoots, which are trained outwards, will, at the end of the season, say September, present vigorous shoots several feet long; these should be stopped, that is, the upper part of them broken off, when the remainder of the season would be throwing strength into the remaining portions. The stopping, however, must be done at the right time, which in some seasons is later than in others; if they be stopped when in full vigour of growth, lateral shoots will come at all the eyes; do not, therefore, stop them till the growth is nearly completed. When the leaves have fallen, or are close upon it, the long shoots must be trained, which may be done either perpendicularly or serpentine fashion. They ought not to be required to cover more than eight feet in height, and twelve in width; they will, therefore, require to be shortened to reach that space only at the most, and the branches where the grapes were must be cut down to two eyes. The next year, the long trained branches will bear the fruit at every eye, or nearly so, and the shortened branches will yield two shoots, the strongest of which is to be allowed to grow for the wood of next year's fruit, and the weakest to be taken away altogether. It is better to have the shoot from the bottom, than that which grows above it, if it be as good or as strong as the other—not to be judged, however, by the length or forwardness, but the actual thickness, which is a good indication. Generally speaking, either would be strong enough; and the reason for leaving more than one is the chance of damage or accident. If there be two shoots come from one eye, the weaker is to be removed directly. One good shoot from each place is to be allowed to grow as the others did the year before, the lateral or side shoots being pinched off beyond their first leaf, and the main one fastened as it grows by pieces of shred nailed to the wall.

The fruit-bearing branches will shoot at each eye, and may show two or three bunches of fruit from each. The shoots must be so secured as not to damage the fruit, which should be reduced to the handsomest bunch, generally the one nearest the stem; but if some of the eyes show no fruit, which is very

rarely the case, then a second bunch may be left on those which have them. The shoots on which the grapes are growing should be pinched off at the first, or at most the second, leaf beyond the fruit, and the portion of branch beyond the bunch enables you to nail it to the wall in the most eligible position, which is generally right and left of the main stem. There are many who strip the leaves off the vine, to give, as they imagine, the grapes the benefit of the sun ; now, the vine must not be robbed of its leaves, except where two leaves cover each other, and make too deep a shade. The leaves are as important to the fruit as the sun is, and nothing can be much worse than the ordinary practice of stripping them off wantonly. The thinning of the fruit three or four times, the repeated examination of the vines, to remove any useless shoots, which may often be found in a strong vine when the principal branches are stopped, and the occasional shifting of the fruit branches from the spot at which they are nailed to others a little higher or lower, according as the growth of the fruit or the branches in their immediate neighbourhood dictates, are all necessary operations. While the grapes are swelling, there will still be found, after several thinnings, here and there berries, which are better cut out than left in, and, therefore, every time the vine is examined you should have the knife and scissors with you, and watch constantly till the fruit is fit to cut. The September, or rather the autumnal stopping of the alternate branches, which are growing for the next year's bearing, must be attended to, as soon as the growth is nearly completed ; and when the fruit is ripening, bottles of sugar and water should be hung up in the neighbourhood of the grapes before the wasps attack them or break a skin, for it is but little use attempting to lure them from the fruit after they have once tasted or broken into them. The grape will hang on the vine for a considerable period without being injured by a slight frost. If there be any desire to bag them, as the easiest means of preserving them, the bags should be made of coarse muslin as open and thin as possible.

This plan of training and pruning, and, indeed, general management, is, we think, the best under all circumstances, where we have a clear wall, a clear border, new vines, and nothing to prevent our adopting it. And if we have to cover the front of a house, we should adopt the same principle,

unless something intervene to make it inconvenient. In covering a house, separate vines are used for the bottom and the top parts, but, excepting the length of the stem, before we divide the branches, the treatment is the same; all the attention that is required while the stem is growing to the height is to stop the side shoots, and at the pruning, to cut out or cut clean to the stump every one of them, so that the trunk or main stem shall have no growth of any kind, until the two side branches are trained right and left in the same way as those at the bottom—that is to say, we begin by providing only the four buds at the length we intend to commence training; the strongest on each side is used just the same as the bottom ones were used, to train horizontally, and provide the buds on the upper side for the alternate bearing and non-bearing branches, and to have the under buds cut clean away, to prevent the growing of any wood but that which is wanted. So long as the pruning is founded upon the principle of keeping half the vine growing bearing wood, and the other half bearing grapes, it is difficult to fail in producing plenty of fruit, and if these be reduced to a moderate quantity, they are sure to be of the finest flavour, and, above all things, they are certain of being hastened in their ripening.

There is another way of training the Grape-vine, which many prefer to the constant changes of the wood. The rods of a year old are allowed to throw out their side shoots, and to become themselves permanent fixtures. In this case, the side shoots intended for bearing next year are not stopped till September, and those that are too near to others are removed. When the branches have done bearing, they are cut to a single eye to grow wood from the next year, and the branches which are to bear are cut back to two or three eyes at the most. In training these bearing branches, regard must be had to their being kept out of each other's way, and although three eyes may give a bunch or two each, not more than one each ought to be left to grow. At the places where the branches that bore last year were removed from, the new branches to bear next year will come, and if more than one comes, pluck away the weakest. This is called the spur system, and is a very prolific plan—only persons who adopt it are apt to leave three or four bunches where they ought to leave but one, and have the spurs themselves too numerous.

The reasons for allowing no other plants to grow on the

borders, are, because the roots of the vine receive as much benefit from the heat of the sun and the operation of the air, as from the richness of the ground ; and in a border properly constructed, the roots will almost fill it in time, and at all events come near the top. Now, cropping the borders will keep off the sun, and the necessary digging will damage the roots, both of which evils would be felt in many ways, and must be always avoided by keeping the border clear of every kind of vegetation—the only exception being small seedling plants, such as cabbage, lettuce, brocoli, and other vegetables sown on the border, but removed young ; spring onions, also, and radishes might be grown, but no crops that shade the ground too much, or root too deep. Of course it follows that the surface must be kept free from weeds. Occasionally the border must be forked two or three inches deep, so as to open the surface, particularly when it has been closed by heavy rains ; for this gives the roots, in a larger degree than if it were left close, the advantage of air and warmth. It may be proper, also, to mulch occasionally with stable litter, and also to water with liquid manure ; indeed this may be always done with advantage in warm weather, and should be done equally all over the borders, even much beyond where the roots reach, because by keeping it all over alike moist, the vine reaps all the advantage, whereas, if the portion beyond the extreme fibres be left dry, that part will absorb the moisture almost immediately from the part where it is of the most consequence ; therefore, the whole extent of the border or place prepared for the roots should be moistened on all occasions alike.

ASPECT.

As to aspect, choose precisely that portion of the wall which has the sun longest upon the ground at the foot of it ; for it is quite possible to have a wall well adapted for it, that is, ranging east and west, so that from sun-rise to sun-set it is hardly without it, and yet the border may be so shaded by other buildings as to keep it always cold. We do not say grapes would not grow and ripen under such circumstances ; but there would be no comparison between the produce, and that of a vine in the border which, as well as the wall, had the benefit of sun heat.

As green grapes may be made into wine equal to a good

deal of that which is imported, we should not hesitate to train vines on an espalier trellis, after the fashion of apple and pear trees, if we had no wall ; but there would be seasons occasionally in which the grapes would not ripen, with all the care we could bestow. We should train them the same as on a wall, but not allow them more than five feet in height from the ground, and we should allow each vine twelve feet. The frame or trellis should be made with stakes not more than two feet apart, and rails not more than nine inches, the lowest within six inches of the ground. The raising, planting, pruning, training, thinning, &c., must be the same in all respects, except that the shoots would not be so long. The ripening would be assisted by a basking of any sort, if it were only a reed fence ; but a board fence, in panels of six or eight feet long, and movable, may be advantageously used, and being fastened at the back, would assist much.

FORCING.

In making preparation for forcing vines, presuming that we have plants raised from eyes, cuttings, or layers to plant out, or that we are going to plant cuttings where they are to remain, we must first see to the formation of the border, or space wherein the roots are to grow. The first point is, to see that the situation is perfectly drained. The next, after securing unquestionable drainage, is to lay on a concrete bottom, as it were, of brick rubbish and lime core, beaten hard, even, and smooth, with a fall towards the outer front, where an open drain must be maintained as high as the concrete ; a dwarf wall may be constructed along the front, just as high as the earth for the border is to be. This concrete should leave about eighteen inches for compost next the house ; it should slope enough towards the front for all water to fairly run down to the drain. And now for the compost. We have seen a vine growing in plain loam, without any preparation whatever, the very ground the house was built on, trenched two spits, and the bottom loosened, and then, without a morsel of dung, consigned to its fate ; and few vines equalled it in health, strength, and fruit, and it was the same at the end of twenty years. But all the rest of the advantages were natural ; it was the south side of a hill, where the declivity, as it approached the bottom, was very slight, and the drainage was unexceptionable ; the loam rich. The roots, in this case, ran

just where they pleased. We have seen other vines flourishing on a chalk hill, at least by the side of it, without even the benefit of a prepared border ; but the cottagers had not forgotten an old and vulgar prejudice about burying dead vermin round the roots of a vine, so that it had abundance of flesh and bones to feed on ; and there could be seen, on disturbing the surface at one of these graves, abundance of root and fibre firmly adhering to bones, which were all that remained ; and this might be mentioned as a more than usually vigorous vine, and kept in above average good order. Amongst scientific growers, we have seen vine borders made of the top six-inch spit of a pasture, including the turf, thrown together without even being chopped small : not a bone nor a spit of dung, nor any other matter used but these turves ; and here vines grew well for years.

The vine never fails to flourish in the loam from the surface of a pasture with the turf on it ; if you could mix with it about one-fifth of the whole of good rotten dung, it would do better ; brick rubbish, so that it do not exceed a tenth of the whole, and bones broken into large pieces, but not crushed small, about the same quantity, better still. No compost could beat it. To bring it to quantities better understood, say eight barrows of pasture loam, two of rotten dung, one of brick rubbish, and one of bones ; but it is essential the bones be in good-sized pieces, and not bruised, as they will hold their properties till the vines want them. A compost like this would grow a grape, under proper management, as large as it can be grown ; and this may be laid on, well mixed, eighteen inches thick at the back, and twelve in the front, gradually falling as it comes to the front, and filling up the space to the dwarf wall.

BORDERS UNDER GLASS.

It has been objected, that in forcing grapes there will often come a wet, cold, sunless season, chilling the roots outside ; and this seems to be the only even moderately sound argument in favour of planting inside. We propose, however, to get over the difficulty in a much safer, and far more natural way. We would cover the border with glass ; none of the genial heat of the sun need be kept from the surface ; this would be rather strengthened than otherwise by the glass ; the cold chilling rains would be kept off, and, if water were

necessary, it could be administered of the same temperature as the house : not only so, but holes, to be covered or uncovered, as would best suit the case, might be made, by which the temperature of the front glasses in bad weather might be made the same as that of the house itself ; but as, compared with planting inside, it is very superior, the roots will grow their natural way, outwards, and fill the border. When planted inside, they have heat, it is true, and partial light reaches the surface ; but where is the sunlight ? the vines on the roof check that, if the building of the house does not. With our border prepared as we have mentioned, we select the proper number of vines with the strongest canes, for that indicates the real health and strength of a plant ; and, turning each out of its pot, we lay the ball of earth on its side, sufficiently deep to level the bed as it was at first, and yet cover the ball, as there is no great harm if a little soil were heaped over it, to prevent exposure of the fibres. We have now to make up our mind whether to take the present cane through the hole into the house, and cut back to the last two eyes inside ; or cut it right back to the ground, and have another year's cane, which would, of course, be stronger. We should, if the canes were strong, use them to lead into the house, and cut back to the two eyes just within to grow from ; but it must be seen that there is no violence used in bending them to their places, and ample room must be left in a sufficiently sloping position. There is, however, a way of planting inside usually adopted by those who want the trunk of the vine where its branches are : this is done by building arches just under the surface along the front wall ; by planting in the centre of these arches, close to the wall, the trunk is kept under, while the roots will grow out, because there is nothing to stop them. The good obtained by this is, that the trunk is not bent to get it from the outside to the inside. This plan of building arches is only tempting where there is no glass over the border itself, and where, if the way be clear, the trunk will be as much protected as it ought to be under any circumstances.

Having now the vine planted and cut back to two eyes inside the house, we should, after a few days' growth, select the better of the two for our next year's cane, and let it grow as fast as it would, securing it along the rafter or wire trellis, or to whatever other contrivance was prepared for it, as it

lengthened, and pinching off any side shoots that made their appearance. If a bunch of fruit appeared in either of the breaks at first starting, it would determine us to choose the other; but if one appeared in both, we should remove the fruit as soon as we could get hold of it, from both, and select the stronger of the two for growth; for if we allowed it to bear so soon, it would throw back the vine two seasons. With tolerable growth, the cane will go pretty well the length of the rafters; and now we have to make up our mind as to the intended mode of training. If the house is to grow nothing but grapes, you prepare to cover the roof; but if to grow other subjects as well, one cane to a rafter is enough, and each year it is fruiting, there must be a fresh cane growing; but having found a good cane to fill the length of a rafter, it may be as well to adopt the spur system, keeping the cane for the main branch, and taking off close, from time to time, all weakly growing branches, merely leaving a due number of them strong enough to bear, to grow for fruiting spurs next year: these being cut back to the last eye for another season, are sure to yield fruit. Those who set about this in earnest, will, as soon as they show themselves, select the handsomest bunches, and sacrifice half the others on the vine, if they have any doubt of the capacity to do justice to all. As soon as the grapes are large enough to get hold of them with thin-pointed scissors, considerably thin their numbers, taking care to preserve those important to the bunch—as those on the shoulders and points. This must be done with great care, not only on account of the bloom being so easily destroyed, but also the grapes being so easily prevented from swelling by bruising the footstalk, which in that young state is done almost by bending a little on one side. In a week afterwards they will be swelled enough to show which others are in the way, and to enable you to remove those least likely to help the bunch. These thinnings must take place a number of times, but the more of those requiring removal, that can be moved at the first thinning, the better for the remainder, as all the size attained by those which are ultimately cut off, is to the loss of those remaining on, which might have shared it had the intruders been removed at first; nevertheless, it is desirable to avoid doing too much, for one grape lost, that ought to be retained, will spoil a bunch; and it is rather desirable to thin at several different times, that these important ones may be better seen.

It must be recollected, that advantageous as the glass is to the roots in cold and wet weather, they will require the share of moisture of which they have been deprived. This, in cold weather, should be given fully as warm as the temperature of the house, and the whole border should have it ; and according to the quantity which you have been obliged to keep from them, you must be guided as to what they should have given artificially. All houses should have tanks to receive the water from their own roofs ; and this is generally found through the winter months more than an ample supply, as few things require it. Not so, however, the vine : as soon as it begins to swell its buds, it wants moisture, which must be supplied from the tank.

Grapes may be grown under glass, either for the protection it affords to bring fruit forward without artificial heat of any consequence in due season, or to force it out of its natural season by means of artificial heat ; and very simple and straightforward are the operations in such cases. Whether you set your vines to work in November or March, or any of the intervening months, from the day you shut them up, keep the house the first week between forty and fifty degrees, and next let the minimum heat be fifty, and the maximum fifty-five degrees. Continue this temperature without alteration until they are in bloom, when you may raise to sixty, and not exceeding sixty-five degrees ; and the house must be closed ; for although air may be given, through all the previous stages, if the heat can be maintained with it, none must be given during the bloom, unless the sun happen to be very hot, and raise the temperature too much. The glass over the roots will be found of the greatest advantage. The first thinning of the grapes, as soon as they are set, will be found a warm job, but it is a duty which must not be neglected twenty-four hours. After the grapes are well set, the temperature of the house must not be let down below sixty, but during the sun heat it will matter but little if it rises to ninety or even a hundred occasionally ; these are the times to give air, which conduces greatly to their good, but must not be given on a risk of lowering the temperature too much. Sun heat rarely troubles the early forced houses, but there is sure to be plenty of it when the forcing is begun in February or March.

It may be remarked of the vine generally, that one half the vines that will not ripen their fruit out of doors might

complete their business if carefully treated ; instead of which, in all the cases we have known, the branches have been left to themselves, and twice as many allowed to remain as the vine could support ; whereas, in one case where they had not ripened for ten years, we got leave to manage the vine one season, allowed only half the quantity of bunches, and had these thinned twice, and done even a third time to see they were right. Every grape was eatable, although there was nothing tempting in the flavour ; but the parties to whom the vine belonged usually made wine, so that after a year or two they allowed the vine to bear all that came, and never thinned out a berry. It may, however, be taken as a rule, that the effect of regulating the quantity and thinning the berries is to bring the fruit earlier to perfection.

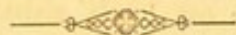
A FEW LAST WORDS ABOUT MILDEW.

THE very best managed vines may by some oversight be affected with mildew, and if you ask five hundred gardeners what is the cure, they say, "Sulphur." Well, we all know that it is a remedy, perhaps the only effectual one ; yet one after another will say, "I have tried sulphur, but it was no use."—It was not properly applied ; the conditions to render it useful are, first, the dust should cover the entire surface of fresh leaves and stem—how is this to be done ? Some syringe it all first, and then powder it all over ; the water, however, among the grapes, and in many parts of the leaves, hangs in all the crevices, so that if the bunch of grapes or a branch could be shaken, it would be seen what a quantity remains in all the interstices. As sulphur will not sink on water, the water keeps it out of all the crevices where we want it to go, therefore, first dry the house effectually, and all that is in it. In the evening, water all the pipes or flues, and the floor, and shut up for an hour : a fine dew will be settled upon everything. Now powder the vine-leaves, fruit, &c., and do not open the house in the morning, but about midday ; syringe the sulphur off ; if it be not perfectly clear of mildew the first time, do it the second time, about two days afterwards ; some do not open the house at all the day it is sulphured, but syringe next morning, and if it is badly affected it is perhaps the best way.

The Cultivation and Management

OF

THE CURRANT.



THIS fruit may be propagated several ways, but the method generally adopted is by making cuttings of the previous year's growth, although almost any part of the bush, if planted in the soil, will strike root. The shoots chosen should be vigorous and straight ; cut them, with a good sharp knife, to ten or twelve inches, retaining the lower portion, the base of which should be neatly trimmed, and all the eyes or buds should be rubbed off, with the exception of two or three at the top of the shoots. This operation, though not always attended to among practical men, is necessary to prevent suckers shooting up from the root, which would be the case were these buds left on the cutting. In the autumn, or spring, make as many of such cuttings as you want plants, and prepare one or more beds, about five feet wide, on any border which is somewhat shaded ; make the soil moderately rich and open ; common garden-soil will answer the purpose well enough. The cuttings should be placed in the ground at the same time the bed is being formed, thus :—Having marked out the dimensions of the bed, dig out at the end of it which is next to the walk, an ordinary trench, and remove the soil thus taken out to the other end of the bed ; then commence digging the soil finely, in the usual way, at the end where the trench has been made ; and, when about a foot of the soil has been dug, make, with the spade, a sloping cut down the face of the dug earth, deep enough to receive the cuttings, which should be placed about six or eight inches apart in the row, and so far in the ground

that their upper extremities, with the buds, may be kept well above the surface. Then lie over their lower parts a portion of soil, and tread it lightly down. This done, continue to dig as much more, when another row must be placed in the same manner ; and so on until the whole of the cuttings are planted. When cuttings are planted in this way, it is proper to make use of a garden-line for the purpose of keeping the rows straight, as well as parallel with the walk ; for cuttings planted in an irregular manner never look well ; but, if the beds are narrow, a practised eye will not require the aid of a line. It is, however, best to be used, as the work can be done with more certainty, and with no more trouble than without it. When the cuttings are placed regularly, and the bed completed, dress the alleys on each side of it, and make them neat and tidy. As weeds will be sure to spring up in a short time, they must be removed immediately. As the rows are wide enough, a Dutch or draw-hoe may be used for this purpose ; but you should remove by hand any weeds that are growing close to the plants, in order to avoid injuring the cuttings, which will soon strike root, and only require to be kept clear of weeds and have the ground occasionally stirred around them. At the end of the following year, the plants will have grown considerably, and will, if allowed to remain in the rows, be too near one another. Every other plant must, therefore, be taken out and transplanted into an intermediate bed, in the same way as at first, and the soil may be somewhat stronger. They must now be kept twelve or fourteen inches apart in the rows, which should be about eighteen inches wide ; the ground in the first bed should also be forked over, not dug, and made neat and level, covering in the holes formed by the removal of the plants.

When the plants, after having been properly pruned and formed, have grown so large as to bear, they may be planted out in the quarters where they are to grow. Like gooseberries, they are very often planted along the borders by the walk of the kitchen-garden, in lines or rows, and at any distance from four to nine feet apart, according to their habit and other circumstances. They cannot have too much room, and it may be preferable to plant them wide enough at once, and the intervening ground may be cropped with vegetables. Indeed, it is perhaps better to distribute them in wide rows throughout the garden, than to grow them in a quarter by themselves ;

for by the former mode they are more easily accessible for the purpose of pruning and gathering the fruit, which, from the greater exposure, is generally larger and better flavoured. There are, also, several kinds of vegetables which are best grown where they can derive a certain degree of shade, such as the rows of currant and gooseberry bushes afford them.

With regard to pruning, currants present no difficulty. The object should be to have them in a regular and open form, which may be secured by a little timely attention when they are quite young, in the nursery-beds. They will have sent out several shoots the first year, and these should be cut back to a few inches from their base, and all the central ones removed entirely. The branches must be trained so that they are regularly and thinly distributed in an outward direction, presenting something like a wheel, the shoots or branches being eight or nine inches apart; rub off all the buds at the base, which would otherwise grow into branches, and impede the free circulation of light and air. The stem which supports the branches should be at least from six to eight inches in length, and it should grow up quite straight and free from secondary shoots as far as the branches which are required to form the bush; and these should not exceed five or six in number. When shortened as already directed at the end of the first year, the branches will, the following summer, form other shoots, which must also be kept clear of useless or unshapely laterals, which should be cut at the summer or autumn pruning, and each of the proper or legitimate branches topped an inch or two, or to that extent which may be necessary to keep them in a neat and regular form. Nothing can be more injurious to the health and productiveness of the bushes, than leaving the centre crowded with small branches, which seldom bear any fruit; for the flavour of that which is produced on the others is considerably affected, while the berries never attain the size they do on properly-pruned bushes. In fine, the branches should be kept moderately short, not close to one another, and perfectly open at the centre of the bush. When pruned in this way, they will produce the greatest quantity of fruit, and the berries will be large and well flavoured. These directions are chiefly applicable to what are called the white and red sorts of currants, the fruit of which is produced on short spurs.

The black varieties are somewhat different in their habit,

bearing their fruit usually on the young shoots of the preceding year's growth. These, therefore, require to be pruned in a different manner, at least to a certain extent; the bushes should be allowed greater freedom of growth, but kept somewhat open in the heart, and the branches should be kept at a greater length.

The currant will admit of being trained against a wall, where it grows with great luxuriance, and ripens its fruit somewhat earlier than when planted out in the open quarter. It should be allotted a warm situation, if the fruit is wanted early. A wall having a south or south-east aspect will be most suitable for those trees which are to ripen their berries first; and others required to be retarded a week or so, may be planted against a west or a north-west wall. You may secure a crop of currants several weeks after the principal crop has been gathered, by training a few trees against a wall directly facing the north; these will come in for use at a time when their fruit, from their scarcity, will be very acceptable at the dessert-table. The texture and quality of the soil have a certain influence in hastening and retarding the maturation of a crop; and therefore, if you want crops of currants on the wall to succeed each other, so as to yield a supply for a considerable length of time, it will be necessary to modify the character of the soil, as well as to vary the situation. Thus, the soil in which the trees on the south wall are planted, should be rather light, dry, and open, but at the same time not poor or exhausted; while such as occupy a more ungenial position, and the fruit of which is wanted to ripen late, should be planted in soil of a stronger and more retentive or cold character. Currants are very suitable for planting against such walls as cannot be so well used for the more choice fruits. They may be trained against sheds or outhouses with great facility; and are particularly well adapted for covering or concealing any unsightly object. The method in which they are usually trained against a wall is different from those adopted for almost all other kinds of fruit-bearing trees, and requires to be attended to at the earliest stage of the plants. When the cuttings in the bed have made one year's growth, select those plants which have two strong shoots, and of nearly equal length, and remove all the other branches which may be growing near them. If you cannot obtain plants of a desirable form, select as many as you want having one good

shoot; cut this back to seven or eight inches from the ground, removing at the same time all other shoots near it; your plants will now have only one upright stem of a certain height, and the following season they will produce several branches at the top. You must be careful to rub off all buds which appear on the lower portion of the plant, so that the uppermost may be encouraged to grow strong; but do not allow more than three or four to attain more than an inch or two, and when these have grown three or four inches, thin them out; select the two strongest and best-placed shoots, cutting away all the others. These will have made considerable progress at the end of the summer, and the plants may be removed to their places against the wall in the autumn or spring. In taking them up, regulate their roots, cutting off such as are straggling; and the central ones, if very strong, may be shortened a few inches. Give the roots plenty of room in the holes, which should be made large enough to admit of the small fibres being carefully spread out all round. Be careful not to place them too deep, but keep them so that the upper parts of the roots, near the stem, are just barely covered; and the stem should be a few inches from the wall, to which the plants must be inclined. Now drive in a nail in the wall, exactly above and close to the point where the two shoots or branches are produced. Then, with a string of matting, tie the branches to the nail, not quite firmly, but just so that in bending the branches down, you may not break them at the joints—a casualty which is very likely to happen, when the precaution of tying them in this manner is not attended to. Now bend down the shoots, one on each side, in a horizontal position, and fasten them to the wall. You must be very careful while engaged in this operation, as, from the softness of the young wood, the shoots are very apt to get broken. These two branches must always be kept in a horizontal position, and at an equal distance from the ground, they being required to form the base of other branches, which they must produce, and which you must train in a perpendicular direction. Accordingly, at the time of laying or bending down the horizontal branches, you must cut them back to six or eight inches from the point of junction, when fresh shoots will be produced near the base of each. Select the best of these, and train them upwards against the wall, removing immediately all that are not required for this purpose. They

should be kept about six inches apart, and should be retained at distances as regular and equal as possible from the centre, as far as they extend. The first year after cutting the horizontal branches, you may not obtain more than one or two which you can train upwards ; but when making the principal pruning, you must always keep the lateral or horizontal branch cut back to six or eight inches of the last upright shoot. Thus every year the main branch at the bottom will be progressing in length, and at the same time producing additional shoots to be trained upwards. The latter must be kept almost bare, no side-shoots being allowed to grow longer than an inch ; but you must take care not to allow them to run into wood producing no small twigs, or, as they are called, "spurs," which chiefly bear the fruit ; and branches growing in an upright direction are very apt to become barren at the bottom, owing to the upward tendency of the sap. When, therefore, you observe them running into unproductive wood, cut off a few inches, so that they may be the better induced to push out fruitful spurs near their base ; and this shortening should always be performed whenever you find it necessary, either for the production of new shoots on the horizontal stems, or of spurs on the perpendicular branches.

With proper attention to these two points, but little difficulty will be experienced in keeping the trees in symmetry and in a fruitful condition. Besides the usual pruning in autumn or spring, a moderate summer pruning is very beneficial to the currant, more particularly when the trees are trained against a wall. When the branches have attained a considerable length, they should be thinned to such an extent that they may not obstruct the light and air ; and those shoots which are required permanently should be selected, and temporarily attached until the time when the principal nailing and pruning takes place. Those trees on which the fruit is wanted early must be specially attended to in this respect ; for if, after placing them in the most suitable position in respect to soil and aspect, you allow their fruit to be shaded from the genial influence of the sun and air, the beneficial effects of the first condition will be much diminished by the neglect of the second ; and in consequence the fruit will not only be later in ripening, but its flavour will be less delicate and sweet.

The method of training and pruning which has just been

described is more particularly applicable to the white and red sorts, which chiefly produce their fruit on short spurs. The black currants, on the other hand, are generally most fruitful on the young shoots of the preceding year's growth; and therefore the fan form of training would be the best for these, when trained against a wall. The fruit of the currant is very liable to the ravages of birds at the time it is fully ripe; and though it will generally hang a long time on the branches, if not disturbed, it is always necessary to cover the bushes with some material, such as netting, gauze, or bunting. By this means the fruit may, in warm localities, be preserved fresh on the bushes, either in the open ground or against the wall, for several weeks, and even till frost sets in, if protected at the same time from drenching rains by a more substantial covering over head.

The leaves and young shoots of the red and white currant are very subject to the attacks of a species of aphid, or, as it is commonly called, green-fly, which commits its ravages on the under side, causing the whole leaf to become red and curled up. The best way of arresting the progress of this pest is to cut off the leaves which are most affected, and place them in hot water; for if thrown down in the vicinity of the bushes, the insects will be sure to creep upon some other leaves. It is also a good plan to syringe the under side of the foliage with lime-water or tobacco-water. We have ourselves resorted to these means with considerable success; and have also fumigated the plants, by placing a pot with burning strong tobacco-paper below the bush, and on the insects falling down, destroyed them by pouring hot water over them. There is also a species of grub or caterpillar which is commonly very destructive to the foliage and tender shoots of the currant, and particularly during dry warm weather at the growing season. The best way of getting rid of this pest is to fumigate the bushes when the wind is still. In a few minutes the grubs will fall down, when they should be destroyed by having hot water poured over them. In general, however, much may be done to obviate the injuries arising from the depredations of vermin by timely attention to thinning the young shoots, and also cleaning the bushes and walls at the time of pruning and thinning in the autumn or spring. The larvæ of insects are usually deposited in all the crevices to which there is the least access; and therefore, at any time

after the fall of the leaf, the walls should be properly brushed over ; and if they are not in very good condition, it will be advisable to detach the branches, and give the wall a good coating of lime-water ; and, indeed, it will do the trees no harm if they come in for a share at the same time.

When the currant is trained against espaliers, the same mode of regulating the branches may be adopted ; and the stakes should be renewed annually, if not sufficiently sound at the bottom.

No fruit admits of being forced more easily than the currant, though it is seldom, if ever, raised earlier than can be accomplished by the influence of the open climate. What we have to say on this point may be the means of leading to the forcing of this fruit more generally. Currants will sometimes bear the first year after being raised from cuttings ; but it is, of course, objectionable, and in most cases impracticable if proper attention is paid to their training, to have them in a bearing condition so soon. We merely mention the fact, to show how well the currant is fitted to produce fruit without requiring much space. In every case of forcing, you should prepare the plants a year beforehand ; and, therefore, those bushes which are intended for forcing should be taken out of the ground in February or March, and placed in pots according to their size. The bushes selected for this purpose should be at least three years old, of an upright habit, but such as have been kept dwarf, and well provided with fruit spurs. Plant them in a good, light, rich loamy compost, and plunge them about half-way up the pot in the soil of a border having a west aspect. Do not allow any fruit to swell on them, but remove it as soon as possible, and supply the plants with water when the weather is dry and warm. They must also be attended to in respect to pruning and thinning ; the aim being to keep them dwarf, and the branches well distributed and strong. If they are wanted to ripen their fruit early the following year, they may be removed to the forcing-house about the beginning of December, or even sooner if desired. Very little heat should be applied the first ten or fifteen days—from forty to forty-two degrees will be sufficient ; and if the weather should at any time be mild or bright enough, a moderate supply of fresh air should be admitted, by drawing down the sashes a little, or opening the ventilators. The temperature may be increased one or two degrees every week, for about six weeks,

when it may range between forty-five and fifty ; and when the flowers are open, till the setting of the fruit, a further increase of one or two degrees may be allowed. Plenty of water may be given at the roots till the plants are about flowering, when it must be very sparingly applied till the fruit is fairly set ; it may then be resumed more freely. In the earlier stages of growth, gentle syringing of the foliage during bright weather will be very beneficial ; but the water used should always be somewhat tepid.

CURRANTS AS STANDARDS.

OF the various modes of growing the Currant, we prefer to use them as Standards, with a stem two feet from the ground, and the head kept by pruning within moderate bounds. To bring the Currant-tree to this state, they must be trained to it from the very cutting ; this should be cut as all the rest, but as soon as the buds begin to break, rub off all but the top one, and let that grow alone ; while it is growing it must be watched, and every second shoot that starts from the stem must be rubbed off, so that the whole growth of the season shall be on the one branch ; this may be inclined to grow sideways instead of upright. Our business is to use a little gentle violence ; having an upright stake, tie the branch from the first in an upright direction ; as it progresses, remove all side shoots from the new branch, except the two or three near to the top, and as these advance and increase in number, continue to take off the lower ones, to reduce them still to the two or three. At the time for removing cuttings, take away the dwarfs, but let those intended for standards grow a second year on the same spot, dressing the ground round the roots, and watching the opening buds of spring ; if the leader starts strong, continue to rub off all buds, and when the advance of growth makes an additional number of side branches at top, take off the lower old ones. When the stem has become of sufficient length for the permanent standard, besides the side branches at the top, the leader may be shortened, and the lateral shoots lopped, because the head of the tree has now to be provided for, whether it be the second or third year. In the spring-pruning, we have to be very careful in providing for a good formed head, and if there be not four or five

branches, or more, pointing all round, we should cut all back very close, say, to three or four eyes each ; as every one of these will start, and we may not want all ; those buds which point the right way should be allowed to grow, that is to say, those that point different ways all round, so that when they grow they form a good bush at the top of the stem. The advantages of this kind of growing are, first, the fruit is all within reach without stooping ; second, the trees appear to take no room on the ground, which can be kept clear from woods very easily ; and thirdly, they are not dirtied by splashing rains. Besides these, vermin may be detected immediately. There is no reason why they should be two feet, nor why they may not be three, if preferred, or eighteen inches. The after-pruning must be the same as a bush ; but we are enabled to keep them much cleaner, because we can see better what we are about. Currant-trees grown after this fashion are really ornamental. The neatness of the borders or beds in which they grow compensates for all the trouble, if the handiness for gathering, pruning, and the cleanliness of the fruit did not. Currants are very apt to throw up suckers from the ground, and it is exceedingly troublesome to keep them down with bushes, but with standards they are detected instantly, and should as instantly be removed ; that is, the ground disturbed from the bottom, and the suckers traced to the base and cut off close : all tampering with these suckers is making more work for the next year ; every under-ground eye will be a sucker the season after, and this shows the necessity of taking them clean off. This can be done with Red, Black, and White Currants alike ; the only difference in the pruning is, that the Black Currant does not like the branches shortened ; all the useless, that is to say, the weak shoots, may be removed at the base clean home to where it starts, but if shortened, like other Currants, the tree or bush would be a mass of brushwood, not strong enough to bear a full-grown berry, if it bore at all. As the syringe is one of the most useful of the various means of destroying the caterpillar, the standard form enables us to use it with double advantage, because we can operate under the foliage so much better than when the plant is on the ground. In fact, the Currant, as a standard, may be kept as clean as the Rose. Nets, too, are easily thrown over, to keep off the birds, and, which is sometimes quite as important, the fingers.

THE PEACH AND NECTARINE.

THE Nectarine is in its character and constitution so thoroughly identical with the Peach, that the instructions given for the cultivation of the one apply equally to that of the other.

The Peach does not attain perfection in this country when grown as an open standard tree ; but the shelter and protection afforded by a wall are necessary to bring it to its full maturity. This artificial position, however, involves artificial treatment ; the branches, no longer extending in their due circumference, are constrained to occupy a space which is a mere section of the natural outline of the tree ; while the roots, though ranging over scarcely more than half their natural circle, are less rigidly restrained than the branches. The natural balance between the roots and the branches is destroyed, the preponderating influence being given to the former. In this lies the great source of unfruitfulness, not only in Peaches, but in wall-trees generally. The evil is met by a proper preparation of the soil ; and just in proportion as the proper formation of a border for the roots is neglected, or improperly managed, in the same ratio will barrenness be the result.

FORMATION OF BORDERS.

The proper formation of the border, though not all that is required, is the fundamental point. Thorough drainage is indispensable in Peach culture, and next to this, the elevation of the border, so as to bring the roots within the influence of the sun and air. The border should, moreover, have an inclination of a few degrees towards the south ; so that, although raised a foot or more above the ground level, at the

base of the wall, it may gradually decline into that level at its extreme boundary. It should never exceed three feet in thickness ; that is, two feet deep of soil, and one foot of drainage beneath it. One foot of this, at least, should be elevated above the ordinary ground level ; and in the excavating, provision should be made for six inches of concrete at the bottom, which should be made quite firm. The border should not be less than twenty feet in width ; the *bottom* for the whole of which, if not the whole border itself, should be formed at one time. The bottom of the border should slope from the wall at the same angle as the surface, but forming a series of depressed ridges, the valleys between which serve to collect superabundant moisture, and convey it outwards to a principal drain, which should run parallel with the wall, and occupy the extremity of the border, with an outlet, so as to readily carry off the water conducted to it. On the concrete place six or eight inches of open rubble, such as brick and lime rubbish, and a layer on this of rough, turfy soil. The bulk of the soil above this should be good loam, of sound holding quality, not plastic, but friable, and rather greasy to the touch ; it should be used as rough as possible, and mixed with leaf mould, and old lime rubbish, intimately blended in the proportion of three parts of loam to one of each of the other ingredients. If the natural soil is good, a portion of it may be used also—say one-third ; but it is preferable to use entirely fresh soil. Make up the border without treading, and allow it to settle regularly and evenly. About a foot extra in thickness should be allowed for its consolidation, which will take place gradually. These operations may be performed any time in dry weather during summer, so that the border may be ready for the trees early in autumn.

TIME FOR PLANTING.

The best time for planting is just as the leaves are falling, for then every part of the plant is stored with elaborated food, and the roots are as nearly at rest as they can be ; consequently, they will then sustain the least possible check or injury by removal ; for the young fibres, aided by the heat still present in the soil, will be stimulated, and will be developed ready to grow away uninterruptedly, on the return of the spring. The spring is sometimes recommended for

planting, especially on heavy and wet soils ; but such soils, without the preparation we have described, are unfit to be planted at all. The objection made to autumn planting is, that the young fibres are liable to be injured by the act of transplantation, and thus remain in a mutilated state during the winter. If, however, the transplantation has been effected sufficiently early in autumn, and the border has been properly made, the roots will have time to establish themselves anew before the commencement of severe weather ; and the branches, being thereby placed in communication with the moisture of the soil, will, on the approach of warm spring weather, draw up an increasing supply of food from the soil, which will act as a counterbalance to the parching influence of evaporation from the branches, caused by the increasing heat and brisk winds which prevail at that season, and which necessarily cause the shrivelling of the branches, if these are not kept distended by the fluids drawn up by the roots from the soil.

REMOVING TREES.

In removing such trees as the Peach for transplantation, some care is necessary, so that the least possible amount of injury may be done to the roots. The proper course is, to open a trench at the extremity of the rootlets, the soil above and among the roots being removed with care, so that they may be entirely cleared from the soil throughout their whole length. For this work a flat-pronged fork is much preferable to a spade. If the tree has to be removed to any distance, the roots must neither be injured nor allowed to become dry ; one of the most ready means of preventing which is, to envelop them in a garden-mat as soon as the plant is taken up, continuing it about them until it is replanted. The strongest roots should be shortened back with a sharp knife, as a means of regulating and balancing the relation between the roots and the branches, and between one root and another.

In the process of replanting, the roots should be spread out radiating from the stem, and should be placed nearly horizontal, slightly inclining downwards ; the point from whence the upper roots issue from the stem should be only just covered with the soil when levelled in, and still nearly a foot above the general level of the border, so that a little

hillock should be made where the trees are planted ; the roots should be covered with fine soil to about the depth of eight inches ; very little consolidation by treading should be suffered, but the soil should be placed evenly and lightly, so that it may naturally settle down in a regular manner. The trees must be so secured as not to be moved or rocked about by strong winds, but still so loosely that they may settle down with the soil. The surface of the soil should be covered with two or three inches of loose straw, or litter, as a protection to the roots in severe weather ; such coverings are beneficial too in assisting to retain the warmth of the soil. It will rarely be necessary, or even desirable, to apply water at the time of planting, for in most cases the soil will be sufficiently moistened. If, however, the autumnal season should be hot, and unaccompanied by natural showers, then it may become necessary to apply water, both at the roots and over the branches, so as to prevent the latter from becoming parched and shrivelled. In any case, about two moderate waterings, at intervals of a week or ten days, will be sufficient.

PRUNING AND TRAINING.

In explaining the operations of pruning and training, we commence with a maiden plant ; that is, one which has been budded during the previous season, and which is consequently a plant with a one-year-old shoot. The month of February is the best time to perform the winter pruning ; and during that month, in the season following the planting of a maiden tree, it should be cut down to within four or five eyes—or so many inches—of the point where the bud was inserted ; this should be done just before the buds begin to push, generally about the latter end of February. All the buds on the remaining portion of the stem should be removed, except three or five ; those which stand at the back or front of the stem as planted being rejected first, and the rest balanced as nearly as possible, one near the top, which should be situated in front, and one or two on each side ; none should be retained whose position is at the back, or that part which will come next the wall. The development of these buds will furnish the basis of the future head of the tree. The shoots must be trained thus :—the topmost upright, and the lateral ones at an angle of 45° , or near it. The next season the

treatment of the upright shoot is a repetition of the first year's training. The side branches, however, should be pruned, to induce an increased number of them; they should be cut at ten inches to a foot in length; the uppermost bud should be encouraged to extend in the same direction as the original branch, and one other should be reserved on the upper side of the branch, and at about one-third of its length. All the side branches should extend in a straight line to the extreme circumference of the tree without obstruction; and as the circumference of the circle traversed by them becomes larger as they extend outwards, there can be no danger of their interfering with each other if the simple rule of training them in straight radiating lines is adopted.

The same principles should be applied throughout the whole existence of the tree. The upright branch in the centre should be continued as a source of side branches, until their divergence has filled up the whole of the space which is available by them. The side branches should be continued outwards in direct lines whenever they are commenced, and may be increased in number as the spaces become wider on approaching the circumference of the tree; whenever the distance between them exceeds a foot, a fresh ramification may be allowed, either above or below, as may be most convenient with reference to the space to be filled up.

Thus much refers to the forming of the tree; it remains to say a few words with respect to pruning as it relates to the production and regulation of fruit-bearing shoots. The Peach produces its fruit-blossoms immediately from the wood of the previous summer's growth: the object, therefore, is to supply the tree, as regularly and as thickly as its powers will endure, with such fruitful shoots annually. The side branches should be trained about one foot distant from each other; and on the upper side, only, of these, should the annual wood be encouraged; and therefore, in the spring, all the buds should be removed which do not occupy a position to admit of their development in conformity with the order and regularity to be observed in training. This renders it necessary to remove the buds produced from the lower side of the branches, and also those immediately in front; and even those which then remain will not all be required. The shoots may be left at about eighteen inches' distance from

each other, along the branch ; if nearer than this, they will become crowded ; and if more distant, there will be a loss of space. In regulating their length at the winter pruning, some attention must be paid to their individual strength ; they should seldom or never be retained more than a foot long, and should be cut back to a wood-bud, which differs from a blossom-bud in being small and pointed, the latter being larger, and nearly round. To maintain this system of pruning and training, we require, annually, a shoot similar to those just mentioned, to occupy the place of each. These are to be obtained by training in a young shoot from the base of each bearing shoot, during the summer, at full length. The one selected should be that which is most conveniently placed, with reference to the position which it is to occupy ; but it should be as near the very base as possible : the topmost bud, too, must be allowed to grow, and may extend a few inches, and should be then shortened or stopped, by pinching out the growing point. All the others on each shoot, which were not removed in the embryo state, and *have not* fruit set at their base, must be removed as soon as this can be ascertained ; and all those which *have* fruit set at their base, should be allowed to develop two or three leaves, and should then be stopped. A repetition of this, with reference to each part of each tree, annually, will provide the trees with fruit-bearing wood ; its healthiness, and the amount of its produce, will, however, depend partly on other circumstances, of which the nature and condition of the soil, and the peculiarities of the season, are the most important. This system of training may be called *regular fan-training*. In practice, it is not important to attempt the strict regularity which it is necessary to keep continually in view, in rendering a description of any operation at all easy to be understood.

FASTENING OR NAILING.

Some persons have been led to consider that disadvantages attend the old method of fastening the trees to walls or fences, by means of nails and shreds of cloth, for these reasons :—The nails are inserted where they are required for the season, but must be removed every winter when the trees are pruned and fresh trained ; and in this operation a portion of the mortar is loosened and brought away with the nails. The old holes

thus formed seldom fall in the right place for the new arrangement of the branches, and consequently the nails are inserted in fresh places every year. The repetition of this process for a number of years causes the walls to be pierced full of honeycomb-like holes, which materially injure them, and afford a permanent harbour for insects; and besides this, the neat training of the trees in future years is in a great measure prevented, on account of the difficulty experienced in finding portions of the wall sufficiently sound to hold the nails. Sometimes, to render the walls more sightly, they receive an occasional coat of colouring; but this offers considerable annoyance to the trainer. When cast-iron nails are used, they are moreover very liable to break; and greater expense is incurred by using nails of wrought iron. This feeling has given rise to various other modes of training: thus, the placing of wires has been recommended; but this plan is objectionable on account of the inconvenience occurring from young shoots getting behind the wires, and on account of the distance at which the trained shoots are kept from the wall. The system is also expensive. Wiring is, however, necessary when trees are trained to walls heated by flues, the heat being liable to become dangerous to the shoots in immediate contact with the surface of the bricks. Another plan is to fix studs into the wall permanently, and to tie the shoots to or between them with bass matting. The studs used for this purpose are of various forms; sometimes they have eyes, but the simplest form, and one equally effective, is afforded by the common cast-iron nails with square heads, and the expense of furnishing the walls with these is little more than the cost of the new nails required during a few years' training in the ordinary way. For fan-trained trees the studs should be driven in eight or nine inches apart in every course of bricks. They are the better for being prepared by heating them till red-hot upon an old shovel, and then precipitating them into a can of boiled oil, which prevents corrosion. The whole of the wall being in this way supplied at once with studs, they should be put in straight lines and at regular distances. The easiest way of doing this is to procure a straight board four and a quarter inches wide, and as long as the wall is high; after the first perpendicular row is inserted in the alternate courses, one edge of the board is placed against them, and a straight line drawn down the other edge as a guide by which to drive

the second row in quincunx order, and so on till the work is completed ; and, in order to prevent any deviation from the perpendicular, the upright lines should be proved with the plumb-line at every four or five yards. By this method damage to the walls is prevented, all harbour for insects is avoided, and the trees may be trained at much less expense than with nails and shreds ; while the appearance of a tree bandaged with rags of all colours, used in nail and shred training, is not to be compared with that of one whose neatly-trained shoots form right lines at equally divided angles, and of which the training material is not visible.

Few people attempt to grow standard peaches, but they are to be grown always large enough for tarts, and sometimes, in long dry seasons, ripe enough to eat. No particular difference is to be observed between the management of a peach standard and any other, but it is never worth while to grow standard peaches ; apples or pears are far more gratifying in their results. When the fruit has well set, go over them and thin them considerably : let not two touch each other on any account, nor be too near together if they do not touch, because by giving the tree too much to do you spoil all, and in all probability damage the next year's bearing. There ought not to be more than two peaches upon any twelve inches of branch, for the peach is a heavy fruit, and an over crop will spoil the growth of the necessary wood.

ENEMIES OF THE PEACH.

One of the great drawbacks upon the cultivator's labour is the frequent attacks of enemies, which he cannot readily destroy nor get rid of. A garden engine is one of the greatest assistants all the former part of the year ; but when the fruit begins to ripen, it is no longer of service ; otherwise, playing upon the walls with a rose upon the branch, and using great force, during the winter months, dislodges many of those pests which in summer would punish the fruit. Caterpillars and their eggs, ants, earwigs, slugs, snails, vermin of every description that take refuge in the cracks of old walls, may be found out with a strong stream of water ; and by using a finer rose, so that the weight of water may be more divided, you may use force when the buds are advancing, and as soon as the fruit is set. None but those who

have practised this can form any idea of the efficacy of good syringing, for it is a valid notice to quit, that is observed by the most cunning of the enemies of fruit. But after syringing walls on which fruit-trees are nailed, it will be necessary to clean everything off the surface of the soil at the foot of the wall, or your enemies will ascend again, and you will have much of the labour in vain. When the trees get forwarder and the fruit swells, you must be more gentle in your applications. Lay traps for earwigs, and catch them twice a-day. Lay down cabbage-leaves on the border, and so long as there are any slugs within the sight or smell—for we do not know what faculty serves them at so great a distance—you will continue to catch them; they will congregate under the leaf, and every morning you may find on the leaf or on the soil under it all that have been travelling in the precincts. Snails travel fast, and you will often see one of your leaves half devoured, and nothing near it; but you may trace the slime, and find the haunt by it, which is frequently in or under some plant on the border, or some hole in the foot of the wall; or it may be that the haunt is the other side of the wall, and that they travel down in the night, and up again before you visit them in the morning. If they happen to congregate on a neighbour's premises, and visit you nightly, contrive to lay lime of a considerable thickness on the top of the wall, or across the path they travel, and after a shower of rain renew it, because it no longer inconveniences them when slacked and run together. There is nothing so thoroughly disheartening as the destruction of one's crops by vermin, and no means should be left untried, no labour spared, to get the upper hand of them before the season for their serious mischief arrives. A wasp hunted down in the early spring may save you from being visited by a whole swarm in fruiting time; and a white butterfly, which is too often spared because it looks lively and pretty, and reminds us of spring, will leave us a legacy of a nest of grubs, numerous enough to strip the garden.

SUMMER PRUNING.

The operation called summer pruning should commence in the spring, and be continued at intervals till after mid-summer. In performing it, no other instrument of manipulation should be made use of than the thumb-nail. Summer

pruning is based on the following conclusions :—No greater number of shoots should be permitted to elongate than the space to be occupied will admit of their foliage being exposed to the light without overhanging each other, and thus preventing its access ; the removal of useless and unnecessary shoots should take place as nearly as possible to the time of their development ; and the supply of food to the roots, and its proper regulation, with regard to the capacities of the branches, is the proper foundation upon which the necessary operation of pruning should be made to rest. As soon, therefore, as the buds begin to swell, a portion of the blossom-buds should be removed from the tree. The first “dressing” should extend to the removal of one bud, wherever two blossom-buds are placed side by side on the shoot ; the weakest and most unpromising, of course, being removed. When the shoots are developed to about one inch in length, all of these, except the best-placed one at the base, as already mentioned, should be removed if they crowd the branches, or bear no fruit or blossom. If they have fruit, a few of the most inconveniently placed should be removed, and the remainder left until it can be ascertained whether the fruit is likely to swell ; they should not, however, grow beyond the development of two or three leaves. Next, when the young fruit have attained the size of small beans, they should be looked over, and a few of the fruit removed, where they may appear to be crowded ; and again, when about twice this size, a still further reduction must be made. When they have attained to about the size of a pigeon’s egg, they must be finally regulated. The distance at which they may be left is a variable point ; if the tree is vigorous, a heavy crop may be taken ; if it is weakly, a much lighter crop only should be permitted to remain ; the medium is, to leave one fruit to come to perfection to about every square foot or rather less occupied by the tree. Whenever a leaf is observed having a warted or blistered appearance, it should be removed : this is the work of insects, and the excrescence will serve as a subsequent shelter and habitation for others. If the insects Aphides take up their abode upon the trees, the young branches, upon which they usually congregate, should be taken between the thumb and finger, and the insects crushed ; afterwards, a good washing with a garden engine, repeated every day or two, using pure soft water, will effectually dis-

lodge them. The shoots which are retained for the next season's bearing, must, from time to time, be carefully nailed or fastened to the wall, which answers a two-fold purpose ; the shoots are thereby secured from injury from storms of wind, and their maturity is assisted by the reflected heat of the wall, which they experience in a greater degree when quite contiguous to it. Nailing should be performed with a small shred and nail ; but no compression whatever should be used on the shoot—it should be allowed two or three times its diameter, in order that it may swell out, without contraction or confinement from the shred. About midsummer a second growth generally takes place : it is equally requisite at this season to remove the useless crowding shoots ; and this, as in spring, should be done by a continuous and constantly recurring act, rather than by one or two severe thinnings. Sudden changes are at all times injurious to the growth of plants, and may be considered as being especially so when young fruit are swelling off.

PROTECTION OF BLOSSOMS.

The protection of the blossoms against severe frosts in spring, is usually necessary. The most effective material is a loose kind of woollen net, the meshes of which are about half an inch apart. It may be applied thus :—from the top of the wall to the ground, at about three feet distant from the base, a series of stout straight rods should be placed ; the net should be fastened at the top, and should extend downwards, resting on the rods and covering about one-third of the height of the wall ; at the lowest point to which it reaches it should be secured to the poles, so as not to be dislodged by the wind. The loose open nature of the material will admit sufficient light to penetrate, so that it may remain in this state until all danger of frost is over ; its oblique position, with respect to the walls, will not only favour the admission of light and sun, but is effectual in guarding off spring frosts, whose influence is most commonly vertical ; when this covering is removed, it should be done gradually. If the summer should be dry and sunny, the border should receive two or three soaking waterings, during the early stages of growth. The use of the garden engine can hardly be too frequently persevered in during fine weather, from the time the fruit is set, until it is

approaching near maturity. It should be used towards the evening, or in dull cloudy weather, and never during bright sunshine. Its use will be to cleanse the branches and the leaves; it will serve to dislodge insects, and that in a more effective manner than by smearing the branches with any foetid composition, with the view of rendering the tree nauseous to them; and as plants derive some portion of nourishment directly from their leaves, it will serve to present them, from time to time, with materials which they can appropriate to their use. In ascertaining the ripeness of the fruit, it should not be pressed by the fingers, as is often done; but it should be gently lifted upwards, and if sufficiently ripe, it will be readily detached; on the other hand, if it is at all firmly attached, it is a certain sign that it is not sufficiently ripened.

RAISING FROM THE STONE.

The peach-tree is raised from the stone for two purposes; either to obtain new and improved varieties, or for the purpose of obtaining stocks, for the propagation of the older kinds by budding. For the former object the stone or drupe of fruits, the blossom of which had been previously crossed for the purpose, must be preserved, and early in the ensuing spring sown. The young plant should be grown carefully in a pot; and in the summer, when it has made its growth, and the buds are plump and matured, one or two should be taken, and inserted into the bearing branches of some established healthy tree. Usually, after one season's growth in this situation, they produce fruit, and the quality of the seedling variety can thus be ascertained. Were they permitted to grow on without budding, they would be some years in producing fruit, and, consequently, the value of the variety could not so soon be ascertained. In raising seedling plants for stocks, the stones, or seeds, should be collected in any required quantity, and buried in a heap of sand, out-of-doors, until the spring. In March sow them thinly in a bed of light soil, and the following season transplant them into nursery rows, in a free open soil, placing them rather closely together; the following season this operation may be repeated, giving them a greater space to grow in, and they may then be budded, as soon as the proper season arrives, or when they may be required.

BUDDING.

The most general practice of propagating the peach-tree is by budding ; and the most important point in connexion with their propagation, is to adapt the stocks to the peculiar soil or situation in which the trees are to be planted. The stocks principally employed are the plum-stocks known as the muscle, pear, and free-plum stocks ; sometimes the almond is used. Preference is generally given to the two first. When worked on the almond or the free-peach stocks raised from peach stones, the growth is often very promising in its appearance, but the trees are in most cases short-lived ; these stocks are best adapted to light and dry soils. The free-plum stocks, that is, those which are raised from sowing the kernels of the plum, are objectionable, on account of their inducing, by their own vigorous growth, an undue luxuriance in the plants. There is one material objection to the use of seedling plants, of any kind, as stocks, for they are liable to considerable variation in their constitution, and therefore it is impossible to adapt either the particular varieties, or the circumstances of culture, to the individual plants. On the other hand, when a permanent variety is propagated by means which render it unvarying in its characteristics, the nature of its growth can be fully estimated.

ROOT-PROPAGATION.

In the method practised as root-propagation, portions of the roots are taken when about the thickness of the finger, or somewhat less, and, after being divested of all fibrous appendances, they are cut into lengths of from four to six inches ; this is done any time in winter ; and in the spring they are planted in nursery rows, rather thickly, at about three inches below the surface. They should be planted in a sloping position, forming an angle of about 45° with the surface of the soil, which will enable them more readily to throw up their shoots ; the operation may be performed any time during the winter, or early in the spring ; and by the next spring they will require transplanting, and more space ; they should be pruned up to a single straight stem the first season, and may afterwards be kept headed back, with a view to increase the strength and thickness of that part. They are usually

budded at about six inches from the ground, and when they have attained about the thickness of the finger.

The muscle stock is best adapted for varieties of British origin, which are somewhat hardy in their constitution; the pear-plum stock is more suited to the French varieties, which, though of first-rate excellence, are, to a certain degree, tender.

Budding should be performed about the middle of July, or as near that time as the bark will be found to separate freely, or "rise" from the wood; if done earlier, the buds will often push into growth during the autumn months, and are then liable to sustain great injury, in consequence of their shoots not being matured before the winter; and if done later, the union is not always perfect.

The peach is sometimes worked upon the stem of the common wild sloe, which causes the plants to make but little wood, but this little gets well matured, and the trees thus produce fruit very early. This might be turned to advantage in the growth of peaches in very late and cold situations. The size of the fruit, however, as well as the extent and duration of the trees, would by this means be considerably lessened.

The peach-tree is subject to the attacks of the red spider and the thrip, which, though very minute, sometimes attain considerable numerical strength, and commit great devastation. The remedy is, to wash the trees well with the engine, and to sprinkle them with diluted soap suds, which should afterwards be washed off. Sometimes the trees are attacked by aphides; the infested parts should be removed, or they may be pressed between the fingers, so as to crush the insects, and then cleansed by pure water from the engine.

FORCING THE PEACH.

In order to have a supply of peaches at an earlier period than the time of their ripening on the open walls, it is common to grow the trees in houses, under glass, adapted for the purpose of forcing. It is advisable to grow the trees a season or two on the open wall, in order to make certain that the proper and most desirable kinds are planted. They may also be grown in tubs, or large pots, until they bear fruit, when they can be removed to their places in the house. The trees selected for forcing should be young and healthy, but not too vigorous. If grown on the open wall, they must be very

carefully removed ; and in planting them on the border of the forcing-house, you must be careful to keep the roots from being placed deeper in the soil than they were in the open ground. If growing in pots, they may be removed with the ball of earth as well preserved as possible ; and those taken from the walls must be lifted so that their roots may not be injured ; and in placing them in their new positions, spread out their roots in a horizontal direction, giving them plenty of room. If the central roots growing downwards are very strong, cut them back, and dress with the knife any that may have been accidentally mutilated in the process of lifting. When the trees are properly placed, their roots must be carefully covered with the soil, and supplied with water in abundance. You must then train the branches to the trellis-work, which in all forcing-houses for fruit-trees is erected in front. Peaches are sometimes trained up the rafters, but this plan can hardly be recommended, and we should rather confine them to the trellises, over which the branches should be trained in the same manner as directed for the open wall. It is always better to keep them from being too close, as there is no advantage in having too many branches. In the first place, you must tie the tree firmly to the trellis at that point at which the branches issue. All weak and redundant shoots must be at once removed, cutting them neatly with a sharp knife ; and those which are selected to form the tree, if too vigorous or long, may be topped and attached to the trellis, being trained in the fan form.

The time of commencing to force the trees, that is to say, to supply artificial heat to the house in which they are grown, will depend, to some extent, on the season at which the fruit is wanted. Supposing the fruit to be wanted in May, you must commence forcing early in December, or even at the end of November. The progress which the trees make should be carefully noted during the whole time they are being forced, until the fruit is ripe ; for by this means you are enabled to ascertain, for subsequent operations, the exact time in which you may calculate on the fruit ripening. You should note down in a book, provided for this purpose, the day when you begin to heat the house, the temperature at which it is kept, when it is increased, and so on, with every other incident likely to assist the following year. A good thermometer must be kept in the house, which, if large, will require two, one

near each end. For the first fortnight, the temperature should range between forty and forty-five degrees during the day ; but when there is any sun during this time, the fires should be kept low, so that the heat of the house may not exceed the maximum of this ; and give plenty of air on all favourable occasions. The admission of air must always be regulated according to circumstances, and so as not to cause any excessive alteration in the temperature of the house. As a general rule, if the temperature is already at the proper height, and the sun breaks forth pretty warm, then air must be given to keep the internal heat from becoming too intense. It may also be admitted when the fires happen to be too strong, but not without great caution, if the weather is dull and gusty. Sudden changes in the atmosphere of the house by the rapid admission of air, should always be avoided ; and fresh air must never on any account be admitted, beyond that extent which is compatible with the maintenance of the proper temperature ; you must therefore be guided by circumstances in regard to the extent to which you pull down the sashes, or open the ventilators ; much less opening will of course suffice when the air is cold, or the wind high, than when the weather is mild and warm. In most cases, a very small opening will be sufficient to effect a beneficial change in the atmosphere of the house. About the third week after forcing has been commenced, you may increase the day temperature two or three degrees, so that it may range between fifty and fifty-six ; and when the trees are in bloom, it may be further increased to sixty degrees as a maximum ; and this should be continued till the fruit has set and begun to swell, when five degrees more will be necessary ; but it should not exceed seventy on any account. It may be proper to observe, that the temperature should always be several degrees lower at night than in the day-time, because with all plants the growth that takes place is less vigorous at night than in the day-time.

WATERING.

From the time that forcing is commenced, considerable attention will be necessary in respect to the application of water. When the trees are near blossoming, they must be somewhat freely watered at the roots, and also syringed occasionally over the foliage ; but in every case of syringing, tepid water must be used ; and when the blossoms are about

to expand, the syringing must be discontinued, and a little water thrown on the paths and the sides of the walls, to keep the atmosphere humid. You must also attend to the thinning of the shoots, removing all that are weak and not likely to be wanted for training; adjust and arrange the others, so that none of them are allowed to shade the fruit from the beneficial influence of the sun and light. When the fruit have attained the size of large peas, they must be thinned moderately; and after they have grown as large as nuts, they should be finally thinned to four or five inches apart. Water must be very sparingly applied at the time the fruit is swelling, but the atmosphere of the house may be kept somewhat moist by frequently throwing water on the paths. As the weather becomes warmer, air should be admitted somewhat freely.

PEACHES IN POTS.

Peaches may also be forced very conveniently in large pots, and planted in good rich light soil. When forced in this way, they are trained to grow like other plants similarly placed, but kept somewhat dwarf and open in the centre, like a neat gooseberry-bush. Besides selecting the earliest kinds, you should have such trees as are of a dwarf habit. They should be taken out of the ground in the spring and potted, the pots being at least twelve or fifteen inches wide, and proportionably deep. Plenty of drainage is indispensable to the healthy growth of the roots; and when taken out of the ground, the trees should be properly pruned before being placed in the pots. As soon as potted, supply them with plenty of water, and remove them to any border which is not too much exposed. The pots should be sunk in the soil nearly to their rim, for the roots of plants grown in pots are always more liable to be injured by excessive heat or cold than those grown in the ground. But little fruit should be allowed to grow on the trees; and it will be better to keep them growing moderately than otherwise, so that more fruit may be produced in the forcing-house the following spring. At the end of November they may be taken in and very gently excited for the first week or two; and they must be treated in all respects as already directed for those planted in the border of the house.

THE APRICOT.

THE Apricot is seldom raised from seed unless for the purpose of experiment in obtaining new varieties. The common way of raising it is by the operation of budding or grafting the young shoots on certain kinds of stocks prepared for the purpose. The stocks in ordinary use for budding the apricot, are what are called the Brompton stock, the Brussels or St. Julien stock, and the Mussel Plum stock. These are more or less prized by different growers, but all of them may be used with success. The stocks may be raised from seed and by layering the shoots. The usual and by far the best mode of providing stocks for the apricot is to obtain them from a nurseryman, and then you may bud or graft them to your liking. They should be neatly budded near the ground. But like all other wall fruit trees you may buy them ready trained, or in the form of maiden trees, as they are called when one year budded. In removing them, the roots should be carefully preserved if they are trained trees; because you cannot afford to cut away branches which would throw back the tree a whole season. The difference between a maiden tree and a full trained one is, perhaps, as one to three or one to five. But you are two years bringing a maiden tree to a full trained one.

PLANTING.

The Apricot may be planted in autumn or spring. If the former season is preferred—and for several reasons we think it the better of the two—the operation should commence immediately after the fall of the leaf, especially in situations where the soil is somewhat light and dry. The apricot tree is usually trained for walls, and sometimes for espaliers, but is not often grown as a standard. The wall may be of any

height, but the height must determine the distance at which the trees should be planted ; a greater distance apart will be necessary for high walls than for those that are somewhat low. For a wall ten or twelve feet high they may be planted eighteen or twenty feet apart, and so on, more or less in proportion to the height of the wall. The best situation is that having a south or south-east aspect.

SOIL.

The soil in which the trees are planted should be made moderately rich, and may consist of sandy loam and a portion of well-rotted dung, such as has been used as a hot-bed the previous year. The border may not be deeper than two feet or thirty inches, and should have a dry gravelly bottom. Having obtained your plants from the nursery, make holes at the proper distances, and as deep as may admit the plants without having more than their roots under the soil. Do not prune the roots, unless they are coarse or bruised, but spread them out regularly in the holes, so that they do not become twisted or huddled together, and keep the stems of the trees a few inches from the wall. When the plant is properly placed, cover up the roots by first sprinkling and working the soil between them, and when quite covered up, tread the ground lightly, and give it a good soaking of water. The tree must then be fastened to the wall by attaching it near the summit of the stem to a nail driven into the wall ; and the branches may also be attached to other nails, and trained in the fan form. If planted at the fall of the leaf, the trees will take hold of the soil before the winter sets in, and they will be ready to start into growth in the spring, without being subjected to the partial check they receive when planted at the latter season. Except in very cold situations and damp soils, they will require little or no protection, and you should never plant the apricot where protection is very necessary, because there are other fruit trees in plenty which are more hardy.

PRUNING.

The pruning necessary, consists in regulating the branches, so that they may not be too much crowded. All the moderately strong ones not in the way should be nailed, and all the weak or superabundant ones cut clean away.

The branches near the centre should be arranged in the direction between the perpendicular and the slope, while those further to the side may take a more inclined position, those towards the base being kept nearly horizontal. All twigs or shoots which form on the front or at the back of main branches should be cut off, and the rest, selected for bearing, must be distributed somewhat thinly; for there is no use in having a great many branches crowded together, for this merely increases the labour of nailing, and deteriorates the quality and size of the fruit. The pruning and thinning of the trees should be carefully attended to at an early stage, for then such operations can be done with greater ease and with less injury to the trees. Severe amputations should always be avoided as much as possible. In pruning, you must observe that the fruit buds are generally produced on the young shoots of the former year's growth, and sometimes, also, on short spurs on branches of greater age. These spurs, however, in some kinds, as the Moorpark, may be cut off, as the best buds are formed on the young shoots, which should rather be encouraged to grow.

TRAINING.

The fan form of training the branches, or some modification of it, is by far the best for all the sorts of apricots, and the buds which are produced on the preceding year's shoots are always preferable to any others for bearing good and handsome fruit. If the trees are trained as espaliers, they should have the same mode of training as for walls, for the horizontal form is not well suited to this tree.

When the trees are newly planted, great attention is necessary to adjust the branches in the direction they are to grow, for if not regulated at this stage the branches are not so easily arranged and placed afterwards; and in order to secure plenty of fruitful buds at the lower parts of the branches, the shoots must be occasionally shortened. Pruning and thinning the branches may be partially performed at any season, but the principal cutting should be left till the fall of the leaf, or the beginning of spring. The trees should, however, be examined during their period of growth, when those shoots which are not likely to be wanted may be cut away; the others may be merely nailed temporarily so as not to exclude the sun and air from the fruit. The autumn pruning should

be performed early enough to prevent any injury to the shoots from exposure to severe frost; and if cut at the fall of the leaf, the wounds will generally heal before the cold weather sets in. At this season, all the branches should be properly regulated, and all superabundant and weak useless branches cut out. The older and stronger branches may also be shortened, as this will induce young shoots to break out at the return of the growing season, when they may be disposed according to requirements, either in filling up vacancies or taking the place of those which are less productive. In every case keep a good supply of young shoots, for these will bear the following season, but they should not be crowded as they are frequently seen. All barren or naked old shoots may be cut back to a few inches from their base, and the next year fresh buds will break out and form branches, which should be properly trained as soon as possible. In cases where any good single lateral shoot occurs on such naked branches, it will be merely necessary to make the incision a little above the point of junction. If there is a considerable space to fill up, and only one slender or weak shoot growing there, it should be shortened to two or three eyes, which produce sufficient shoots to fill up the vacancy. By timely attention to pruning in this way, you may always secure plenty of shoots to form the tree in a neat and regular way. You must observe always to make the cut in a slanting upright manner, and immediately above a wood-bud, which is to be distinguished from a fruit-bud by being more tapering and attenuated in its general form.

It is customary in the language of gardening to speak of "nailing" branches or shoots; but it may be worth while to observe, that the process of nailing consists in placing a small piece of cloth or shred round the branch, driving the nail through the two ends, which are made to meet together. The length of the shreds must depend on the thickness of the branches, but they should always be long enough to leave sufficient room for the swelling of the wood, and also to admit them to be fastened to the wall so that the nails do not touch the bark of the young shoot.

DISBUDDING.

Disbudding is a very important operation in pruning, and this should be performed in the early summer, when in most

cases the use of the finger and thumb will be sufficient. Those buds and young shoots that are not likely to be wanted should be pinched off as soon as they are observed. Sometimes accidents will occur which injure or break the main shoots near the bottom, and therefore it is advisable to leave one or two branches here and there, which may be used in case of any contingency of this kind. These auxiliary branches may merely be temporarily fastened during the summer, and if not wanted they can be cut out in the autumn or spring.

THINNING THE FRUIT.

The Apricot requires thinning when the fruit is as large as a gooseberry, and there ought not to be more than one in a place. A rough thinning at the first will do. Many who value the fruit green only thin them a little while they are small, and leave the principal thinning till they are as large as damsons, when they are fit for use. It will be seen, as they ripen, that some attain maturity sooner than others, and therefore it is necessary to gather them at different times. The trees should be examined in May, and again in the month of June, giving the fruit a rough thinning by merely removing those that are crowded. They may be ultimately thinned to four or six inches apart, and some kinds, as for instance the Moorpark, will bear greater thinning.

During the growth of the tree all foreright shoots—that is, all that grow out in front of the tree, and, of course, away from the wall—should be rubbed off; and at the summer pruning, select healthy strong wood to ripen, and cut away all the rest that may not be wanted.

AS STANDARDS.

When the Apricot is trained as a standard, the fruit will always be fit to use for preserves and tarts, but will not in all seasons be fit for dessert. Still the apricot is a good tree amongst the rest for the various uses of the kitchen, and some of the sorts now and then yield a fair crop. The fruit must, however, be thinned, and the tree pruned, by cutting away all the weak, and leaving all the strong shoots; and above all things keep the inside of the head free, for if crowded, none of the fruit in the crowded parts can come to perfection. The thinning of the fruit will in most cases be requisite at two different times.

ATTACKS OF INSECTS.

The best preventive against the attacks of insects, or other evils to which the Apricot is liable, is to keep the wall and branches thoroughly clean. The walls should be brushed properly at the time of pruning, when the tree is for the most part detached, or it should be detached expressly for this purpose if for no other. A little weak lime-water applied to the walls is also very beneficial, and all holes and crevices should be carefully stopped up with lime or cement. When the trees are nearly in blossom, it may be proper to suspend a covering of netting over them, especially if the early March winds are cold and cutting, as well as during heavy drenching rains. Otherwise, in ordinary situations, the apricot is quite hardy. But if young trees are planted in the winter, and very severe frost intervenes, you should protect their roots by a covering of light litter.

FORCING.

The Apricot is not often forced in our climate; not, however, because there is any great difficulty in raising an early crop of fruit, but rather from its not being sufficiently prized for dessert. But, if wanted early, the fruit may be forced to any extent, either having the plants in pots or planted in the border of the forcing-house. If to be forced in pots, the plants selected should be of a dwarf and bushy habit, having nice young healthy branches. They may be taken up in February, and placed in pots nearly or quite a foot across, according to the size of the roots. The soil used should be a mixture of good light loam and sand, made rich enough by the addition of some old and well-decomposed dung. If any roots are growing downwards, they must be shortened. Having potted the plants carefully, set them in a light and airy situation, not too much exposed to the sun; and give them a good soaking of water. But it will be advisable not to water them too frequently, in order to keep their growth somewhat subdued. The plants should be selected and marked before they begin to bloom, which will be early; and as soon as their flowers appear, they should be nipped off. As the shoots grow, give them a moderate pruning; and cut away all the weak and superabundant branches. It will be advantageous to plunge the pots in soil, so as to keep the roots cool. They may be taken into the house about

November, and the temperature be kept very moderate for the first fortnight. It should not exceed forty-four degrees when the plants are removed ; but may be increased to forty-seven or even fifty degrees at the end of fifteen days. If the weather is warm, plenty of air must be admitted into the house, so as to keep the atmosphere uniform and moderate. The heat may then be very gradually increased to between fifty-four and fifty-seven degrees ; but always giving air in the day-time as occasion may require. When the trees are growing, they must be watered moderately, and a gentle syringing overhead on fine bright days will be beneficial. About the time of their flowering, the temperature of the house may be further increased, so as to range between fifty-five and sixty degrees, which should be maintained as far as possible till the fruit begins to set and swell. After this, a rise of three or four degrees may take place : but air must be given while the sun shines, although it is not desirable to put down the sashes very far. Avoid as much as possible all sudden fluctuations of the temperature within the house. If the nights are cold and frosty, protection should be afforded, by covering the glass in front with garden-mats or canvass, to economise fuel. If there are no proper ventilators in the house, great caution is necessary in giving air by opening or sliding down the top of the sashes ; for, in most cases, only a very small opening will be necessary to maintain that uniformity of temperature which is requisite ; and extreme or sudden cooling of the air is always attended by injurious effects.

When the fruit has been gathered, the plants may be removed to the place in which they were plunged, and watered very sparingly.

THE PLUM.

THE Plum is generally propagated by budding and grafting on approved stocks ; but for ordinary purposes plants already trained for standards or dwarfs may be procured from a nursery. The Plum is budded on stocks raised from green-gage stones, as well as on the common and the Brussels Plum. The mode of treating stocks intended for Plums, is to cut them down to within an inch or two of the soil, early in the year. When engaged in this operation, be careful to make the cut in a slanting direction, and with a very sharp knife. By the end of the growing season the stock will have made a shoot of considerable height, and will be ready for budding the following year. The common Plum may also be budded when about a foot high ; and if the stock has been sufficiently vigorous, and planted in strong rich soil, it may attain a height of several feet the same season. Grafting is commonly resorted to for dwarf-growing trees.

SOIL.

The soil in which Plums thrive best is a moderately rich and friable loam. It should neither be too light or dry, nor stiff and retentive of moisture. The ground should be well drained, so that no stagnant moisture may lodge about the roots of the plants. A light or gravelly soil, however, is preferable to that of a heavy and adhesive texture ; but extremes in either direction should be carefully avoided.

PLANTING.

Plum-trees may be planted at any time, from the end of September till the end of February ; but always when the weather is mild and open. For all purposes autumn planting is the best ; as then the trees may make sufficient roots to carry them through the winter, and they are thus ready to start at once when the growing season arrives. But if the situation is low and subject to much moisture in the winter, or if the ground is naturally damp, planting may safely be deferred until the spring ; because in such soil the roots

would not strike so readily, and the plants would be liable to suffer during the winter. It must be borne in mind, however, that such a soil is not the most suitable for Plum-trees ; and you should alter and improve its texture and quality : as it is most desirable to plant in the autumn, so that the young trees may become well established before the winter sets in, when they will be in a better condition the following spring and summer for making strong and well-ripened wood. If, however, you wish to plant in winter, take great care not to expose the roots to frost or cold drenching rains. Choose a mild and warm day for the operation, and have the holes properly made and ready before lifting the trees ; which should be carefully deposited in the soil without delay, and a quantity of light stable litter laid over the soil near their stems. Should severe frost set in, cover the stem and branches also with some kind of protecting material.

AS STANDARDS.

Most of the Plums will be perfectly prolific, in warm latitudes, if grown as standards in the open ground, but in colder climates the more choice sorts should be trained to a wall having an east or south-east aspect. A directly south aspect is, however, preferable for those that ripen their fruit late in the summer. But many of the early sorts should not have full exposure to the hot mid-day sun during the warmer part of summer ; and, therefore, an east or south-east aspect is better for them ; although, if you want to hasten their period of ripening, it may be best to allot them the warmest situation.

ON WALLS.

Most of the sorts of Plums are of free-growing habit ; and, therefore, must have plenty of room to spread, when trained against a wall. The distances at which they should be planted will depend to a certain extent on the height of the wall. The most robust and vigorous growers should always have the highest walls. In general they should be planted at distances ranging between twenty and twenty-five feet, so as to preserve some proportion between their height and breadth. And, in planting young trees, you should select such as are about two years trained in the nursery. When large and small trees are planted against a wall, the former should be planted at distances ranging from twenty to thirty feet, so that the latter may have sufficient room.

AS ESPALIERS.

Plums are not unfrequently trained to espaliers, but here the principle of their distribution and arrangement is the same as for walls. If, however, the espaliers are formed of simple stakes merely driven into the ground in rows, you must be careful to examine them from time to time, and such as appear to give way at the bottom must be removed at the end of the summer, and fresh stout stakes put in their places. Espaliers should never be higher than five or six feet; as they are liable to be too much shaken by the wind if of greater height; and in many cases four feet will be quite high enough.

In planting Plums, the great error many people fall into is in placing the roots too deep in the soil, which if naturally cold or retentive will make the roots grow rank, and the branches will not be sufficiently matured by the end of the season. They should, therefore, never be planted deeper than they have been in the nursery ground; and all vigorous roots which have a downward tendency should be shortened. Having made the hole to the depth and breadth required, let the bottom be in the form of a little mound. Place the tree in its new position, and spread out the roots regularly all round to the circumference of the hole, and as near the surface as is compatible with their safety from frost and dry scorching weather.

Another error which many people commit is, making the soil too rich; thus causing the trees to grow so luxuriantly as to prevent them from bearing fruit at all. To remedy this evil, the best expedient is, to prune the roots; especially all those that are found growing downwards. In some cases, merely disturbing the roots, by removing a portion of soil from them for a day or two, will have the desired effect; but in resorting to this practice, care must be taken to keep the roots covered with damp mats, in order that they may not be exposed to the dry air, or sun.

Since it is essential that the roots of plum-trees should not penetrate deeply into the soil, it will be obvious that the best bottom for a border on which such trees are grown, is that which is formed by a good bed of alluvial gravel, as this affords perfect drainage; at the same time the roots are not liable to penetrate far into it. It is also customary, in deep

rich soils, to form an artificial bed, by concreting the border, or placing large flag-stones under the roots.

TRAINING.

Plum-trees may be trained either horizontally or in the fan fashion ; and both may be adopted with equal success ; but the pruning must be regulated, to a certain extent, by the mode which is adopted. If young trees are trained with the branches horizontally, the young shoots should be cut back to four or six buds, leaving the central or leading shoot somewhat longer. In forming young and newly-planted trees, great care is necessary to ensure a plentiful supply of wood-buds at the lower parts. For this purpose various expedients are resorted to, such as pinching off the points of the shoots in the summer—bending them downwards, in order to induce fresh buds near their base—cutting back according to the vigour of the shoots, &c. It is important to observe, that the lateral shoots should not only grow, but also bear fruit-buds ; while the central or leading shoot is only required to produce wood or lateral shoots. These two kinds of shoots—the lateral and central—therefore require different treatment in respect to pruning. If the central shoot is allowed to grow very luxuriantly, it will fail to produce laterals, as the sap will naturally ascend to the summit. In this case, it will be proper to pinch off a few inches of the top. This operation will most likely have the effect of causing it to push out lateral shoots near its base ; and if these are in greater abundance than may be necessary or useful, you must select those which will make the best lateral branches, and rub off all the others. Make this adjustment as soon as possible ; so that the chosen shoots may acquire due strength and vigour. As soon as they are long enough, bend them gently down in a horizontal position, and nail them securely to the wall. But this is the nicest operation you can perform, and requires all the care and nimbleness you can give it ; for the least jerk or rough handling may break the young shoot, thus leaving your work to be done over again. If these lateral shoots, also, become very strong, pinch off the ends an inch or two. But if, after being topped, the central shoot does not form lateral shoots in a reasonable time, it will be necessary to repeat the operation. Owing to their horizontal position, the side branches are less apt to run into

wood ; and hence the *rationale* of training them in this manner to ensure the more readily the production of fruit ; but they also require to be occasionally shortened and regulated, in order to induce them to push out fruit-buds or spurs. The pruning of the trees should be attended to at these three periods : early in the spring, at planting ; in the summer, while the branches are growing ; and early in the autumn, after their growth is completed.

SUMMER THINNING AND PRUNING.

The summer thinning or pruning is especially necessary for removing superabundant shoots, and selecting those which from their position may be suitable for training ; while the fruit which may be on the trees is benefited by the increased amount of sun and air thus admitted to them.

The principal training and pruning should be made at the end of summer or early in the autumn, or during mild weather in winter or spring, if it cannot be conveniently done at the fall of the leaf. Pruning is indeed performed at all seasons by many people, but there cannot be any doubt as to the end of the summer being the most suitable time. When the branches or twigs are cut at this season, the wounds heal again, to a certain extent, before the cold weather sets in ; whereas, if they are cut late in the autumn or during the winter, they are liable to be injured by frost and cold. The Plum should not be pruned in winter, except in cases where the operation has been omitted at the end of the summer ; and then, if it can be conveniently left till the spring, it will be much more satisfactory than pruning in winter.

If Plum-trees are trained in the fan form on walls, the preceding directions for thinning and pruning are equally applicable. For espaliers, the best mode of training is the horizontal form. If anything can be adduced in favour of one form more than the other, in training plums against walls, it will be, we think, that which is involved in the consideration of height. For ordinary or very low walls, the horizontal fashion is perhaps the better of the two ; while on high walls, or where the trees can have plenty of room, the fan form is preferable.

With regard to standard Plums, the principle which should regulate the pruning and thinning, is the same as for those on walls and espaliers. The natural habit of the tree should

be studied. Do not attempt to alter it, in order to bring its form up or down to your ideas of symmetry. Some kinds of Plum-trees are not very handsome, but all that you can do to improve them in this respect, to any great extent, will only be fraught with injury. You may, however, modify them in some degree, by timely and judicious pruning when young. Such as have been allowed to grow without restraint for a long time, will perhaps be overrun with superabundant and barren wood ; you may therefore in this case use the knife and saw with considerable freedom. Violent amputations of this kind should be performed in the spring, when the trees are the better able to sustain the shock they thus receive. They will push out fresh branches in the summer, and these, with timely thinning and pruning, may be made prolific and kept within due bounds. In some cases it may be advisable to cut the trees down to within a foot or two of the graft or bud. Such operations should be carefully performed : the knife and saw should be in good condition, and the cuts should be made in a sloping direction, with the face downwards, and as smooth and clean as possible. After you have used the saw, pare the edges of the cut with the knife, so that all roughness may be taken from the bark. When thus treated, the wounds are the less liable to be injured.

THINNING THE FRUIT.

As soon as the general crop of fruit has swollen to the size of good peas, you should look them carefully over, and using a pair of good scissors, sharply pointed, cut out all those that are likely to be in the way. This operation, which is of course most pointedly applicable to choice trees, must be repeated from time to time, until none are left but such as you select for ripening. At the first thinning you may be somewhat sparing ; for as the plums are liable to drop, it may be difficult at such an early stage to select the most healthy or well formed ; but in eight or ten days more, they will have formed their stones to some extent, and the process of thinning may be again continued with more freedom.

With respect to insects which commonly infest plum-trees, these sometimes commit serious ravages on the young shoots, the foliage, and the ripening fruit. Great attention to cleanliness is the best remedy for this evil. At the pruning season, and especially in the winter time, examine the branches

closely, as well as all the crevices on the walls, where the larvæ of insects are likely to be deposited. It will be advisable to use a moderately rough or stiff-haired hand-brush, and sweep off suspicious particles or excrescences of every kind. When the foliage is infested with green-fly, syringe it with tobacco-water; but occasional syringing under the leaves with soft water on fine days, is preferable to this application.

FORCING.

Plums are grown in pots, or in the borders of the forcing-house. If to be grown in pots, they should be potted for two seasons before being set to force. In their probationary state, they must be attended to in regard to pruning, as already directed for those grown on the open wall or as standards. The object, however, should be to keep them somewhat dwarf in habit, and induce them to ripen their shoots properly. During this period, never allow any fruit to set; but rather remove any flowers that appear, immediately. The soil in which the plants are potted, should be moderately rich, and of a sandy loamy texture, and provided with ample drainage. Observe not to place them too deeply in the pot, and give a good supply of water. You may then plunge them on a warm open border, and so placed that they may have the full benefit of the sun and air. The roots are apt to suffer from drought during warm weather; you should therefore cover them with some light stable litter. This will be better than having the pots plunged to their rims. The best trees to select for the purpose of forcing in pots, are those which are least disposed to grow vigorous; and in taking them up from the nursery lines, all strong roots growing downwards should be shortened. They may be of various heights, according to the construction of the house in which they are to be forced; but in general they should not have long stems, and it will be necessary when taken in, to arrange them so that the taller trees may be at the back, and the shorter at the front of the house; in this position they will be equally exposed to the light. They may be removed from the border in which they are plunged to the forcing-house, in December or January, and very gradually excited; for if rapidly or suddenly pushed into growth, they would most likely drop their fruit-buds. For this reason give them plenty of air when the weather is mild, and they will also be benefited by a gentle syringing

with tepid water on bright warm days. Be careful, however, not to give them much water at the time they are setting their fruit, and keep the temperature as moderate and uniform as is conducive to their gradual progress. The heat should rather be moist than dry, and throwing a little water on the paths from time to time will be beneficial. At first, the temperature may range between forty and forty-three degrees; in two or three weeks it may be increased to between forty-three and forty-six, and so on very gradually, until the trees are in flower; but it should not at this time exceed fifty degrees. At the time of flowering, give as much air as possible with safety, especially during warm sunshine, so as to keep the temperature from rising too high; but after the fruit has made some advance, the heat may range between sixty and sixty-five degrees.

FORCING IN POTS.

The treatment of Plums planted on borders and trained to trellises, is much the same as when they are forced in pots; but the latter mode is perhaps the more convenient of the two, as, after the fruit has ripened, the trees may be removed outside, and their space occupied with other things. As all forced plants become exhausted sooner than those grown naturally, it will be necessary to keep a stock of young plum-trees, to take the place of those which have been forced for a year or two. It sometimes happens that plants fail to ripen their fruit; and when other plants are kept ready for an emergency of this kind, inconvenience and disappointment are obviated to a certain extent. Fresh plants thus introduced will of course be somewhat later in maturing their fruit; but this circumstance is not to be much regretted, if a supply is ultimately secured. Between the stoning and the ripening of the fruit, water may be safely applied in abundance, but it should be gradually decreased, and withheld altogether when the fruit is near maturity. A little well-decomposed manure may be laid over the surface of the soil, after the plums have stoned; or the same benefit—the feeding of the fruit—may be secured by occasional applications of manure in a clear liquid form. As soon as the fruit has been all gathered, the trees should be removed and placed in a shady situation, and kept somewhat dry until wanted again at the end of the year. They must be re-potted once a-year, for which the autumn is the best time.

THE STRAWBERRY.

THE strawberry requires planting in good kitchen-garden soil, at something like a distance of a foot every way, and the result will be crops of good strawberries in ordinary seasons. If we were going to publish good advice in the shortest possible space, the above would be the lesson; but there is as much difference between ordinary and good fruit as between a shilling and half-a-crown, both in quantity and quality. From the wild strawberry in the woods to the largest of the late improvements, the flavour of the fruit is universally admired. The great object of the cultivator is to produce the largest quantity of fruit of the finest flavour in the smallest space, and at the earliest season. To do this, many have grown strawberries from seed for years, to obtain improved varieties; and this is what everybody should do that can wait two years for novelties, and in the meantime make the best of the sorts they possess. There is not a more luscious or finely flavoured fruit in cultivation, though it is not capable of being kept in perfection many hours after gathering, and therefore its reign is but short, unless we contrive to grow the earliest and the latest, and so prolong a season which would otherwise be soon over.

The Alpine strawberry will, if raised from seed in the spring, bear fruit before the winter, and if the weather continue mild, may be gathered up to Christmas. The size of the berry is very much against it, but the flavour is exquisite, and if you have but enough of them, and in gathering pull them off the plant instead of pulling the stalk, they form a first rate luxury in cream, because the size is no object. We will first treat of these, because they are familiar to everybody, and with all their want of size they are very desirable with others, not only for their flavour but for their constancy, for they bloom and bear for months, if the frost does not cut

them off. Those who desire to save the seed of strawberries should pick out the finest fruit that they meet with in the season, and keep them instead of eating them. The fruit should be squeezed out in water and the pulp be completely crushed, so that when it is squeezed through a fine cloth little will remain but the seeds, which may then be put into an equal quantity of dry silver sand and be rubbed with it and among it till dry enough to sow. Such is the direction for the Alpine strawberry, but with the large sorts there is no occasion to destroy the fruit; get a sharp knife and peel them as thin as may be to get off the skin and the seeds, and as to the flesh or the middle, eat it; there is no occasion to waste any but the trifling thickness which comes off in the peel. This peeling and skin may be rubbed together in water until there is little left but the seeds, which will remain behind when the whole is strained and squeezed through a fine cloth. A little dry sand is the best under any circumstances to dry the seed in and completely clean it, but it should be quite dried before it is laid by. The mixing of it with silver sand is the best thing we can do, because it enables us to see where it is sown and how thick it is. The time of sowing will be as soon as the seed is ripe, except for the Alpine, which may be sown in spring about March or April.

FROM SEED.

If you are sowing the seed of some remarkable fruit, and there is room for it, sow the seed in thirty-two or twenty-four sized pots; but if you have a quantity, level a good rich bed, and mark out four feet wide by any length that you may please to occupy. If the smaller quantity is to be sown in pots, spread it evenly and thinly over the entire surface, and do not sow too much in a pot, but rather use a greater number; and in sowing in the bed, sow it as thin as possible; if the seeds were three or four inches apart, so much the better. When they come up, there will doubtless be many weeds come up with them; these must be drawn out by hand, and when the seedling strawberries are large enough to handle well, a bed should be prepared on purpose to plant them out in. Let the bed be well dunged a foot deep, and with good decomposed horse or cow-dung, and in this bed plant out the seedlings six inches apart in the row,

and a foot between the rows all over the space, and keep them well weeded from time to time ; and if the season be at all dry, well watered also. The best way of making the close rows is across the bed, because the foot vacancy being across also, enables us to clean the bed so much better than if it were reversed. A row across a four feet bed will take seven plants. In due time these plants will grow to a tolerable size, but no runners must be allowed to grow ; take them off as fast as they come, they only confuse the bed ; and it is very desirable that not a single runner should be allowed to root itself, because if it should turn out that any particular plant exhibits some novel quality, and should be worth growing, there should be no kind of doubt, which would always be the case if the runners were allowed to root about the bed in all directions. If the seed is sown when the fruit is ripe, the plants will be large enough to stand the winter in the bed, and if the weather should threaten to be very hard, some loose litter on the bed will be quite enough to protect them. The blooming and fruiting the first season will be very uncertain, The seed sown in pots must be weeded well until the plants are large enough to put out in the beds, but the treatment will be precisely the same. As the spring advances, there will be many whose foliage will be small and unpromising, but there will be no certainty in the quality the first year, even if any bloom and fruit ; so that we simply recommend hoeing occasionally to keep them clear of weeds, and stirring the earth between them now and then to let the air in.

In the fall of the year, cut off all the yellow and discoloured leaves from both seedling and established plants, but do not deprive the plants of the green and healthy ones, which is too frequently done to their hurt. In the spring, top-dress with a layer of good decomposed cow-dung ; and if the weather prove at all dry, water now and then copiously. In the case of the seedlings, be particular in watching the period of bloom of each as they come out, because the earlier a strawberry is the better for market, and, consequently, the more valuable the plant ; any, therefore, that come out very early may be doubly watched, to see if the fruit come ripe earlier than the others ; in short, they should be constantly examined all through the bed, to see if there is any peculiar character in form, quality, flavour, or growth, for it is only

such as exhibit those that are worth keeping. Such as really show anything like novelty in form, colour, or flavour, may be allowed to put forth their runners unmolested; others which do not, should have their runners taken off before they have time to grow much, because they would only interfere with the rest, and such as you feel inclined to try again may be allowed to grow, and by placing a stone upon the joint, or pegging them down to the soil, they will root freely, so that you may give them a fair trial the next season. When the leaves begin to turn yellow, and the runners are rooted, treat the old plants as they were treated before, and take off the runners without damaging any of their roots, to plant out in another bed with labels corresponding with the plant to which they belong. Select for these runners a good open bed, well dressed, and plant them a foot apart from row to row. These plants will give a better notion of the value of the sort than the old plants did, because they will show the season. They will be well established before the hard weather disturbs them, and in due season will be at their best,—that is, presuming they were pegged down and became well rooted before they were taken from the old plant.

Before, however, we can begin seedling raising with good effect, we ought to possess ourselves of all the popular sorts, a few plants of each, because it is impossible to judge of the goodness of a strawberry without we have others to compare it with; there ought to be something different from all of them to be worth calling a new variety. It should come in at a different season, or be of a particularly fine flavour, or of a distinct form or character, to be worth growing at all. A very late strawberry, that comes in when all others are out, would be worth saving, although not so valuable, perhaps, as one that would come in before all the others; but if it possessed any superiority that was distinguishable by an ordinary observer, it might be worth its place among the most popular kinds, but it must be no trifling or doubtful point.

It is almost impossible to obtain a better strawberry than some of those we have at present. Even Keen's seedling is at present not beaten by anything, although there are sorts considered in some points superior; but Keen's seedling is good in all points—a good bearer, a good size, a good forcer, and a good flavour. It is not impossible to beat it in all these points, but there is no indication of it at present; one may

be a deeper colour, another a larger berry, a third claims to be a little earlier, but take it for all in all, nothing has beaten it yet altogether. Therefore it will be useless to attempt to prove the value of the promising sorts by merely growing them, unless we have the most popular sorts growing at the same time. If, on trying them by their runners, the value of the fruit as a new variety is established, take care that every runner is made effective by pegging it down at every joint, in order to make as many plants as possible, and as soon as possible; and after this treat them as the named and popular sorts are treated.

PREPARING THE BEDS.

At the period of the year when the strawberry runners are well rooted (which if not effectually done by September will be not at all), prepare the bed or border for them. We may run an alley between every bed; the four-feet beds hold three rows, two rows a good six inches from the edge, and the third up between them, so that the three rows will be eighteen inches apart, and the alley between the beds eighteen inches wide. Dibble the plants in a foot from each other in the rows. Let these beds be kept very clear of weeds, and the earth be occasionally stirred up, but not so near as to damage the fibres of the roots. When they show the bloom, they want copiously watering, unless there has been a good deal of wet weather; for the bloom and subsequent fruit require great nourishment, and the water-pot must not be spared. When the fruit has begun to set, lay down long litter between all the rows and in the alleys, first, to keep the rain from splashing up the grit to the fruit, and, secondly, to keep the moisture in the ground, because it will save a good deal of the labour which must necessarily be devoted to them if the plan of laying down litter be not adopted. There have been tiles invented with which to form a complete pavement between strawberry plants grown out of doors; half-circular vacancies being left in the sides, so that two may be placed to a plant, closing upon it with the two half-circular vacancies only large enough to allow it room to grow. These have been said to harbour snails, slugs, &c., while, however, they certainly keep the fruit clean, however hard it may rain, and perhaps hasten the ripening, as the tiles retain the heat of the sun a long time. Upon the whole it is better to

tie up the stems neatly, to keep the fruit from dirt and grit ; and it is by no means lost time nor crop to remove from every bunch, as soon as they set, all the later and smaller stuff, that never comes to good fruit, but detracts from the best crop : three or four of the principal berries on each truss are sufficient to leave, and they will be the better for our pains. Weeding is so much a matter of course, that we say nothing further than that the beds must be kept clean.

LARGE FRUIT.

To grow for size, select as soon as you can after the fruit sets, two or three of the most handsome berries, and pick off all the rest of the fruit and flowers, by this means the strength of the plant goes into the reduced number which are thereby increased in size ; some persons will remove two out of the three as soon as they discover which takes the lead. This is only done for exhibition purposes, for the vulgar taste that prefers size to all other qualities, too often settles the award. Colour, form, flower, go for nothing, as compared with size ; but this is the fault of the people who appoint the judges, and not of the men they choose, who generally know no better. The gathering of the fruit should be commenced as soon as the leading berries ripen, but there will be many gatherings on the same piece.

YOUNG PLANTS.

You have now to decide whether you want young plants ; and if you require them, let the shoots be pegged down at the joints, and, unless you want a considerable number, only peg down the strongest shoot of each runner, and break off all beyond the shoot. These will be found well-rooted, and make excellent strong plants in a short time. If they are to be formed into a new bed, dress the ground well, and plant them in rows a foot apart in the row, and eighteen inches from row to row. In the mean time the old bed must be cleared, the dead and dying leaves removed, the dung or litter forked into the ground between the rows, and the work left level and neat. Some prefer to leave the litter on through the winter, but, besides, the untidiness of the thing, there must be a waste ; the sooner, therefore, it is dug or forked in, when the crop is done with, the better for the plants, and all the trimmings of the plants, dead leaves, &c., should be forked in at the same time ; any of the struck

runners that are not wanted in the beds may be potted for forcing, and will be quite strong enough by the time they are wanted to be placed in the forcing-house, or vinery, or whatever other place they are to be forced in.

The formation of beds is very simple ; they should be prepared by digging and trenching two spits deep, in well-drained ground. At the bottom of the first spit put a good coat of stable dung. The plants may then be inserted. Those which grow very large will require a considerable space ; many grudge so much room, but the convenience of keeping the beds clean, and in gathering, is very great, and the fruit only gets damaged if cramped. Some of the larger kinds will require eighteen inches from plant to plant in the rows, and two feet from row to row. The crop will, perhaps, be slight the first year, but much depends on the condition of the plants.

FORCING THE STRAWBERRY.

If the runners of the last summer have been made the best of,—that is, if they have been struck early and grown well,—they will make excellent plants for forcing ; but it is desirable that the runners be actually struck in the pot at once, instead of having to be potted after striking. For this purpose, get as many four-inch pots as you require plants ; sink these between the rows of strawberries, and then, as the runners push out, peg the strongest shoots on the surface of the mould in the pots, and cut off all the runners beyond the shoot. These will rapidly make good plants, and will require only one shift. The soil in these pots should be good rich loam, rather strong, and well-rotted dung, one part of the latter to two of the former, and the pots should be well drained. When the plants have made pretty good growth, and are firmly rooted, let the pots be taken up, and the runner severed from the parent plant. As soon as the pots are filled with roots, which they frequently are when taken up, they must be shifted to six or seven-inch pots. Let them all be placed together in a sheltered situation, and be carefully watered during the dry weather. When the time arrives for putting them into the house, set them first in a cool part of the stove, or pinery, or forcing-house, and gradually get up the heat ; they should be near the light, and where they can have air given in case of need. They require, perhaps, as little atten-

tion as anything, for they can hardly go wrong, unless in the event of sudden check. Some of these may be put in the house at one time, and some at another, to make a succession of fruit; and when they have done fruiting, they may be turned out and planted in the open ground, when they will often grow and fruit again in autumn.

GROWING IN HOT-BEDS.

But it is worth while to consider of another mode of forcing. Make up a hot-bed as if for cucumbers, and put six inches of soil on the dung before you put on the lights; when this has come to a regular and genial heat, and you are sure there will be no burning, plant carefully the same plants that are in pots by turning out the balls of earth without disturbing them, and plunging them one foot apart all over the bed; give air daily by tilting up a little behind, and be careful that the heat is kept up regularly. The beauty of the fruit with this kind of forcing is equal to any that are found in the hot-house. As the fruit advances to ripening, the air may be increased, but the heat must not be allowed to decline. If there be any disposition to lose heat, remove the outer portions of the dung as close up to the wooden frame as possible, and place hot stable-dung all round. This will increase the temperature enough to enable us to give more air, but there must be no chill. These plants will in all probability yield more and better fruit than any of those in pots. The only thing to guard against is sudden change of temperature, which would have the effect of blighting the fruit. If, however, you have a good stock of potted strawberry-plants, you can do anything with them. They will bear in-doors or out. At any time after Michaelmas, they may be put into the forcing-house, or grapery, or the stove, or in the greenhouse; they will be hastened more or less according to the time they are placed under cover, and the degree of heat to which they are subjected; but they are sure to produce more or less for the trouble and attention that are bestowed on them.

The earliest period, however, that strawberries repay us for forcing, is the first of January, at which time a few may be placed on a very light shelf in the vinery, or in a greenhouse, a few more in February, and a few more in March. If in the vinery you can make room for five or six dozen pots about the shelves, by taking them in at three different times, you will have them succeed one another well.

THE RASPBERRY.

THE Raspberry grows on a sort of cane which dies down every year, after bearing its fruit; other canes, generally more numerous than the old ones growing up during the year, to take their places for the following season. They are usually planted in rows about four feet apart in the row, but they may be planted as close as three feet in the row. The rows should be about six feet apart. The soil should be deep, rich, and moist; they do not bear freely, nor is the fruit so large and fine, if grown on dry, shallow, or poor soil. They should therefore be planted in a somewhat low and damp situation, not too much exposed to the light and air, as partial shade is found to be conducive to the flavour and size of the fruit. Any border having a north or north-east aspect, if the soil is sufficiently good, will be a very suitable situation for raspberries. We have seen excellent crops of finely flavoured fruit raised on such a border, where, from the lowness of the situation, the ground was for several weeks under water in the winter season, or during very wet weather in spring. Some people object to raspberries being grown on a border where other fruit trees are grown and trained against the wall, on account of the roots exhausting the border, and depriving the fruit trees of their due share of nourishment; but we think it must be obvious that a border where raspberries may be best grown, is quite unsuitable for fruit trees of any desirable kind, and therefore if, in such a case, the wall is used at all, the trees grown against it should be such as would only cumber the ground elsewhere.

The canes should be procured of a market gardener or nurseryman. They are generally sold single, the cane with its root making the plant. You ought to select vigorous and well-ripened canes, having good healthy roots, for such are the most likely to bear luxuriant crops, and much sooner than

those that are weak or small. Previous to planting the canes, the ground should be well dug, and a quantity of good old well-decomposed dung laid in the trenches during the process of digging. When the ground has been properly prepared, make the holes in even rows, either along or across the border, and in the quincunx manner, so as to leave the more room between the plants. It is desirable to use the line in making the holes, for nothing looks so ill as a crooked row of plants or bushes on a border; and when they can be properly placed at first, there is no necessity for relifting them. Having placed the canes in the ground, cover their roots carefully, and tread the soil slightly over them. You must also observe to keep the more vigorous plants near the wall, and the weaker towards the margin of the border, so that from the wall to the walk they have a sloping appearance, and the back rows may be considerably wider than those in front. If you have patience to wait till the following season for the fruit, after the plants are placed in the ground, you should cut down the canes to within a few inches of the surface, so that their roots may become strong. By this means the fruit will be much more plentiful and better flavoured the next year. But in expectation of fruit the first season, you should shorten the canes to three feet above the ground. Observe, however, that you should not look for much fruit the first year, because the canes are often weak when detached from their parent stools; but the roots are sure to send up one or more during the summer, and in general, much stronger than the old one. At the end of the summer, the old cane is cut down to the ground with a sharp knife and a sloping cut. The new canes which have grown during the summer must be examined; and if there be one or two strong ones, they may be shortened to four feet, and tied to a stake driven firmly into the ground. All the small and weakly canes must be cut off close to the ground, in the same way as the old ones were. If the canes are planted in quarters or on borders which are favourable to the growth of vegetables, as savoys, Brussels sprouts, and the like, a greater distance between the rows will be necessary, and in this case, if they are eight or nine feet apart, the rows will be close enough. The intervening ground may be stocked in this way all winter, so that the crops may come off before the fruit begins to ripen or the canes grow so much as to shade the crops.

There are various modes of training raspberries, but perhaps the most common, as well as the most simple, is, merely attaching the canes to a stout stake driven into the ground near the roots. This is also the most convenient when the ground between the rows is cropped with vegetables. When the stake is properly placed, it is only necessary to tie the canes to it after they are cut. The best material for this purpose is common matting, and a tie should be made at a few inches from the tops of the canes. Of the other modes of training raspberries the espalier form is perhaps the best. This consists merely in tying each cane to a separate rod or stake, and when several canes spring from the same root, they are trained in this way, to have the appearance of a fan, either of a uniform height or otherwise. This method requires, of course, more time and labour, but there can hardly be any question as to its superiority over every other; for not only are the plants arranged in the most agreeable manner which they are capable of, but the fruit is better ripened, larger in size, and more easily gathered than when the canes are grown closely together. Another method sometimes practised, is to bend the canes of one stool towards those of another, and to tie them together, thus forming a series of arches. Whatever mode of training is adopted, the canes should never be tied thickly together, as is not unfrequently the case.

There is very little to be said about pruning raspberries, but that little admits of no exception. In the winter time you have only to go over the plants and cut out all the old shoots close to the ground. Remove also whatever weak and straggling canes you may find of the new growth, leaving only two or three of the best ripened and most vigorous, which should be immediately tied to the stakes. It is desirable not to shorten these until the spring, when they may be cut down with a good knife, to about four feet from the ground. They may also be cut down in the winter, if most convenient, but in case of severe frost the spring pruning is preferable. The ground should be manured and dug at the time of pruning and training the canes. Raspberries require very little further attention; but in the summer it will be necessary to hoe the ground frequently, in order to keep down the rank and coarse weeds which prevail in soil of a strong and moist character. A number of superabundant or 'useless suckers will also spring up, and these must be treated as weeds.

Where fresh plantations are intended to be made, these suckers may be allowed to grow with greater freedom. The fruit is borne on the ends of all the shoots, and when the berries begin to ripen, they should be gathered every day, as they soon spoil if left on the canes after they are ripe. At the end of the second year the number of canes will be much greater than before, but at no time ought more than three good strong canes to be left to bear fruit. The others should come off. When the canes come strong, and only three of them are selected, one stake will be quite sufficient.

With the view of obtaining a little early fruit, it may be worth while planting a few canes of an early kind near or against a wall having a south exposure. When grown in such a situation they require plenty of water, and a gentle syringing of the foliage in the mornings of fine days; and the same practice adopted previous to the opening of the flowers will be attended with considerable benefit, and hasten the setting of the fruit. A late crop may also be secured by cutting down the canes close to the ground in spring. The fresh canes will bear fruit in the autumn, after the regular crops are past. The double-bearing sorts are the most proper for this mode of treatment; though some of the other varieties of the Red and Yellow Antwerp bear late crops when so cut down. In every case, the canes should be cut down as soon as their fruit has been gathered, in order to invigorate those intended to bear the following season.

Raspberries are seldom worth the trouble of forcing, since other and better fruit are selected for this purpose. But if you are desirous of having a few plants forced, you have only to plant them in the border of a vinery, and train their canes under the glass, the same way as for vines. Dwarf plants may also be grown in pots or boxes very conveniently, and placed inside of the forcing-house early in the year. Admit plenty of air to them during fine warm days, and keep the temperature of the house as uniform as possible, carefully guarding against excessive heat.

THE GOOSEBERRY.

GOOSEBERRIES are raised from cuttings, which may be obtained, at the pruning season, from any garden. Select the strongest shoots, and, with a sharp knife, cut them to about eight inches long; but if they are cut into lengths of six inches, they may do. Make up one or more beds of rich soil, and fork in a quantity of well-decomposed dung into the top spit. The beds may be of any size; but it may be as well to have them on a spare border. Plant the cuttings in the beds six inches apart, and in rows, across the bed, about a foot apart, for the convenience of weeding. They ought to be three or four inches in the ground, and three or four above the surface. Some people plant them deeper, but there is no use in having the shoots further in the soil than what we have stated. In making the cuttings, cut them at the bottom close up to a joint; and cut out clean all the buds on that part of the cutting which is put underground. Water the ground thoroughly, as soon as they are planted, in order to settle the earth about their lower extremities. During the summer, they must be kept clean by weeding with the hand and the hoe; and in dry, hot weather, a good soaking of the soil will be very beneficial to them. At the fall of the leaf these will have made strong shoots. They should now be dug up and planted in a new bed, in rows eighteen inches apart, and about twelve inches from each other in the row.

PRUNING.

Prune the young plants back to two eyes; that is to say, cut off all the upper portion of the shoots, and leave only as much at the bottom as preserves two buds. A considerable increase in the number of shoots will take place next season, and all the shoots that grow inwards, or on the central parts, should be rubbed off; and the ground having been made rich,

as in the formation of the first bed, the shoots will grow much stronger, and, in all probability, you will be able to preserve half a dozen having an outward direction, and forming a tolerably good bush. But if there should not be a sufficient number of branches for this purpose, you must cut all that have grown back again; because the object should be to obtain compact and neat bushes, with strong branches growing in an outward direction all round, but all from the centre, and without any side or irregular branches at all. But if there be six or eight branches growing outwards, all we have to do is to cut in whatever side branches there may be very close to the main stem, and shorten the ends, so as to form, as it were, the mere skeleton of a bush, and without any branches growing *in* the centre. Much depends on the particular habit of the bush; but there is no exception in respect to cutting all lateral shoots close, and depending on the main stem, with its shoots, for the fruit every year. The pendent and spreading growers require more space between the branches than the erect growers. Supposing, however, the young bushes to have become somewhat near the right shape the second year, it will be advantageous to take out every other bush in the rows, that the others may have the more room to grow. Those which are taken out for this purpose should be planted on other beds as before, or, if large enough, removed altogether to their permanent situations. The third year's growth will enable us to calculate as to the probable quantity of fruit we may expect the following year. But the pruning at any time is to be the same; all the side-shoots must be shortened to mere spurs, and the end shoots allowed to grow on if the bush be not large enough. But when the bush has attained to a moderate size, the ends may be shortened every year, as well as the side-shoots; but not more than half-way back.

PLANTING.

The permanent distance at which gooseberry-trees are planted should be six feet from plant to plant, and eight feet from row to row, because of the root-growth underground; a row of vegetables may always be grown between the rows. This, therefore, is the best disposition of gooseberry-bushes in ordinary gardens; but where the produce is raised for market, it cannot be so well adopted; for, owing to the great quantity of fruit required, quarters of several acres are exclusively

allotted to the bushes. In the operation of planting, you must be careful to preserve the roots as perfect as possible, and not allow them on any account to lie exposed to the sun. The holes should be dug large enough to admit the roots with perfect facility; this point, though frequently neglected, is very important; for when the roots are thrust into the ground cramped and huddled together, they cannot possibly take hold of the soil so well or so soon as when they are placed on a soft, somewhat level bottom, and spread out regularly on all sides. Many people also plant their bushes by far too deep, and consequently the ripening of the fruit is considerably retarded, or its quantity lessened. They should be planted deeper than they were in the nursery-beds, where the shoots always strike root at a certain depth of soil. This will appear obvious by examining a cutting which has been inserted too deep; the lower extremity, in such case, will generally be found without any roots. From time to time dung may be forked in about the roots, but they must not be damaged by the prongs of the fork. Supplying the roots with dung in this manner will greatly conduce to the formation of fruit-buds. Digging between the rows, and dressing for any crop of vegetables that may be grown there, will have the same beneficial effect.

TRAINING.

Gooseberries may be trained so as to have a tree-like form, and, if there may be no great use, practically viewed, in having them grown to miniature trees, they are very ornamental, and therefore pleasing; and if there were a considerable number about the ground, the beds and borders might be kept much cleaner. There is, however, one advantage in training them in this way, which is, that the fruit cannot become dirty or splashed, as frequently happens in heavy rains, if the branches are near the ground. Gooseberries trained in this way should have the stems not less than three or four feet high, according to taste, or the end desired. With bushes having stems of such a height, crops of vegetables might be grown close up to them the greater part of the season. Plants selected for standards must be chosen from the cutting-bed the first week after they shoot, and such as shoot directly upwards are alone fit for this purpose. The first thing to be attended to is, to rub off all the shoots except

one, which must be that growing upright. This must be carefully supported by a stake, to which it should be loosely tied, so that it may not be confined. The plants so selected must not be removed with the others, but be left in the bed, and the others may be thinned out so as to give the more room to them. Any side-shoot that pushes while the growth is going on, may be pinched off as soon as it shows itself; but at the end of the season, on the fall of the leaf, when the others are pruned, the plants intended for standards should not be shortened at all, only if they bear any side-shoots that escaped notice while growing, they must be cut off quite close. The second season, their upright stems will continue to grow, and the same care must be taken to allow no side-shoots to grow on the same plant. When the branch is tall enough, which it may be at the end of the second season—or it may not be till the third—you must take off the top to induce side-shoots; and, in the following growing season, you must rub off all the buds as they push out on the stem, only allowing the uppermost few eyes to grow. As the season advances, they must be frequently looked over, because there will be a constant struggle to push out shoots from the stem, which, whenever they appear, must be rubbed off; but the lateral branches, which will be rapidly growing ahead, must not be checked. At the end of the season, when these shoots have done growing, there may not be more than four or five; but all these must be pruned back to two eyes, or, if one side is rather bare, to three eyes; and these will shoot the following year, and grow vigorously. But the year that you cut back all the shoots on the head, prepare for their reception the ground where they are to be permanently placed, by trenching or digging holes as large as may be necessary, and two spits deep. Mix up the mould with a quantity of well-decomposed dung; and then taking up each plant, with all the fibres to its roots carefully preserved, spread them out in the hole at the proper depth; then put in a sufficient quantity of soil to cover the whole up to the level of the surface. Tread the soil down firmly, so that the original position, as to depth, may be preserved; and then drive in a stout stake near the stem to support the bush. Any trifling damage the roots may receive in this process, will be amply compensated for in the pruning. We have no right to expect, this season, to see all the shoots vigorous, and in sufficient number to

produce an equal head all round. All the shoots that are crossing, or that are in each other's way, or growing inwards, must be rubbed or cut off before they deprive the rest of the nutriment they require. All this time the berries, if any appear, must be picked off. The pruning of the standards must be the same as for low bushes ; all lateral shoots must be pruned close in.

With gooseberries, fruit is produced on the old as well as the young wood ; and spurs that are only an inch long will be equally fruitful with those of greater length. The preceding year's shoots, however, are the most prolific ; and, if only a few are allowed to grow on the most vigorous branches, will produce the largest and best-flavoured berries. In the summer it will be necessary to keep the central parts of the bushes clear of superfluous shoots, in order to admit all the sun and air possible to the berries ; otherwise the flavour will be affected, and the main shoots considerably weakened.

THINNING THE FRUIT.

For the purpose of insuring large and well-flavoured berries, you must thin the fruit from time to time, but more particularly when they have grown as large as peas : and those thus taken off may be used for tarts if desired ; but, in any case, they only injure the general crop by being left on the bushes ; and if they are not fit for table, they can be thrown to the pigs or on the manure-heap. The berries, in fact, should be thinned so that they may be at least an inch apart, for by allowing them to grow crowded together, they are very much deteriorated in quality and lessened in size. When they have sufficiently swelled to be fit for use, they should be thinned again, so that those remaining may be from two to three inches apart.

If very large berries are wanted, the thinning should be carried so far as to leave only two or three, or even only one fruit to each principal branch. The best-formed berries should be selected for the purpose of growing large, and these should, if possible, occupy the most vigorous lateral shoot on the branch. When thus thinned, only from six to nine berries will be left to ripen on the bush ; but this applies to strong, small bushes, such as are calculated for prize-fruit, and having that number of shoots.

Some kinds of gooseberries have habits which in pruning

are more or less unmanageable ; but whatever the habit may be, every endeavour should be made to prune them with a view to their symmetry and productiveness. Those whose branches take an upright direction, present little difficulty ; but there are others which have a horizontal, straggling habit, and some whose branches turn and twist about in all sorts of ways. These are not so easily regulated, and it is necessary in the summer time to keep the shoots from the ground by supporting them on forked sticks, firmly stuck in the earth, and long enough to answer the purpose.

GENERAL REMARKS.

Besides the operations already detailed, it may be proper to add a few remarks on the general treatment of the soil in which gooseberries are grown. When once the bushes are completely established and planted in sufficiently rich and substantial soil, they require no care in respect to watering ; but when the weather continues very dry in the summer time, some weak liquid manure may be applied to their roots with decided benefit. At the end of the autumn, some time previous to the winter digging, it is usual to fork up the ground near and round the roots, and lay down a quantity of moderately strong dung over the surface of the soil, to be left until all its strength has been washed in to the roots by the rain. By this practice, it is not necessary to dig near the roots for the purpose of supplying them with dung.

The application of liquid manure, in the summer, or the laying down of dung on the surface of the soil in the autumn, is preferable to digging the ground ; as by the former methods the tender fibres of the roots are not disturbed or injured. Digging, moreover, generally induces the roots to strike deeper in the soil ; they are thus further removed from the influence of the sun and air in the early part of the year, and the maturity of the fruit is considerably retarded. During the summer, you have only to keep the soil clear of weeds by hoeing and loosening its surface from time to time, as occasion requires.

AGAINST WALLS.

Gooseberry-bushes may with very great advantage be trained either against walls or other fences ; and they may either occupy entirely an allotted space, or be planted temporarily

in the intermediate spaces between other fruit-trees, while they are yet too small to occupy the whole surface. The best mode of training is to lead about four or half a dozen principal shoots from the base perpendicularly up the surface of the wall, at about six inches apart, all the lateral shoots on these leading branches being annually spurred in to about half an inch in length. When the principal branches become exhausted, each alternate one should be cut out to near its base, and a young shoot selected and trained up in the place of it; the other set of branches being removed and replaced in a similar way subsequently, when they have become worn out. The variety of aspects afforded by garden walls or fences, does much to extend the gooseberry season both earlier and later than the season of the ordinary bushes; and when late fruit are wanted, there is no plan so well adapted for their preservation as wall culture, because it is so easy to apply netting to keep away the feathered depredators, which do considerable injury if not prevented; it would only be necessary to select those varieties of which the fruit naturally hang well.

FROM SEED.

If you want, for the sake of experiment, to raise gooseberries from seed, select the best-formed and ripest berries, and take the seeds out of the pulpy covering, and lay them on a shelf in a store-room or shed to dry. After they are dry, you may put them in a paper bag till wanted. Make up a bed of moderately rich soil, on a warm border, and sow the seed thinly over the surface. Scatter a little fine soil over the bed, rake it carefully, and dress off the bed. During severe frost, protect it by a quantity of light litter or straw. If the weather is dry at the time of sowing, the soil should be properly moistened with water. The following spring the plants will have grown sufficiently large to be fit for planting into other beds six inches apart; leaving, however, as many in the seed-bed as will fill it at this distance between each plant. At the end of the first season, you may take them up, and having pruned them according to the directions already given, plant them out in other beds of good rich soil, one foot and a half apart in the row, and two feet apart from row to row; water them thoroughly at planting, and weed them from time to time. They may now remain in these beds until they bear

fruit, but they must be properly pruned every year. When they are sufficiently advanced to have produced their fruit, you will have an opportunity of forming an opinion as to their merits, and if your own experience is not extensive enough for the purpose of enabling you to recognise a good variety or discard a bad one, you should consult some grower who has attained eminence in raising good varieties. If they are worth naming and keeping, you have only to treat them like other good sorts ; but mere slight distinctions and worthless varieties should never be propagated.

THE CRANBERRY.

THE fruit of the cranberry is much prized by confectioners for pies, tarts, and similar purposes. The habit of the plant is dwarf and procumbent, and, therefore, it is best adapted for growing in beds. There is one species, a native of Madeira, which is more upright in its mode of growth, sometimes attaining the height of three feet. This is a very prolific sort, and should not be omitted by those who want to raise large crops. The cranberry thrives best in a peaty soil, and in rather a low situation. It is generally grown in beds on a gentle slope to the south, in order that it may have full exposure to the light and air. The soil should be peat earth. The beds should be made about six feet wide, with alleys on each side, about two feet wide. The soil should be made rather fine and free, and have a good quantity of sand mixed with it. In spring or autumn commence to form the beds to the size already stated ; let them be raised a little above the surrounding ground, and if they can be made in the vicinity of a running stream, so much the better, as it is very desirable to have the facility of partially flooding the beds from time to time, and this can be effected by drawing the water into the alleys of the beds during summer, and it may sometimes be allowed to flood the whole of the ground. When the beds

are properly formed, the plants should be placed in rows, about nine inches apart in the row. The Madeira species, which grows larger than the common, or American cranberry, should have more space. In forming beds for such plants as this, it is usual to insert the plants in the ground at the time the beds are being formed, or after the dimensions of the beds have been marked off, and the alleys formed and trimmed. The plants are put in the rows in the process of digging the bed. The planting should, if possible, be made when the weather is rather moist or overcast; and when each bed is completed, it should have a good soaking of water. The plants will now require little further trouble or care, except occasional weeding, and irrigating, or watering in the ordinary way, if there is no stream near the beds. They will soon grow strong, and produce plenty of fruit, which can be gathered as wanted.

THE QUINCE.

THE quince may be raised from cuttings and layers of the young shoots, and may also be propagated by grafting or budding. The most common method of multiplying it is by layers. The soil most suitable for growing it to the greatest perfection is of a strong, moist, and retentive description, and it succeeds well in nearly all situations, more especially on the alluvial banks of rivers and streams. In general, and perhaps always, it is grown as a standard in the open ground. In propagating it, the shoots from parent stools are bent to the ground, and fixed in the soil firmly by means of pegs made sufficiently strong for the purpose. In proceeding to form layers, prepare the ground around the trees selected, by digging it properly, and making it level and trim on the surface. Bend down the branch or shoot with one hand, and at the same time make a hole about four inches deep with the other, and at such distance from the stem as may be suitable

for inserting the shoot. Before it is inserted, however, you must cut the shoot at the "knee," or that part which is inserted or laid in the soil. Place the knife at the back or under part of the shoot, and draw it carefully towards the top of the branch for about three or four inches; the shoot, when placed in the ground, will form roots at this point; these ultimately serve to nourish the terminal part of the branch, which may then with perfect safety be detached from the parent tree by cutting the other part of the branch just below the soil and behind the roots. This is called layering; and when laying the shoots down in the manner described, they should be so placed that only two or three eyes or buds remain on the terminal part above the soil; cover them with soil, which should be firmly pressed down, and secure them in their proper position by stout hooked pegs, about eight or nine inches in length. The pegs should be placed over the part where the incision has been formed. As soon as the terminal buds have grown six or seven inches in length, the part of the shoot next the stem, and which was bent down, must be cut clean off or detached from the other immediately above the soil, thus leaving the terminal part to form the plant. If an upright stem is wanted, the rooted layers, when transplanted from the stools, should be headed down close to the soil, when one or more strong shoots will be produced, one of which should be selected early, and the rest removed to throw strength into it. This transplanting may be done at the fall of the leaf: you take up the young plants and plant them in rows about thirty inches apart, and about a foot distant from one another in the row. Here they must be regularly tended for a year or two, the soil between the rows being dug every season and kept in proper order. They will then be fit to form stocks, on which the different varieties of pears may be grafted or budded to be grown as standards, espaliers, or any other mode of training. Such as are wanted for grafting or budding should be cut down to about a foot and a half from the soil, after being planted in the rows, this will tend to keep them erect and stout; while others that may be wanted for standards may be tied to stout stakes, driven into the ground near their stems. These may be planted out in their permanent situations at the end of three or four years. Some are of opinion that seedlings make the best rooted stocks for pears, but when raised from seed the

quince stock requires several years longer to grow before it is fit for grafting.

The usual treatment of the quince in respect to training is to keep it as a standard in the open ground, and it is very seldom, if ever, trained in any other way. All that is therefore necessary is to keep the branches so arranged and regulated that they may not become too numerous or crowded. Strict attention to pruning at their earlier stages will obviate much after-trouble, and will also be more efficacious in its ultimate effects in regard to the habit of the tree.

Whether intended for stocks to be grafted or budded on, or for producing its own fruit, the method of raising and cultivating the quince is the same, and for ordinary consumption a few trees in one orchard will be quite sufficient. It is, however, sometimes freely planted in hedgerows as well as in woods, for the production of fruit, of which in some places a sort of wine is made. If, as is sometimes the case with the quince, the bark turns rough and becomes tight, or what is familiarly known by the term "bark-bound," you must remove these evils by having recourse to the scraper, or use the draw-knife.

THE MEDLAR.

NOTHING can be grown with a less amount of trouble than the medlar ; and it has been long cultivated as an orchard-fruit, though of inferior quality. It is propagated by grafting on the common pear stock, and trained as a standard.

The trees already grafted should be obtained from a nursery, and planted in any good loamy soil, previously well trenched to the depth of two feet or more. When they are lifted, such roots as appear strong, and growing downwards, should be considerably shortened, and any of the side-shoots which are mutilated, cut clean off with a sharp knife. The holes must be made sufficiently large to admit the roots without pressure, as it is very disadvantageous to crowd the roots together when planting them in the soil. The holes should not be too deep, but just so that the roots may be kept as near the surface as they were in the nursery lines. In the centre of the holes, the soil should be raised so as to form a sort of mound, and the roots are to be spread all over it regularly to the circumference, and keeping the collar of the tree somewhat higher than the general level of the ground. As a general rule, the holes should be formed before the trees are taken up, so that the tender rootlets may not suffer from exposure, but be immediately placed in the ground and covered up ; and it will be beneficial to have the holes formed a few days before planting, as the soil will then be acted on by the sun and air, and the better suited for the reception of the young roots. The trees should be planted when the weather is mild, but overcast, or dull and moist, without being quite wet. Having placed the tree in the hole, with the collar in the middle, work the soil gently among the roots, covering the lowermost first. When the roots are nearly covered, tread down the soil gently over them, but not near to the stem, as is commonly the practice ; for if the roots are pro-

perly placed, and secured at their ends by light treading, they will soon take a firm hold of the soil, and ultimately support the tree. Then cover in the whole evenly, and drive stakes in the ground for the purpose of attaching the tree to them by means of straw or hay-wisps, one of which should be wound round the tree firmly to protect the bark. Drive the stakes so deep that they may not yield readily to the action of the wind on the tree. The soil over the roots must then be thoroughly soaked with water. As the trees grow, they must be pruned to keep them in a regular and neat form, as well as to maintain them in a fruitful condition. When the fruit is ripe, which will be at the fall of the leaf, it must be gathered in dry weather, any time before the frost sets in, which would be injurious to them. They should be wiped dry, and laid up in a dry cool place; and every four or five days, for some time, the process of wiping must be repeated. They must be examined from time to time, and when they become brown and soft, it is an indication that they are fit for eating. They are more like a preserve than anything else. In point of texture, they resemble a rotten apple; but the flesh, or pulp, is more buttery. Some persons affirm that it is an acquired taste to like the medlar; but there are many things devoured with a relish that have not half the claims of a medlar in respect to the richness of texture and delicacy of flavour. But if the medlar is not wiped, as directed, and kept perfectly dry on the surface, and, moreover, kept in a dry place, it will become mouldy on the outside, and the flavour will thereby be spoiled.

R H U B A R B.

It is a common practice in the cultivation of rhubarb, after placing the plants in the ground, to pay no more attention to them until the produce is fit to cut and make into tarts ; then to consume all that comes of them, and when cutting is over, to leave them alone till the time comes round to cut again. There they may remain for years, yielding a goodly supply, and if they get worse every year it is so slowly that we are hardly awakened to the fact. We are the more blinded to the degeneration by the fact, that the flavour is as good as ever ; for the slower the rhubarb grows, the more perceptible is the acid which renders the produce so agreeable when cooked. The aim we should have in the culture of rhubarb is, first, the quantity a plant will produce,—all cultivators are interested in this, whether they grow it to eat or to sell ; secondly, handsomeness of growth, for, independently of the pride a man takes in pleasing the eye, there is so much handsomely grown rhubarb at market, and distributed from market into every shop window, that inferior growth should be avoided ; thirdly, earliness, because as it can be produced when there is no fruit for tarts, every day that the production can be hastened is an object.

SOIL.

The soil for rhubarb must be deep and rich, therefore get a good supply of manure to begin with, and if your ground be moderately good and two spits deep, throw out a trench two feet wide to that depth, and in returning the soil, mix with it quite six inches in thickness of good manure : leave the width of two feet undug, and make other trenches two feet wide, and two feet from each other, until you have prepared in this way as much ground as you want for the plants you intend to grow. It is generally the first object to get the plants, and

then think of planting them ; but the ground should be prepared in this way, after taking off one of the summer crops, say in September, and whether you plant it in October or wait till a later period, the bed is the better for being done and lying together to settle before you plant it.

PLANTING.

The plants should be procured when the leaves have died down or are so far declining as to be of no consequence. In fact, the plant should have done all its growth and be at rest. They should then be planted down the centre of the beds prepared for them, three feet apart, if the room can be spared, but two feet would do, because if the plants are close enough even to draw a little, the stalks will only be a trifle thinner for it : three feet is the proper distance. Make the holes deep enough to bury the collar of the root three inches, and close the earth about them by pressing it all round before the soil is filled up to the surface. The result will be enormous growth, which will equal any that can be formed of the same sorts ; for it is pretty well known that there are some very large sorts, the Giant, the Victoria, and others of the largest kind, that will always beat the more stunted sorts, do as you will with them, but the choice of sorts can alone affect the size of the stalks. By this treatment they will come as large as anybody can grow them, and yield a good supply ; but you have to consider whether you will cut too much the first season or leave them a year to gain strength. A few of the first developed leaves may be taken, but we recommend moderation the first year. When the flower-buds appear, cut them off : flowering and seeding weaken a plant more than most people are aware of, and it cannot be questioned that depriving plants of their leaves tends that way also. When the leaves have died down, a top-dressing of decomposed dung forked in among the top three inches of soil will assist the next year's growth considerably, and the second year you will have as strong stems as can be wished for. The top-dressing in autumn must not be neglected ; the very large growth of the plant being only accomplished by the strength of the soil and the openness of the situation in good country air. The shade and drip of trees are very unfavourable to healthy growth of anything. The objection which many make to the great distance from row to row and from plant to plant, has

induced the culture of the two feet between the beds of rhubarb ; and there is no objection, when the rhubarb is done with, to a couple of rows of cabbage plants between the beds ; but they must be only a foot apart,—that is, the rows only a foot apart,—and before you can do any good with even these, you must dig the space between the beds without in the least disturbing them, and dress the ground moderately with manure : or a single row of brocoli may be planted instead of two rows of cabbages ; but whichever it be, let it come off before the rhubarb makes any spring growth. We prefer two rows of cabbage plants, not more than six inches apart in the rows, and a foot from row to row, because these can be first removed alternately and eaten in their young state, bringing them a foot apart all through, and the others can be cleared off before the rhubarb gets large enough to interfere with them, and they will not affect the growth of the principal crop in any way. The rhubarb will without any care come forward pretty early, but as every day is an object, the sooner it can be had, the more it is valued. There is not a vegetable that can be forced with so little trouble, or that is more valued when produced out of season.

EARLY CROPS.

At any time after Christmas rhubarb may be had without difficulty by scores of means ; first, by growing it in pots in a warm place, no matter whether light or dark. We have seen it grown in a warm cellar, in a warm kitchen, in a warm manufactory, in a regular hot-house, and in ordinary hot-beds. The soil in the pot must be strong and rich, the pot large, and the plant healthy. It may then be placed in the intended heat, be it what it may, and watered occasionally. There is no rule for cutting it, but that of its being large enough to be worth cutting ; whether the stems are broken off when they are six inches long, or allowed to remain till they are double or treble the size, is a matter of choice. There is no occasion to wait till the leaves are green, or of any particular size or colour ; the stalks are the only portion to eat ; therefore, when the plants begin to grow is the time you may begin to look for your tarts, remembering that the younger you cut them, the more stalks you take away to make up a given quantity.

FORCING.

We prefer forcing it on the ground in the beds it is growing in. You can produce them larger, healthier, a better colour, and more regularly. Some get boxes without tops or bottoms, and two feet high, although only one foot square. They may be called wooden troughs. They are placed over the plants, one to each, and pressed a little into the ground to keep them steady. Round these wooden troughs place hot dung pressed pretty close, and a good eighteen inches on each side. On the top of the box put a piece of flat wood with a three-inch hole in it, and with a bit of glass over the hole. Heap the dung over it, or if you please, a flat piece of glass to cover the trough altogether, for the dung is no weight, and the object is to let in light when a little of the top dung is removed, and this should be done by daylight, and the steam should be let out by leaving a slight aperture. The best contrivance is the flat wood with a hole in it, because by moving the glass a little on one side you may leave a bit of the hole uncovered, enough to let out the steam, without letting out much heat. The dung should be removed as it cools, and other hot dung placed there before the box has time to chill. By keeping up this heat, the plant will soon grow, and the larger leaves be drawn up to the top of the box. The dung must be taken away from one side of the trough or box, and the box carefully removed. Lay hold of the leaf-stalk near the bottom, bend it down slightly, and pull it off sideways; only take off the outer leaves as far as they are large enough: be quick about it, and cover it up again carefully, replacing the cover and the dung, and allowing the plant to grow again. The number of plants to be forced must depend on the supply required, but the plant will continue to yield by growing fresh leaves, until the flower rises, as in the exposed ground, at the proper season; so that you may cover up and cut again at the same plant every few days till it is exhausted. The objection to this mode of forcing is the litter it keeps the garden in, and the quantity of dung used, and there may be something in the objection.

IN POTS.

A hot-house, a hot-bed, or a hot-room, where the pots can stand without inconvenience on the ground, or in any dark

corner, or on shelves, taking their chance, and growing in light or dark, as the case may be, answers the purpose. Many force, like sea kale, in pots and covers ; but rhubarb does not require blanching, and is better for a partial light, or at any rate does not absolutely require to be dark, as the kale does—the blanching of the kale being a necessary condition to its tenderness. The pots for the rhubarb are necessarily larger than for kale, and the proper form is like chimney-pots, a foot in diameter ; boxes, however, are found much easier to pack away when not wanted, much lighter to handle, and in other respects more convenient.

To force rhubarb in a regular hot-bed, you must have a deep frame—eighteen inches in front, and two feet six inches behind. The hot-bed must be made in all respects as for cucumbers ; and when the dung is being piled up or built, as it were, the last foot high, let into it about six twelve-inch pots up as high towards their brim as will leave three inches for soil. Some pains must be taken to place these pots at equal distances, only two wide to each three-feet-six light, and three deep from back to front, so that the wooden frame reaches outside the edges of the pots. Take off the frame, and fill up to the edges of the pots all over the surface of the dung that may come outside the frame, with good garden mould, and the dung ought to be a good foot all round larger than the frame ; now set the frame in its place on the mould, to enclose all the pots, which, be it remembered, are empty within the frame—six to each light. Then let the whole be covered with the glasses, and when the heat comes up let off the steam. Get fresh strong plants of rhubarb in eight or nine-inch pots, that will drop into the pots already fixed, and you provide completely, first, for the non-disturbance of the dung by plunging, and next, against the burning of the roots, in case the dung happens to be too hot. The plants here have abundant room to develop their leaves and stems, and will all grow handsome and well under command for light, heat, and air. The plants will require occasional watering ; air every day if the sun happen to be very hot ; and covering at nights and during frosts, to prevent the decline of the dung-heat. The attention must be as regular as that to a melon or cucumber frame. By sinking the pots, abundant room is provided for the plants, and they will bear cutting at, or rather breaking off the leaves, as fast as they are fully developed, or

as long as they may be wanted. This mode of forcing produces the handsomest sticks or stalks, and answers longer and better than any other. It can be begun as soon as any, and therefore will produce as early as any. The heat of the bed may decline before the plants are half done with, or the weather is warm enough to answer the purpose of exposure; if so, take away all the dung from behind the frame, and even undermine it a little, and pack new fresh stable dung in its place, well pressed together, and if this does not give heat enough in a day or two, serve the two sides the same, and lastly, the front, so that the entire "lining," as it is called, will be new and hot. This operation may be repeated if necessary, but of course all depends on the season at which the produce is wanted, how soon it is begun, and the quantity of dung that can be commanded. We have begun soon after Christmas, and kept on till the natural ground supplied it; and there is no difficulty in this; but there must be a supply of plants, and to secure this, it is as well to depend on seedlings of your own raising; first, because they are always stronger, and often better than the sorts on hand; and, secondly, because it is the cheapest and best way of getting a supply of young plants.

FROM SEED.

In raising from seed, select the healthiest, strongest, and most favourite plant, and instead of taking off the flower of this, let it grow, and when it rises pretty high, support with a stick. Let this perfect and ripen its seed, which must be carefully dried, housed, and preserved till the spring of the year. In the first week in April prepare a bed of well-dressed ground in an open situation, four feet wide, and as long as you require; draw drills one foot apart, that is to say, four drills along it, and an inch and a half or two inches deep. In these drills drop seeds three inches apart, and cover them in. When these seeds come up and begin to make growth, the weeds will be quite as fast in their growth, and therefore must be removed, together with all the plants that are near one another, so that in the rows the plants be not nearer than nine inches or a foot apart when left to grow. On no account must any of their leaves be taken off; let them grow, and stop growing, and decay, without any other interference than the mere clearing the surface of weeds. If you were now

desirous of planting beds, you should take them up at the period when their leaves have dropped. These one-year-old plants are in the best condition for making new plantations.

We are so fully prepared to expect little differences in a batch of seedlings from a good plant, that we would not for an instant think of depending on any publicly acknowledged sort. The bed of seedlings after dying down is only to be kept clean, and allowed to grow another year, instead of being made to yield its stalks in the second season of its existence. At the end of this second season the plants may be dug up and transplanted, four feet apart one way and two the other. These two-year-old plants are fit for anything: they may be potted and forced in any of the ways we have pointed out.

The value of rhubarb is now generally admitted. The money expended on it is immense. It is no chance crop; it never fails; it has been a most important article of commerce for many years, and no garden ought to be without it. Rhubarb, which depends not upon seasons, and, as it supplies everything with its stalks, cannot be affected by blight, is, without exception, the most useful and wholesome of the substitutes for green fruits. We have only to encourage from any seedlings the plants which come earliest without any forcing or extraneous aid. Save the seeds from these; sow it, and bring others; again save the seeds of the earliest only—there is no limit to the sporting of vegetation. It is only by following this up well that we have got so many improved varieties of many different vegetables and fruit.

To propagate favourite sorts, which do not always come true from seeds, take up the stool, shake the soil from the roots, and separate the crown; let every piece of crown have a root to it; plant out these pieces in a bed, with half the space allowed for old plants, the first year, because you only want them to grow into strength; and at the end of the first season you can dispose of them where you please.

THE CHERRY.

THE cherry will grow as a standard or dwarf tree, and also trained against walls. You may succeed in obtaining good fruit, and a plentiful crop, by adopting any one of these modes ; but when the trees are trained against a wall—especially one having a favourable aspect—the fruit is not only finer, but a week or two earlier than when grown in an open situation. An orchard of cherries is no uncommon thing in Kent, which is consequently famous for its plentiful crops of this delicious fruit. But for private families, who consume their own produce, a few varieties will supply a succession, and be quite sufficient for any moderate establishment,

FROM SEED.

The cherry may be raised from seeds, but this method is seldom resorted to, except with the view of obtaining a new variety ; and in making experiments for this purpose, it is necessary to impregnate the flowers by artificial means. The stones of any of the cultivated sorts may be sown in the autumn in good rich soil, and in a moderately dry and warm situation. Many of the best sorts now generally known have been obtained from seed. Very few, however, grow the cherry from seed, as there are other and more expeditious means of obtaining young healthy trees, and seeds are seldom if ever used, except for the purpose of raising stocks for grafting and budding on, and then the seeds of the black or wild cherry are chosen by nurserymen, who not only raise stocks, but graft or bud them, and train the trees according to the various methods in vogue, until they are ready for bearing. Stocks are also raised from the Morello, and Mahaleb, a kind of prune, and one or two of the more common of the cultivated sorts are sometimes used for the same purpose.

As our directions would scarcely be complete, did we not shortly notice the process of raising stocks from seed, we shall embody the particulars in a very few words, for the sake of those who may wish to make an experiment for themselves. Whatever sort is chosen, from which to gather the seed, the fruit should be properly ripened, and the stones taken out of their fleshy covering, or if the latter is of no consequence, they may be at once laid in a portion of dry sand in any cool loft or shed, until the following spring, when they should be examined. The pulpy matter around the stones will have decayed or shrivelled away, and the stones will begin to open. A bed of good light dry soil should be prepared on any warm or sheltered border, and of any convenient size, according to the extent of the sowing made. The stones may then be taken out of the sand, by passing the latter through a sieve. A quantity of sand should also be spread over the bed, and the stones may then be scattered thinly over the surface. If preferred, they may be sown along with the sand in which they were kept during the winter. The bed is then to be covered over with about an inch of soil, and lightly beaten down with the back of the spade. Nothing further will be required but to keep the ground clear of weeds, and thin out the plants to four or five inches apart, as soon as they become large enough.

BUDDING AND GRAFTING.

The more common, and certainly the better modes of propagating the cherry, are budding and grafting on stocks raised for the purpose. The former is practised chiefly for standards, and the latter for dwarf-growing trees, but either may be adopted successfully, whatever the style of training may be. When the buds have become properly established on the stocks, the latter are cut back to the point where the buds grow; but it is desirable first to plant out the trees where they are to grow, and cut them back afterwards. When the buds have grown a few inches and ripened their shoots, the trees should be planted out, at the latest early in the autumn, so that they may be the better enabled to become established in the ground before the winter sets in, and the following spring they will start into vigorous growth. Then will be the time to regulate the direction of the future branches according to the manner in which you wish to form the tree. If the

tree is a standard planted in the open ground, supposing, as will most likely be the case, that a greater number of buds break out than may be wanted, those which are not required should be rubbed off, and the others which are selected for forming the head should be cut back to within four or six inches of the top of the stock : you must also be careful to rub off any buds that may break out on the stock below the point at which the buds have been inserted. In growing standard trees, the object should be to keep the head open and regular, and therefore, it will merely be necessary to thin out superabundant shoots from time to time as they grow ; and the sooner this point is attended to, the better, as much of the future health and fruitfulness of the trees will depend on the extent of pruning which they receive in their earlier stages. For forming dwarf-trees, either for the wall or open ground, grafting is often practised. It may be also very advantageously adopted with such as are intended to be grown against espaliers.

For ordinary purposes, the quickest and commonest way of obtaining trees in a bearing condition, is to purchase them at a nursery ; for there they may be had ready to your hand, of any age, and already trained, according to the most desirable form, whether for a wall, espalier, or to be grown in the open ground as standards. Maiden trees, one year budded, may also be had more cheaply, and by cutting the shoot back, they will throw out their branches in greater number, so that you may train them yourself. The fan system is the most generally and successfully adopted for training the cherry against walls or espaliers ; because the young wood that is strong enough is laid in, so that the branches thus distributed help to fill in the vacancies between the principal shoots. In either case, let the trees be planted with the collar of the root above the surface ; that is to say, they should not on any account be deeper in the soil than they were in the nursery rows.

SOIL.

The cherry grows well in good friable loam, and requires no other soil. In ordering young trees from a nursery, it is advisable to direct attention to the importance of having them taken out of the ground and packed for transmission, with the greatest care. The roots of young trees generally suffer

more injury during the process of lifting them out of the soil than from perhaps any other cause. It is therefore very necessary to enforce the strictest care and attention to this point.

LIFTING AND REMOVING.

The proper way of lifting a young tree out of the ground is first to dig a trench all round it, at that point of circumference which may be supposed to form the line to which its roots extend. This trench should also be dug somewhat deep—from twelve to eighteen inches at least, and about the same in width. The soil around the roots may then be gradually removed with a digging fork, the prongs of which should not be too sharp. The hands or a short stick will also sometimes be in requisition, in order to disengage the roots from the soil. The spade, however, should not be used for the present, as the roots and tender fibres would thereby stand a great chance of being injured. When the soil is removed from the upper portion of the roots, the tree should then be inclined gently to one side, and the spade inserted deeply in the soil below in a sloping direction inwards, and by working the hand up and down, the earth at the roots underneath will be loosened. Then incline the tree to the other side, and work the spade at the bottom in the same way, until the roots are fairly disengaged, as far as practicable. The last thing to do is to bend the tree to one side, and then to thrust the spade quickly and forcibly under the roots, in such a manner as will cut off cleanly any of the central roots which may retain their hold of the soil, when the tree may be fairly detached and taken up. This mode of lifting a fruit-tree is applicable to all stages and sizes, but there is of course considerably less labour and time required in lifting a young than an old one. In some cases it may be merely necessary to insert the spade at one or two points round the roots, gently pressing down the handle at the same time, in order to loosen the soil and detach the roots. In other cases, it will be requisite to adopt the more tedious process. When you have taken up your trees, examine the roots, and any of them that may have suffered mutilation in the process of lifting must be pruned neatly and smoothly with a good sharp knife. Those which grow downwards from the centre should be considerably shortened, especially if they are vigorous.

It is always the best plan to transplant the cherry early in the autumn, and therefore the selection should be made in good time. The autumn, however, is not the only season at which the trees may be planted, as the spring planting will also answer the purpose ; but it must be obvious, that when a young tree is taken out of the ground—say at the fall of the leaf, and transplanted in good soil and in a favourable aspect, it will become so far established in its new position before the winter sets in, that it will start into growth the following year with nearly as much vigour as it would have done had it not been disturbed at all. We therefore think that when the cherry can be planted early in autumn, that season should be preferred to any other. But sometimes, from various causes incidental to garden operations, the planting of trees in the autumn cannot be attended to, and therefore the operation must of necessity be left till the spring. In this case, the cherry should not be planted later than the end of February, as the dry and searching winds of March are unfavourable for the development of buds on trees newly planted.

PLANTING.

The cherry may, then, be planted any time from January till the end of February, but only when the weather is favourable,—that is to say, when it is mild and open. It is always a good rule to prepare the holes a few days before the trees are taken out of the nurseries, not only because the soil will then, by exposure to the weather, be in a better condition to receive the roots, but the latter can also be transferred to their new places without any loss of time ; for if the trees are obtained before the necessary preparations have been made for them, both the buds and fibres of the roots are apt to be injured. It will sometimes happen, however, that the weather is not suitable for planting, and in that case, if the trees are obtained, they should be laid in by the roots in the ground, in trenches, in some sheltered situation, until the favourable opportunity occurs. But in thus trenching them temporarily, care must be observed that the trench is made large enough, and that the trees are not placed too thickly together. All their roots should be spread carefully out, and properly covered up with earth, so that no openings may be left at the back of the trench by which the frost may find access. These precautions are the more necessary, if the planting is made in

the early part of the year. In planting at the fall of the leaf there is less danger to be apprehended, and therefore, were there no other considerations to influence us in the choice of the season for planting, this of itself might be sufficient to lead us to prefer autumn planting.

WALL-TREES.

In preparing the holes for young cherry-trees for the wall, you must, of course, be guided by the size of the trees you intend to plant. The best plants to select are those which have been grafted or budded from two to three years, and these will generally have roots, ranging between two and three feet long from the stem. Dig out the ground accordingly, keeping about six inches from the wall, and throw the earth to one side, near enough to be used in filling up again. It is better to have the holes too shallow than too deep, but they should be just deep enough to receive the roots of the trees, keeping the collar a little above the general level of the ground. The bottom of the hole should be well stirred and loosened, and the soil then laid together, so as to form a gentle mound, on which the crown of the roots should rest. But, of course, the stem of the tree should be kept about six inches from the wall, and therefore, the highest part of this mound should be formed at the same distance. The holes being properly prepared and left open for a few days, take up one tree at a time, and adjust it in its proper position in the hole, placing it with the left hand, so that the crown of its roots may rest on the mound; fasten the stem temporarily to the wall, and proceed to spread out the roots all round in an outward direction to the circumference of the hole. Those roots which are undermost should be first covered up, and the others kept in the hand until the soil has been gradually raised to their level, when they may also be covered up in the same manner. The principal point to be attended to in covering the roots, is to keep them in a horizontal position from the main root, and of course, as there are higher and lower roots, they must be arranged accordingly, in being covered up. If this is properly attended to, the roots which are uppermost will be only an inch or two below the surface of the soil. When the roots are all properly covered up, tread down the soil gently over them, and if the weather is dry, give the ground a good soaking of water. Then proceed to plant the others which you

intend to stand in the same vicinity, leaving the adjustment of the branches until the whole are secured in their position.

DISTANCE APART.

The distance at which cherry-trees may be planted apart from one another, or from other trees, will much depend on circumstances which every one must consider for himself. The height of the wall against which the trees are to be trained, and the general character of the soil, will, however, for the most part determine this point. If the wall is rather high, and the soil good, the cherry may be planted at distances of from twenty-five to thirty feet. If, on the other hand, the soil is poor, and the wall rather low, the distance between the trees should of course be proportionably less. It must, however, be observed, that the cherry should not be planted in poor soil; and when such soil exists in a situation otherwise favourable for this fruit, a portion of it should be removed, and the remainder properly enriched. But in this it is not necessary to be very profuse of manure, as a good light, friable, loamy soil, is the best for the cherry. If you intend having the wall cherries all in one place, you may plant what are called dwarfs and riders alternately. In this way the heads of the dwarf-trees will occupy the spaces between the long stems of the riders, when they have grown some years and attained a considerable size. It generally happens, however, in planting fruit-trees against a new wall, that the kinds are mixed to a greater or less extent; and it is seldom that an entire wall, or even a great part of it, is wholly occupied with one kind of fruit. This arrangement is, perhaps, the more desirable, as in ordinary establishments the principal or choice fruits are grown against the wall which has the best exposure; and it is therefore necessary to have more than one kind on the same wall. You must, therefore, in planting the cherry, determine the places and distance of the trees by the spaces which may be still unoccupied, paying at the same time due consideration to the other trees on the wall. One thing may be settled at once; that is, never to plant trees against a wall so near one another that when they grow a few years their branches become mixed and confused.

Where there are any trees, either of the cherry or any other kind of fruit, which have become unshapely or too old to be longer worth the room they occupy and the labour they re-

quire, they should be at once taken up and supplanted by healthy young trees. With regard to the best aspect for the cherry when grown against a wall, the south or south-east may be considered as the best for the early kinds ; but the cherry will thrive almost in any aspect where the situation is moderately sheltered. A north aspect is, however, not to be chosen for the dessert sorts, as the fruit would be late in coming to maturity, though it is found suitable for the Morello, and similar kinds. As soon as the young trees, whether dwarf or riders, are planted, the stems should be properly secured to the wall. A nail should first be driven in the wall immediately behind the part of the stem where the branches issue, and a good osier twig fastened round the head of the nail, and the ends then crossed round the stem several times and neatly tied together. The pruning and training of the branches may then be proceeded with.

TRAINING.

The cherry is generally trained in what is called the fan fashion—that is to say, the branches are spread out in the form of a fan, neither altogether upright nor horizontal. The number of branches or shoots which may be on the trees when they are taken from the nursery and planted permanently against a wall, should be sufficient to enable you to train them in the proper position at once. But, if there be not enough, you must cut what there may be back to two or three eyes, and you will soon have three branches to every one cut back. You can, therefore, scarcely fail to obtain as many branches the following year as will form a good fan. The small weakly shoots are to be cut close in, and the strong and healthy branches to be nailed to the wall in their places. The great object is to cover the wall with healthy wood, leaving only sufficient room to allow of the fruit hanging free of the branches. It is impossible to determine the number of branches which the cherry may have when trained. They may be more or less numerous, according to the space the tree is to occupy, but they should never be so numerous as to be nearer one another than from four to six inches, and a greater distance is in many cases desirable. The fruit is produced chiefly on short spurs which grow on the branches at two years old. The Morello, however, bears fruit on the branches one year old, and generally on short shoots. None of the choice wall

fruits are more easily regulated in respect to pruning and training, than the cherry; and, if the branches are kept moderately thin and regular in their arrangement, they will require little further attention. All superabundant and weak shoots should be removed, and those which are necessary to preserve the symmetry of the tree encouraged to grow.

DISBUDDING.

If the practice of disbudding is properly and timely attended to, it will reduce the operation of pruning to very narrow limits. Accordingly, you should look over the trees as soon as the shoots begin to grow, and all those which are not likely to be wanted for nailing to the wall should be at once pinched with the fingers. The others may be left for a subsequent examination, and, when large enough, temporarily nailed. About June or July the trees should be again examined, and similar adjustments made. In autumn the trees may be again pruned, and the branches which were selected, finally nailed in their places.

AS STANDARDS.

In planting the cherry as a standard, both roots and branches should be trimmed. All the roots that have a downward tendency should be cut away. The other roots which are bruised or mutilated should also be neatly trimmed with a good sharp knife, otherwise they would canker and impede the growth of the tree. Shorten also such as may be spreading out too far for the growth of the roots, which should be encouraged to grow close. The head requires pruning to bring it into a good form, and keep the inner part open and free. The trees should be planted in the same way as apples and pears. The roots must not be placed deeper in the soil than they were in the nursery lines, and they should be regularly spread out towards the circumference of the hole, which is to be formed in a similar way to that directed for the trees grown against the wall. Here, however, there is no nailing, and stakes must be driven into the ground to make the trees fast, that they may not be shaken or disturbed by the wind. There are various methods of fastening standard trees, but in the present case it will be sufficient to drive in one stake, from four to five feet long, near the stem of the young tree. The stake may be about the thickness of one's

wrist, and made sharp at the end which is to be driven into the ground. Before driving it down with a wooden mallet, which is most suitable for the purpose, be careful to insert it gently in the soil through the roots, so as not to injure or break any of the latter. In order to prevent any injury to the bark of the trees, tie a hayband round them, making several turns, and then making them fast to the stakes with string ; or a piece of stout matting twisted well may be used for this purpose.

Where the situation is warm and well sheltered, the cherry will bear as good fruit on standards in the open ground, as it will do in many places planted against a wall. But in ordinary cases, when trained against a wall, the trees are not only less liable to be shaken by the wind, but they admit more readily of being protected from the ravages of birds and insects, by covering with netting. When standard trees are grown, they should be kept somewhat dwarf, because in this form they are neater, and the fruit is more easily gathered when ripe. They may also be covered with netting more readily than when they are allowed to grow high and branchy. Dwarf cherry-trees are therefore preferable to large standards. The distance at which they should be planted must, for the most part, be determined by circumstances, such as the size they are to attain, the shelter, and their proximity to other trees. From fifteen to twenty feet may be considered as a very good distance, if the trees are not wanted to grow large ; and, in ordinary cases, they should not be allowed to grow higher than seven or eight feet from the ground. For the purpose of protecting the blossom and the fruit, stout rods may be driven into the ground at convenient distances, and these, again, connected at the top by other rods in a horizontal position. The whole may then be covered with netting, which should be securely fastened to the rods. A very good situation for low standard cherry-trees is along the borders of the central compartments of the kitchen or fruit-garden.

TRAINING AND PRUNING STANDARDS.

In training and pruning standard cherries, the chief point to attend to is, to keep them in a regular and symmetrical form, neither too compact nor straggling. If the branches are allowed to grow close and thick, they cannot have the beneficial influence of the light and air, so necessary to pro-

mote their health and vigour, as well as impart to the fruit an agreeable flavour. The bearing branches should be shortened as little as may be compatible with the easy and regular form of the whole tree ; but when the branches become too numerous or close, they must be thinned. You, should, however, first remove those which may be least wanted, such as weak or unproductive shoots. But the practice of pruning should be avoided as much as possible ; and if proper attention be paid to disbudding, the necessity for severe amputations will be considerably obviated.

ESPALIERS.

The cherry may be grown very successfully when trained to espaliers on the borders, but these should never exceed six or seven feet in height, and in most cases from four to five feet will be quite high enough. For this mode of growing, the trees should begin to branch out at about eight inches from the ground, and the branches be trained in the fan fashion. The espaliers may be made either of iron or wood ; the latter are the more common, and in many cases answer very well ; but the former are more durable, and from their greater strength, admit of being made more elegant. A very good way of having espaliers made is, to provide a number of stout iron rods, about an inch thick, and fasten them with molten lead into blocks of stone. They are then placed in the ground to the depth of twelve or fifteen inches, and at any convenient or suitable distance from one another, along the border in a straight line, and are connected at the top, and about six inches from the surface of the ground, by narrow bars of hard wood—say two inches broad, and one inch thick. In these bars a number of holes are bored at equal distances—say from six to eight inches apart—and through these holes, which must correspond exactly in a perpendicular line, thickish rods of wood are drawn and secured in the holes at the top and bottom ; but they should not touch the ground ; and they may either be cut close to the top of the horizontal upper bar, or allowed to exceed it a few inches. You have thus a neat and permanent kind of espalier, and when the trees have been trained to it a year or two, the general appearance of the whole is very agreeable.

The common espalier, which is formed simply by driving into the ground, in a straight line, a number of short poles,

is objectionable, from the fact that the stakes or poles require to be renewed from time to time; but although less elegant and durable, these stakes form a very economical espalier of a temporary kind. The distance at which they should be placed may range from five to eight inches, and for the better securing them in their position, they should be attached by a narrow bar of wood at their tops. They require also to be examined every season, and if any of them are not firm enough, or have begun to decay at the bottom, they must be removed, and fresh ones driven in in their place.

As soon as the trees are planted against the espaliers, whatever kind may be adopted, they must be trained, and there should be at least five or six good shoots, but if there is not enough, cut them back to three or four eyes, and in the course of the following year you will have so many shoots, which must be encouraged to grow in the spreading form of a fan. All superabundant shoots should be cut away, and those which are retained may be shortened a little at their extremities, if you find they are growing too strong or lanky. Do not allow the branches to crowd on each other, but rather aim to keep the whole somewhat thin and regular. When the cherry is trained against espaliers, the branches must be tied, not nailed; for this purpose fine osier twigs are suitable. The species of willow which has the bark yellow is the best for tying; the twigs should be just so thick that they will last for a year; the dark-coloured willows are not suited for tying, as the younger twigs are very apt to break. Before being used, the twigs should be kept in water for some days; they will then be more pliable, and will twist readily. Some train the cherry against espaliers with the branches in a horizontal direction, and if you prefer this mode, there are no very strong reasons against it; but the fan form is the most common, and if properly considered, it involves less labour than the other.

PROTECTION.

When the cherry-trees come into bloom, which is generally early in April, it may be necessary to protect the blossom from the cold night-winds and scorching sun. For this purpose, a good stout netting should be provided and suspended over the trees, taking care to keep it from being much blown or shaken, so as not to ruffle against the blossoms. It is

merely necessary to place a number of stout poles against the wall in such a way that their tops may lean on the top of it, and their lower extremities rest on the ground three or four feet from the base of the wall. The netting may thus be attached to the poles at the top, and secured in the same way at the bottom. They may be removed after the fruit has fairly set. The trees against the espaliers may be covered in the same way, but the netting should be laid over both sides. The fruit of the cherry grows in small clusters of several together, and though the practice of thinning is not often resorted to with this fruit, we think it is deserving of consideration, especially when large and well-flavoured fruit is desired. Accordingly, when the cherries have attained the size of large peas, they should be examined, and the clusters thinned to two or three at the most. Cut away those you remove with a pair of sharp-pointed scissors, and if large and fine fruit are exclusively desired, only one may be left at every three or four inches. Thinning to this extent may, however, be confined to one tree, the others being allowed to bear more abundantly. But if the trees, whether on the wall or in the open ground, are allowed to bear heavy crops, the result will in all likelihood be, that in a few years they will become suddenly unproductive. It is therefore better to thin the fruit to a certain extent every year, so that the health and fruitfulness of the trees may be maintained the longer. While the fruit is ripening, care must be observed to keep the branches from forming a shade; those that are not wanted should be at once removed, and the others required for training temporarily nailed in till the autumn.

As soon as the cherries begin to colour, the necessary precautions must be adopted to insure the crop from the depredations of birds, to the attacks of which this fruit, from its luscious qualities when properly ripened, is very liable. The netting must accordingly be placed over the trees in the same way as directed for the preservation of the blossom, but in the present case it must be kept much closer at the bottom. It must be kept on while there is any fruit worth caring for; as, if removed, there would be no likelihood of prolonging the crop to a very late period, as may be accomplished by observing the directions now given.

While the cherry is in the earlier stages of its annual growth, it is frequently preyed on by a species of green fly,

which lodges on and sucks the tips of the young and tender shoots. The best remedy, as well as preventive against this troublesome insect, is fumigating the trees with the smoke of strong tobacco, and syringing them freely afterwards, taking care that the under sides of the leaves are properly cleaned by this operation. It is also advisable to syringe the trees with tobacco-water. If possible, this cleaning should be attended to before the blossoms begin to expand, which is, of course, before the leaves have made much growth; but even then considerable benefit will be produced, and the attacks of the insect likely prevented. After the fruit has properly set, and if the insect has begun to spread, the trees may be freely syringed with clean water; but the syringe must be applied with force, so that the water may clean the under side of the foliage properly. If the trees are gone over once or twice in this way, neither fumigation nor tobacco-water will be necessary. Syringing with water, so that the water is propelled vigorously against the under side of the leaves, is the best and safest cure for insects, such as the green fly and the red spider. When the walls are high, a good garden-engine should be employed.

At the fall of the leaf, or in making the principal nailing, the walls should be well brushed with a stiff-haired hand brush. It may be necessary to detach most of the branches from the wall to perform this operation properly; but it is of sufficient importance to compensate for the trouble it involves, for nothing is so sure a preventive against the accumulation of vermin as keeping the walls and the branches clean. Much benefit is also derived from the practice of washing the walls with lime-water during the winter; and all holes or recesses in the walls, in which the larvæ of insects are likely to abound, should be carefully stopped up with lime or cement.

FORCING.

The cherry is a good fruit for forcing; and though among the very earliest of fruits grown in the open air, yet when a supply may be obtained a week or two before those on the open wall are ripe, it may be desirable to have a few dwarf-trees placed in a house, where the maturation of the fruit may be hastened. The ordinary forcing-house is, of course, the most suitable place; but they may also be forced in any other structure where a moderately warm and rather moist atmo-

sphere can be maintained. The best trees for forcing are of dwarf and compact habit, having plenty of well-ripened and fruitful shoots. If they are to be grown in pots, which is perhaps the most convenient way of growing them for forcing, they should be selected accordingly. The branches should be regularly disposed, and in a robust and healthy condition. They should be carefully taken out of the ground early in the autumn, and planted in pots of a size proportioned to their roots. The roots should be very slightly trimmed; the central ones, if strong, should be shortened; but it is advisable not to cut the others at all, except where they may have been mutilated in the lifting, or are growing irregular and very large. The branches should also be slightly trimmed, in order to give the tree a good form. Where the shoots crowd together, they must be thinned, and any that are too long or irregularly placed, may be cut back a few inches. When grown in pots, the trees should be trained so as to assume a free and symmetrical form, open near the middle, or if what is called a pyramidal shape be preferred, the branches should not be nearer one another than four or six inches. They may be grown to any size, according to individual requirements or the space which can be allotted to them in the house. But from two to four feet high, with a corresponding breadth, is perhaps large enough for the cherry when grown in pots.

The trees may also be planted in the house, and trained over a trellis-work or slanting espalier, in the same way as is practised with the peach and nectarine. But when grown in pots, the trees can be removed to the open air after the fruit has been gathered, to make room for plants or other fruits; and therefore we think this plan is the more convenient of the two. The soil used in forcing the cherry does not differ from that which is used for the trees grown in the open air; but plenty of crocks or broken pots should be placed at the bottom of the pots, in order to promote free circulation of moisture.

Although trees which are taken up out of the ground and potted in the autumn might possibly bear fruit the following season, it is much better to have them potted about two years before they are placed to force, because the roots during that time are well established in their new position, and by proper training and exposure the branches will have formed plenty of healthy shoots and fruit-buds. But it is advisable not to

allow the trees to bear any fruit during these two seasons, and the third season they will be in excellent condition to produce abundantly when forced. The trees should, therefore, as soon as planted in the pots, be removed to some open, warm situation; the soil about their roots must be soaked with water twice or thrice a-week for the first fortnight, and the pots plunged to their rims in the ground, at such distances as may leave all freely exposed to the influence of the light and air. A little moss or light litter may also be laid over the soil in the pots, to keep the uppermost roots damp. The best sorts for forcing are the Morello and May Duke. The trees selected should have been some years in the nursery lines, as well as being suited for forcing in other respects already mentioned. If a good number of trees are wanted, they may vary in size according to the structure of the house in which they are to be forced; but if only a limited supply is required, it may be as well to have one or two trees about the same size. Where they are numerous, they may be ranged in rows from the front to the back of the house, keeping, of course, the smallest in front, and the largest or tallest at the back. They may be removed to the forcing-house about the end of the second year, supposing that they have been properly attended to during that time, in respect to training. November or the beginning of December will be soon enough, unless the fruit is wanted very early, in which case they should be taken in a week or two before that time.

TEMPERATURE.

The trees should not be placed in a warm temperature for the first week; and they should have very little increase of temperature for the first fortnight. If convenient, the pots should be partially plunged in tan; but if they are imbedded six inches, it will be sufficient. Give the trees plenty of water, both at the roots and at the tops, by syringing; and keep the temperature about forty degrees Fahrenheit, till the end of the third week after the trees have been introduced to the house. In the beginning of the fourth week the heat may be increased, so that the temperature may range between forty-two and forty-five degrees, giving a little air on all favourable occasions, especially during sunshine, and the branches may have a gentle syringing every morning and evening. After a fortnight more, the temperature may range

from forty-six to forty-nine degrees; and sufficient moisture must be maintained by throwing a little water on the walls and paths of the house. When the wind is high or cold, the ventilators should not be opened very wide, or if air is given by sliding down the sashes, they should only be opened a very little at the top. The great object to attain is a uniform and rather calm atmosphere; and therefore a small aperture at the top of every other sash will, in most cases, be all that is necessary. But when the weather is bright and warm, air may be admitted with greater freedom; always observe, however, to close the house entirely rather soon in the afternoon. By this means the heat which may have been produced by the sun will be maintained the longer, and fire heat will be less necessary. The temperature may be gradually increased to fifty-six or fifty-eight during the day, when the sun is somewhat strong, until the blossoms begin to expand. A corresponding decrease should, however, be maintained during the night. When the trees are fairly in blossom, water must be applied very carefully, and especially when the fruit has begun to set. At this stage, sixty or sixty-two degrees should be the maximum temperature, and as much air should be admitted as possible with perfect safety to the blossom and incipient fruit. One or two degrees of increase in the temperature may be allowed, for the purpose of swelling and ripening the fruit, after it has fairly set.

THINNING THE FRUIT.

When the fruit have attained the size of large peas, they should be judiciously thinned, for frequently they are produced so thickly together as is unfavourable to their attaining a desirable size. Examine the shoots carefully, and with a pair of sharp-pointed scissors remove such as are weak where they are growing too thick, retaining only the largest and best formed. While the fruit is still green, the trees may have a moderate supply of water, and a gentle syringing overhead will also be beneficial.

In general, it may be advisable to keep more trees ready than may be wanted, as, in the case of any of those forced happening to fail, their places may be filled up without inconvenience.

If these directions are properly observed, the fruit will ripen and acquire a fine flavour; and when it has been all

gathered, the trees may be taken out, repotted, and again plunged in the open ground, and freely supplied with water. They should not, however, be encouraged to grow very vigorously, as they are more suited for forcing when they are somewhat stunted, so long as they produce plenty of fruit-buds.

The following season—or rather towards the end of the same year—they may be again removed to the forcing-house, and treated in the manner already detailed. As the trees will in the course of a few years become somewhat exhausted, it will be necessary to provide for a succession, by potting a number of fresh trees, which can be used after the first set appear to decline. But their fruitfulness will much depend on the manner in which they are treated; and it is always better to keep the crops rather limited than profuse, not only because the trees will thereby continue to bear the longer, but the fruit will be larger and better flavoured.

THE MULBERRY.

THE numerous fine ancient specimens of this tree that are to be found in old gardens, and the vast difference between them and the next size or age, would lead us to fancy that there had been no attempt to keep up a succession, but that it had been among the most neglected of fruit for a long lapse of years. The great trouble, perhaps, attending the gathering, and the difficulty of sending the fruit perfect to market, may have rendered people indifferent to their culture; besides which it must be confessed that a mulberry is in a very short time flat and mawkish after gathering, so as to present no great temptation for growing up young trees to succeed the old ones. The worst feature about them when grown to a large size is that the finest fruit are the farthest from reach, and scarcely to be got at with any description of ladder except

a double one, and many trees are too tall for that. The first thing, then, that strikes us is the propriety of growing them nearer the ground, and this suggests the growing them—

First, as dwarf bushes.

Second, as espaliers.

Third, on walls.

Now, as dwarf bushes, it is clear that we have only to stop them while young, and as they break out, to cut away the smallest and weakest branches, and regulate the others as you would those of a black-currant bush or a gooseberry bush. What age it must attain before it bears fruit, we are not able to say; but it is quite certain that a broad spreading surface may be had near the ground, as well as at the top of a large trunk. A mulberry tree will bear a good deal of hard usage, as well as a large quantity of fruit, and therefore it would not be a difficult thing to manage one whose extreme height should not exceed half that of the old specimens, by only keeping the heads cut down, and allowing the tree to spread as it will within the reach of ordinary fruit steps. The first thing to think of is raising the young trees. This may be done—

First, from cuttings.

Second, from layers.

Third, from seeds.

RAISING FROM CUTTINGS.

The cuttings ought to be selected from the present bearing wood, because they fruit so much smaller than any other part of the tree. They require very little preparation, simply cutting up to an eye, putting about four inches into the ground and leaving four out of the ground; treat them the same as the cuttings of currant and gooseberry bushes; insert them in the ground early in spring, in good rich soil, and if two or three buds grow on the sides, rub off the top one, because the nearer the shoots are to the ground the better.

PRUNING AND PLANTING OUT.

At the end of the growing season, and when the leaves have fallen, they may be all cut back that throw but one shoot; those which throw out several may be allowed to grow. They may be planted in beds of rich earth, a foot apart every way for the first year, and merely regulated as to

form by rubbing off superfluous buds, because they must not be crowded in their growth. They will have made considerable growth the second year, and may now be selected according to their disposition to grow; those which have made two good low side branches may be selected for espaliers; others that have formed themselves into bushes may be allowed to remain bushes, and be planted two feet apart every way, in a new bed, while those intended for espaliers may be allowed to remain, putting two or three stakes on each side in a row that the two lower shoots may be trained out right and left, in the direction they will most easily take, and all above those two branches may be cut away, except a couple of buds at a proper distance above the others, to form two other branches higher up the next year. If there is very little left above the lower branches, and no leader, you can only leave a leader, and wait for the proper useful growth. None of the branches spreading right and left are to be cut back, because spreading outwards, if they went ten feet on each side, would be of no consequence. The object to be aimed at is to have the next branches a foot above the lower ones, and so continue from year to year to add two branches, that is, one on each side, a foot above one another, till there are five or six pairs of them, and then please yourself about going higher. Perhaps the fruit can be conveniently gathered eight feet high; but when as high as you wish it, let them grow no way but outwards, until they are as wide as you please; but we must go one year at a time.

AS ESPALIERS.

When they are left for espaliers in the same bed they grew in, and the bushy ones are selected out, you may have them straggling about the bed without any regular distances. You must put up with it, because they are wanted to grow, and the moving will check them more than it is desirable to do, whereas the bushes may be removed every year, because you are in no hurry for the growth, and it will throw them into bearing sooner. If a good deal of small wood should come it would be objectionable; therefore you must go over them when the buds first push, and see that all weak and useless buds be rubbed off, to throw their strength into those remaining. The espaliers may be removed the second year to where

they are to be permanently planted. It is to be recollected that the trained ones will do for a wall as well as espaliers, so that no difference need be made on account of the wall in the training; the branches would have to be nailed to the bricks instead of tied to espalier frames, and that is all the difference. The mulberry bears on young wood, so that all the shoots that are useful should be preserved; all that are useless cut clean away if they have been allowed to grow, or rubbed off in the bud state, before they attain any size. Nor is it desirable to lay in or fasten all the young wood.

ON WALLS.

The trees, likewise, on a wall may be allowed to push out their fore-right shoots, because the tree may be growing all over a foot from the wall, only not too thick. The pruning will, of course, consist of merely lessening the number of shoots, to let in the sun and air, and for the most part it will be best to cut out the thickest and most vigorous shoots when they push too far; but as mulberries bear on all the short sprigs, you have only to keep plenty of wood to lightly cover all the wall, and not nail the small wood to the bricks, but let them grow at liberty. It will be seen from what we have said that the spreading of the branches along the wall is desirable, and the main branches so fastened while young, will, of themselves, keep their position when older; but, unless the wood is carefully encouraged to run along the wall at different heights while young, it will be very soon found naked in some parts. When this is the case, it will be better to head the tree down, for the purpose of inducing young shoots that may be made to fill the space. Espaliers must be trained in the same way, the main branches being provided in horizontal positions about a foot above each other; the young wood may grow about a foot outwards back and front, but not more, and upwards and downwards enough to fill up the spaces between the branches. Here, too, the branches may be taken off close to the main shoots as soon as they get too thick and want to obtrude too far; because there will always be abundance of lesser shoots to keep the tree supplied with bearing wood. With regard to dwarf-trees or bushes, they should be encouraged to begin bearing near the ground; and the centre should be kept from becoming too close and

crowded, for the mulberry will grow larger and finer for being kept open to the sun and air ; because we see in all trees the top-branches and those nearest the outside always have the largest fruit, and it is nothing but the larger share of sun and air they enjoy that makes them so. When the trees, whether wall, espaliers, or dwarfs, begin to bear, be very careful of the bearing wood, and prune judiciously ; be not afraid of the knife in removing branches altogether, but be shy of cutting back partially, except when you want side-shoots, or desire to thicken the wood. We have now directed how to raise from cuttings ; and we may say, as a general hint, that they will bear as soon as layers, and years sooner than those raised from seed.

FROM LAYERS.

The raising of young ones from layers, when branches can be had low enough on the tree, gives us one advantage. They may be laid of a much larger size ; but you will frequently find that the lower branches and suckers also will not bear, or rather do not bear, and then you might almost as well have seedlings, except for size, for they are often a long time before they give us fruit. They grow away rapidly to wood, become longer jointed, are less tractable, and, of course, give more trouble. If, however, there are good bearing branches near enough to the bottom to layer into the ground, it is advantageous to layer them. To do this well, the side-branches or shoots should be cut away all but the few shoots at the end, and the layering should be done so that only the head be kept out of ground ; a slit or notch should be made about two inches under the lowest shoots left on, and the portion left above to be the form of a small bush : the earth should be dug, a little rotten dung forked into the ground, the branch laid into the soil about two inches deep, and pegged down with a strong wood peg, cut so that there is a hook to hold it in its place, and the peg thrust into the earth so that the hook is close to the place notched or slit. This slit being at a joint, cut into the under part nearly half-way through the shoot, and made an inch or two long, cutting off half the supply of sap, by thus leaving only half of the branch to take it, induces the rooting of the plant at the part wounded, and it is only severed from the tree when it has roots enough to sustain itself. But, in cases where there are

no branches near the ground, some mode of raising the earth to the branch must be adopted. A large pot filled with earth may be fixed on a stage, or in the tree, and the branch layered in the pot; but there is great danger of its suffering from want of water, and this can only be guarded against by regular attention, the same as is required by the most tender plant in a pot; not that the branch would die, but that, from want of encouragement by proper moisture, the shoot would not properly root. If the branch can be brought within a foot or so of the ground, it is the safer way to raise the ground sufficiently. But those who want to raise from layers should procure a bearing tree, and plant it sloping in the ground,—so sloping, that the head can be brought down to the ground,—when all the branches may be layered at the same time. When the layers are well rooted, which ought to be by the following autumn, they may be cut off and bedded out the same as one-year old cuttings.

RAISING FROM SEED.

The raising of mulberries from seed is hardly recommended, because of the time it takes to bring them to a bearing size; but if it is to be done, go about it in earnest. Pick up all the ripe fallen mulberries in the autumn, and save them; they will require to be squeezed into water, washed, and carefully dried, before laying by. In the spring, about March, sow them in seed-pans or boxes, or in the open ground; but we prefer seed-pans, and placing them in a cold frame. Let them not get thoroughly dry once after they are sown. We do not mean that they are to be constantly watered, but simply, that the entire soil of the pot shall not get dry; while the under part is moist there is little or no fear of their taking harm; when the seeds vegetate, and the plants begin to grow, make a point of refreshing them with water wherever the surface is dry; they will soon be large enough to prick out, as you would celery or cauliflowers, in a rich piece of open border, and keep them constantly clear of weeds by hand-weeding; they should be pricked out about six inches apart. At the end of the year, if they have made much growth, they may be bedded out a foot apart every way, for the sake of light and air, and the plants will advance much more rapidly, as well as being dwarf and shrubby. As soon as they are large enough, they must be treated the same as

cuttings or layers, but they will be a considerable time before they bear. Those who raise from seed may, in the course of time, obtain some distinct variety perhaps ; and in that consists the charm of raising plants of all kinds from seed. Although the trees have been pretty constant, some have fancied they obtained larger fruit ; but the fact is, that small trees do produce larger fruit for some years than they do when they get older ; and seedlings, especially, of almost every thing, have more vigour for some time than old established plants, or plants from cuttings or layers.

Mulberry-trees should be planted on grass, or rather, a quantity of good turf should be placed underneath the trees, as far as the branches extend ; for if the fruit falls on the gritty soil, it is entirely spoiled. But a soft smooth bed of grass not only prevents this evil, but it also breaks the fall of fruit even of a standard, and prevents it from bursting. The advantage of keeping the trees dwarf, and of growing them against walls, is that the fruit is not so much affected by the wind. On standards and on tall trees, the fruit is often blown down by the wind, both before and after it is ripe ; and thus the crop is destroyed, while any that remains on is spoiled by being bruised. It would appear from the habit of growth of many old trees, that when first planted, they were dwarf and bushy ; for we generally find that they begin to fork away very near the ground. It is equally evident, however, that others were standards from the first.

The white mulberry rarely bears fruit, and when it does, it is very insignificant. The planting of the varieties of this sort of mulberry for the breeding of silkworms has been attempted many times ; but the safest way is to keep the worms in a place apportioned for them, and gather the leaves of the trees and feed them.

FORCING IN POTS.

The mulberry may be very successfully forced in pots, and will produce plenty of fine fruit with very little trouble. To raise an early crop in this way, take up the plants in the spring, selecting the neatest and dwarfest you can find ; trim them slightly, and pot them in pots of a size proportioned to their roots, using a light, moderately rich, loamy soil. In general, it is preferable to grow them for a season in the pots, which should be plunged in ashes or in the soil of any shady

border, in order to become well established before being forced. But you may, if necessary, take them into the forcing-house after they have been in the pots a week or two. Keep the temperature rather low for the first two weeks, and raise it very gradually as the season advances ; from forty to forty-four degrees will be a very good heat to begin with. The plants will require to be frequently supplied with water and syringed over head on fine bright days, more particularly in the morning and evening ; plenty of air must also be admitted on all favourable occasions. As the plants progress, keep raising the temperature gradually till they flower, when it may range between fifty-four and sixty. Be very sparing of water at this time, that is to say, guard against excess, as there is much more danger to be apprehended from too much moisture at the roots, than the opposite extreme. When the fruit begins to set and swell, you may water with greater freedom. Give plenty of air during bright sunshine, and keep the atmosphere of the house rather moist by pouring water occasionally on the paths and along the bottom of the walls. Sudden or excessive fluctuations in the condition of the atmosphere must be carefully guarded against ; and if the wind is high or cold, a very little opening should be made. Thin the fruit as they begin to swell, otherwise they will be small and ill-flavoured. The foliage of the mulberry, when forced, is somewhat liable to the attacks of the red spider, which is very common wherever there is a dry, warm atmosphere ; but as the atmosphere of a forcing-house should never be dry, there is not much to fear from the attacks of this pest. If, however, you detect it—and you must look for it on the under side of the leaves—apply the syringe without delay, so that the evil may be removed. The leaves of the mulberry, from their texture, are only subject to the attacks of the red spider, and the best remedy for this, as already stated, is to keep the atmosphere moist, and syringe the under side of the foliage from time to time.

THE ALMOND.

THE almond is but little grown in England, except as an ornamental tree ; and from the beauty of its blossoms in spring, it is well adapted for a lawn or shrubbery, while from this cause, as well as its agreeable and useful properties, it is by no means uninteresting, or undeserving of cultivation even for the dessert. There is also some degree of pleasure to be experienced in raising such fruit in one's own garden or orchard, although it may, perhaps, be purchased cheaper, as large supplies are always imported to this country from the more favoured climates of Europe. The almond is generally grafted on the plum stock ; it may also be worked on the almond stock, and trained either for standards, or, which is the preferable mode when fruit is wanted, trained in the fan fashion, to be planted against a south wall. It is always best to procure the plants from a nursery, where you can select them according to your requirements ; and to have any chance of raising good crops of the fruit, the trees should be trained for a wall. They may either be what are called "riders," that is, having the head on a straight stem, five or six feet high, or "dwarfs," which have the branches produced near the ground. In purchasing such trees it will be necessary to bear in mind, that as they require the very best aspect you can allot them, and as the south wall ought to be occupied with other fruits, which are not only raised with greater certainty, but in more general request, you should only select such trees as will best fill up any vacancies that you have to spare. Perhaps two or three will be quite enough, as, unless the situation is unusually good, almonds can only be raised with much difficulty, when grown on the open wall. Whether, therefore, you choose "riders" or "dwarfs," let the trees be well formed, and about three years trained, with fine healthy

wood, and provided with fruit-spurs near the base of the stems, as it is on the small spurs which are formed every year that the fruit is chiefly produced.

REMOVING AND PLANTING.

Before commencing to take up a tree that has been trained for some time against a wall, the nails should be all carefully taken out, and the branches, if long, tied lightly, but securely, with strings of matting, in order that they may not be injured by the shaking incidental to the operation of lifting. See that in taking the trees out of the ground the roots and tender fibres are not injured. A trench should be dug out all round as far as the roots extend, and then the soil nearer the stem should be carefully removed with a bluntly-pointed fork. To wrench a tree or plant out of the ground, as we frequently see done, is often productive of those causes which commonly operate against successful cultivation. When all the soil has been removed from the sides, thrust the spade in the ground directly under the root, and this will most likely have the effect of detaching it from the soil. Shake it gently from one side to the other, and you may thus ascertain where any roots may still be held by the soil. These, if likely to be very long, may be cut at the end with a sharp knife, and the tree taken up. Should there be any long, straggling roots, or very strong central ones, they should be shortened, and all those mutilated by accident should be neatly trimmed.

It is always better to have the holes for fruit-trees made a few days before they are wanted, in order that the soil in which the roots are to be laid may be acted on by the weather. This practice is particularly necessary, and it cannot be too strongly enforced.

The soil for the almond should be somewhat light and loamy. Excessive, or even great richness, is to be avoided. But it should be well dug, and a quantity of old rotten dung should be mixed with it, some time before the trees are planted.

If it happen at any subsequent time that there is a greater paucity of fruit than may be reasonably expected, or should the branches be growing too luxuriously, it will be an indication that the soil is too rich, and it will, therefore, have to be replaced by soil of a poorer character; but root pruning, if judiciously managed, will generally have the effect of inducing

fruitfulness ; and in many cases it is merely necessary to uncover the roots of the tree for a few hours, in order to check the vigour of the sap.

Another requisite, equally important, is making the holes large enough for the roots to spread out. It is not desirable to have them too deep, for even strong roots growing downwards may be safely shortened ; but the sooner the lateral roots and fibres strike into the soil the better, and this will be best facilitated by their being well spread out on a rather shallow bottom. Give them plenty of lateral room in the holes, forming a kind of round, slightly-elevated bottom for the tree to rest on. Place the tree in the hole formed for it, and exactly in the same way it was growing on the nursery wall. Keep it a few inches higher at the collar than the general level of the ground, which will allow for the treading, and any sinking that may subsequently take place. Spread out the roots carefully to the circumference of the hole, working in the soil with the hand among the roots, and gently inclining the tree from one side to another, so that all the crevices and recesses may be properly filled with soil. You must be careful, while adjusting the root, that the branches are not forgotten, for should they not be placed so that they may be nailed to the wall without twisting them, it will be necessary to lift the tree again completely out of the soil ; and this is not only troublesome, but fraught with injury to the whole tree. In general it is better to "set" the tree before proceeding to arrange the roots minutely, for that can be done afterwards. In placing the tree in the hole at first it may be advisable to fasten the stem at once to the wall, near the branches ; this will be sufficient to prevent any wrong placing of the latter.

Having adjusted the stem and branches properly, proceed to cover the roots completely, and tread down the earth over them lightly. If the weather is dry, give the ground about the roots a good soaking of water ; then the nailing of the branches may be proceeded with. For this purpose, provide a number of short cast-iron nails and cloth shreds, which should be cut to different lengths to suit the various thickness of the branches. As the tree must be trained in the fan fashion, lay in the strongest branches first, distributing them regularly at distances of from eight to nine inches apart. Those that are long, and not furnished with plenty of spurs at the base,

must be cut back a few inches from their extremities, by which they will be induced to push out young shoots the following year. The secondary branches, or shoots, must be then nailed in, so as best to fill up the intervening spaces regularly and neatly ; and all those that are not wanted for this purpose should be cut clean away. In arranging and pruning the branches, the production of spurs near the base is of the greatest importance, for when this point is properly attended to at the beginning, there is less difficulty afterwards in keeping the tree in a good bearing condition, and a desirable form in regard to symmetry. The following year a considerable number of young healthy shoots will be formed, and these must be regulated as soon as possible. The practice of disbudding is much more preferable than pruning, especially when the shoots have grown to a great length ; you should therefore examine the trees in June, or even earlier, and rub off with the fingers all incipient shoots that are not likely to be wanted, but retain those that may be useful to train along with the others in the autumn. These should be temporarily nailed to the wall. By this means you secure the branches that are necessary for the formation of the tree, while the others being removed, the sun and air are not intercepted. It will be necessary to go over the trees again, according to the growth they make, and the time and labour employed in pruning ultimately will be considerably diminished. When the trees are in blossom, they should be protected with a covering of netting from cold cutting winds or drenching rains. As the fruit begins to swell, it should be partially thinned, so as not to be too crowded, and in about a fortnight later, a second and principal thinning will be proper. No two fruits must be nearer each other than four or six inches, and a greater distance should be allowed if they are wanted large or well formed. With the almond it is better to be content with a moderate supply of fruit, especially on young trees, than to allow them to bear profusely ; for not only are the trees ultimately rendered more prolific, but the maturation of the fruit is earlier and more perfectly ensured. In the spring, at the time of each pruning, proceed to make your principal pruning and final nailing. Those shoots which were temporarily laid in during the summer should now be detached and properly placed. If they have formed fruit-buds somewhat regularly, it will not be necessary to shorten them ; but if, on

the other hand, they are simply of a woody character, they must be cut back a few inches, according to their length and vigour: not, however, according to the ratio of these conditions, for it is well known that if a strong and vigorous shoot is much shortened, it will push out fresh wood rather than fruit-buds. No precise rules, however, can be given for this matter; much will depend on circumstances of which the operator alone can judge; and practice, with close attention, is in general a safer guide in shortening branches than any specific directions. All small and weak shoots should be at once rejected, if there is any choice left; and it is always better to aim at thin and regular distribution of the branches than having a tree crowded with shoots.

Such are our directions for growing almonds on the open wall. And we may just again repeat, that this fruit can only be raised to any satisfactory extent when the trees are grown in a warm situation; and there are but few localities in England where the supply would be sufficient to repay the time and trouble bestowed on them.

UNDER GLASS.

The almond may be grown with perfect success under a glass structure, where moderate heat may be obtained when wanted. When grown under glass, the trees should be dwarf, and about two or three years trained. In general it is preferable to have them in a pyramidal form, but they may also be trained in the fan fashion, and either planted in the border of the house or in pots, tubs, or boxes of a size proportionate to the plants. If planted in the latter, the pyramidal form would be most desirable; but the fan form should be adopted if they are planted in the border of the house, for then they can be trained to a fixed trellis-work, such as is used in training the peach and nectarine. The trees should be removed from the nursery-ground in the spring, or autumn, which is perhaps the better season, as they would be properly established in the new position to commence growing without interruption to the roots the following year. The soil in which they are planted may be similar to that recommended for growing them against the open wall; but if pots or boxes are used, plenty of draining should be provided. Except during the time of starting them into growth, which should be as near the natural season as possible, but little artificial

heat should be applied to them ; but frequent syringing over head before the trees expanded their blossom would be very beneficial on fine warm days. The atmosphere of the house should be kept somewhat moist and uniform, and the temperature should be regulated so that it may be from ten to twelve degrees higher than that outside. This should be maintained until the fruit have set and begun to swell. Water should be liberally supplied to the roots in the earlier stages of growth ; but it is necessary to be more sparing of it at the setting of the fruit. Admit plenty of air on bright warm days, but the sashes or ventilators need not be much opened for this purpose, as in most cases a very small aperture will be sufficient to alter the condition of the internal air to that extent which is desirable. In thinning and pruning the trees, aim at keeping them somewhat dwarf, so as not to get too near the roof, if they are grown in pots ; and it will be proper to arrange them so that the taller may stand at the back, and the shorter in front. But if only a limited number are grown in the house, one row, of a uniform size, may be kept in a place by itself. The sizes should however vary, if the plants are arranged from front to back, instead of standing in a line with the house. After the fruit has been gathered, give abundance of air ; and such as are grown in pots should be removed to an open border, and there plunged in the ground up to the rims of the pots. They will thus be exposed to the free action of the sun and air, and ripen their wood better than if kept in the house. They should be removed to a cool greenhouse, or an intermediate house, before the frost sets in. In February, or the beginning of March, place them in the house where they are to bear their fruit, and which may, for convenience, be a moderately warm vinery or peach-house. They must be treated in the same way as already detailed ; and if properly attended to, they will continue to bear good crops for a number of years.

RAISING THE ALMOND FROM SEED.

Among the varieties of almond several are cultivated for ornament only, the fruit not being eatable. They are variously described. Duhamel mentions seven :—1. Common almond, with a small fruit ; 2. Sweet almond, with a tender shell ; 3. Bitter almond, with a tender shell ; 4. Almond, with a small fruit and tender kernel, *Amande-sultane*—and with a

still smaller fruit, *Amanda pistache*; 5. Sweet almond, with a large fruit; 6. Bitter almond, with a large fruit, a variety of the preceding; 7. Bitter almond, probably a variety of the first. He also mentions another, which he calls *Amandier pecher*. Miller says the Jordan almond, the nuts of which are imported in great quantities, has a tender shell and a large sweet kernel. The leaves are broader, shorter, and grow much closer than those of the common sort, and their edges are crenate. The flowers are very small and of a pale colour, inclining to white. These trees have been often raised from the almonds which come from abroad, and the plants have been found to maintain their difference from the common almond. The Jordan almond is the only one worth growing for its fruit. Procure the nuts of the last season, sow them as you would walnuts, in the spring of the year, or rather plant them at regular distances, of a foot every way, and two inches deep; when they come up they must be kept clear of weeds, and liberally watered in dry weather. As autumn comes, prepare hoops and mats to protect them against frost and snow, for hardy as they may be when once established, they would be in danger while young. In the spring, the surface of the soil should be stirred, and if a season of lengthened dry weather ensue, let the soil be regularly drenched, that the moisture may go below the roots; at the end of the second season they will not require protection, but they should be bedded out in October, three feet apart every way. In the early spring head down those intended for dwarfs, or trained trees, to eight inches; but those for standards may have some of their lower shoots trimmed off, leaving the top to grow to whatever height you desire them; side shoots are to be discouraged, and when they are high enough, the leader may be stopped, and the side shoots near the top cut back to three eyes each, when they begin to grow, rub off all the buds that are pushing where they are not wanted. The dwarf and trained ones are to be managed the same as peaches and nectarines; branches where they are wanted should be encouraged, and the buds, where shoots are not wanted, rubbed off. It is far better to prevent the waste of strength in wood that has to be pruned off.

THE PEAR.

THE soil most suitable to the pear-tree is a rather heavy loam ; not, however, so heavy as to render it more than moderately retentive of moisture ; but of medium texture, with just enough silica (or flinty matter in a finely divided state) to prevent the stagnation of superfluous moisture, and just enough alumina (the chief constituent of clay) to prevent a very powerful evaporation. A deep dryish loam is best when the trees are growing on a stock of their own species ; but a moister soil, when a quince stock is employed. This soil may be eighteen inches in depth. Gravel is a good sub-soil, where the incumbent earth is suitable ; clay is a bad sub-soil, generally speaking, though it admits of great improvement and amelioration by draining and sub-soiling. To prevent the trees from striking down into a sub-soil of this nature, stones or concrete may be placed beneath the plants, though a great deal may be done to this end by a good preparation of the surface soil, sufficient elevation in planting, and by giving the roots a proper direction in the first instance, at the time of planting.

Though a loamy soil of medium texture is that in which the pear may be most successfully grown, yet almost any soil, with a proper and careful preparation, will support the pear-tree in good health, and enable it to produce fair crops of fruit. Soils of a lighter and more sandy texture than those recommended are to be improved by the addition of heavy loam, approaching to clay, in quantity according to the degree of lightness or sandiness in the soil, so as to render it, to a certain extent, retentive of moisture. The light and heavy soils should be intermixed and blended together as perfectly as possible, in order that the full advantage may be experienced. Soils of this nature seldom require any artificial drainage, the natural texture and composition of the sub-soil

being such as to admit the percolation of moisture with sufficient freedom. If the situation should happen to be a low, damp one, it ought, however, to be drained in the ordinary way. On the other hand, heavy, close, adhesive soils, approaching to clay, which, for the most part, rest on a sub-soil of clay, require not only the melioration of the surface by the addition of sandy earth, but also the greatest care and attention in draining, in order to prevent the stagnation of moisture beneath the prepared surface. On such soils trees must be planted high; for it is under such circumstances that the roots become most injured by deep planting, which is far less felt on light porous soils. The addition of sand or any earth containing a considerable portion of gritty matter, is for the purpose of its becoming intermixed with, and disintegrating, the aluminous particles, by which means the whole mass, in process of time, may become more friable. This advantage, for the most part, is simply mechanical; but it is an advantage of great importance. Other substances, such as wood-ashes, charcoal-dust, or lumps of charcoal, brick-dust, or charred rubbish of any kind, or even burnt clay, would improve the texture of the soil very much; but as these are scarcely so permanent in their effects as the sand or grit, when it can be procured, it should be used first, and then any of the others may be added to complete the process of melioration. The process of draining requires to be carefully performed; but the general system of drains, with which a garden ought ever to be furnished, should be sufficient. No garden ought to be formed, or, if formed, it should not be suffered to remain, without a thorough system of drains, sufficiently numerous to carry off all superabundant moisture from the soil. If this is not done as a part of a general system, it ought, at least, to be done before fruit-trees are planted. The nature of the soil must regulate the operation. In a clay soil, a depth of three or four feet will be most effective; in lighter soils it is not necessary to go so deep. Sub-soiling, that is to say, trenching up the layer beneath the surface soil, must be done cautiously; if it be of a gravelly nature, it is less important that it should be disturbed at all: but if of clay, it should be broken up and loosened; by no means, however, should it be brought to the surface; and the object in breaking through it is principally to facilitate drainage. Almost all soils are deep enough below the surface for the growth of fruit-trees, so that what-

ever fresh soil is added should be raised above the general level, keeping the good soil near the top, and allowing the sub-soil still to remain beneath.

APPLICATION OF MANURES.

The application or use of ordinary manures, to any extent at least, is hardly to be recommended. The soil should either naturally or artificially be rendered of such a texture and composition as to be suitable for the growth of the pear; and, in most cases, this would involve the application of a certain amount of fresh or maiden soil. Even if the texture of the soil required no application of this kind, the use of such materials as charred earth, refuse, or wood, or wood-ashes, would impart fertility enough to secure a very healthy and satisfactory growth. Under these circumstances the trees would grow with vigour, but not luxuriantly; and whilst they possessed strength of constitution, they would avoid grossness, which is but apparent and not real strength. The application of manure at that period would only tend to induce luxuriant growth; a quality which, so long as healthiness of constitution is secured, is of all others the most to be avoided in plants which are required to produce fruit with regularity. It is the rash and improper use of powerful manures, in the preparation of soils for fruit-trees—young, and naturally vigorous—which is productive of a great portion of the diseases to which such trees are subject. The proper time to apply manures at all is when the inherent fertilizing properties of the soil become exhausted, and then no more than is sufficient to make good the actual deficiency ought to be applied at any one time, or an effect the same as that of an undue application in the first instance will ensue. The gradual yet gentle action required from the manure when applied, suggests the special applicability of liquid manure, as it can be so easily applied just when necessary, and then only. The objection to solid manure is, that it either requires frequent application in small quantities, and then the roots become much disturbed; or, if to avoid this evil a larger quantity is given at one time, the greater evil of encouraging luxuriance will be likely to follow. The best mode of applying solid manure is to lay it as a mulching on the surface of the ground, just scratching up an inch or two of the soil, to

lay over it, to prevent, in some degree, the loss of any of its fertilizing properties by evaporation.

PLANTING.

There is no period like the early part of the autumn for planting hardy trees of all descriptions, and, therefore, fruit-trees and pear-trees among the number. The additional soil required in the preparation for the trees is most conveniently collected together in the summer season, because it is then most free from moisture, and therefore will better admit of removal without becoming soddened or consolidated; the next best time is when a hard frost prevails, for then it can be moved without consolidation, and the action of frost, as well as of the sun, is favourable to its pulverization. The preparation for planting consists in first attending to the drainage; then placing a layer of coarse rubble of any kind, and finally adding the new soil, and completely intermixing it among whatever proportion of the old soil may be retained. The surface of the soil ought to be a foot, at least, above the general level. If the soil is of a wet, cold nature, the trees ought to be planted nearly or quite on the original surface, and have their roots covered by the earth laid in a slight mound about them; but if the situation is a dry one, the usual plan of taking out a pit for inserting the roots may be adopted. As a general rule, the surface of the bed where the trees are inserted ought to be at least a foot above the general level, gradually passing off into the ordinary slope of the ground; and the principal roots ought to be placed horizontally, at from six to nine inches below the surface.

The process of transplantation involves many considerations. Trim the coarse roots, especially tap roots; but the fibrous roots must, as much as possible, be preserved from injury, and, when placed in their new position, should be laid out quite straight, without being crumpled, or crossed, or bent in any way. When thus laid out, they should be gently covered with fine soil, shaking it regularly and evenly among them; a portion of the soil may then be covered over them, and then, in most cases, it is desirable to give them a good soaking of water, in order to settle the earth, and as soon as this has soaked in, the remainder of the soil is to be added, and left without consolidation, quite even on the surface. Trim the heads to a moderate size, removing weak useless

shoots, and regulating those left, that they may form a good head with a season's growth. The tree should be staked immediately, to prevent its being blown about by the wind, than which nothing is more hurtful to newly-planted trees. One of the firmest ways of tying standard trees is by means of three stakes placed at equal distances around the plant, the base sloping outward, and the upper end of each meeting together at two or three feet up the stem: the advantage of this plan is, that the plant is able to meet the force of the wind blowing from any point; while a single upright stake is acted on alike on all sides, and has but little power of resistance.

In opposition to autumn planting, it is sometimes urged that the plants in damp soils suffer from the excess of moisture; but soils liable to any excess of this kind are not in a fit state to be planted at all until they are drained, and the excess of moisture carried off.

TRAINING ON WALLS.

Pear-trees are grown as standards, as espaliers, as dwarfs, and on walls; and where they are on walls the fruit is much finer, and often much better ripened than in either of the other cases; but pears of some kinds will do well as standards, which is the least favourable manner in which to grow them. The training on walls is as various as that of the peach or plum. The branches may be placed horizontally, or fan-like; in short, the principal object is to cover the wall; and experience has shown that this can be done by all the different plans. Some grow a straight branch upright from the trunk, and have branches out right and left, a few inches apart, all up the wall, but as straight as so many ruled lines. This is not to be done under several years; because, supposing we begin with a dwarf tree with three good branches, one to turn to the right, one to the left, and the one for the centre, this centre one must be shortened to six inches, and the top three eyes alone be allowed to grow; these will be sufficient to supply a right and left branch a few inches higher than the bottom ones; and the top branch must be shortened again, to give three more for the next year. By this plan we get one step every year, until we reach the top of the wall. The pruning is spur-fashion; that is, all the small branches are cut back to short spurs. Others, who train fan-fashion, get a dwarf

tree, and lay the two lower branches straight out horizontally, the next two rather bending upwards, and others more and more so, like the sticks of a fan. The tree, at maturity, will bear; and the more wood is preserved, with due regard to proper room, the more fruit there will be. Pears are very rapid growers, and attain a great height, therefore the sides and fronts of houses are more favourable than walls, if the ground suits the roots and the tree is healthy.

AS ESPALIERS.

Espaliers are trained exactly the same as those on walls, but the horizontal training is more favourable for that than any other, because the frames do not, like a wall, offer a fastening-place at any inch it may be wanted.

AS STANDARDS.

The common standard pear-tree may be grown in the kitchen garden or orchard, and allowed to go its own way, with no other care than thinning out the head to admit light and air; and if they are growing too rambling, the branches occasionally shortened; but if the head loses much wood, the roots must lose something too.

AS DWARFS.

Pears are grown in some places not much higher than good large currant bushes, and are cut out and pruned much in the same way. In others, they are grown in a sort of pyramidal form, and are frequently subjected to root-pruning, which checks luxuriant growth, and promotes bearing. In some places, pear-trees may be seen a few feet high, in the form of a pyramid, and loaded with fine fruit. Trees of this form are dwarf standards; in other words, trees having a single stem, and whose branches are not allowed to extend more than two or three feet on each side of that stem, nor to rise more than seven or eight feet from the ground. This object is sometimes obtained by pruning the branches in a manner similar to that in which gooseberry and currant bushes are managed; that is, all except the main branches are constantly "spurred in," or cut nearly close back, while the centre of the tree is left open and free, the branches being kept, as nearly as possible, to form the circumference of the tree. With the very weakest growing varieties this plan sometimes answers;

but the trees are liable to outgrow it. According to this plan, the principal shoots are cut back when they have reached the intended full size of the tree.

The two methods principally recommended are those termed *en quenouille*, or distaff training, and the umbrella, or pendulous training. Trees intended for this purpose should be grafted on the quince stock, instead of the free stock, or those raised from the seeds of pears, trees grafted on which grow much more vigorously than when on quince stocks, and are consequently less suitable for being kept in a dwarf state. Quince stocks have been condemned, as tending to render some of the varieties gritty and of bad flavour; but this is not found to be the case when the trees are properly planted in situations prepared and adapted to them; consequently the evil is not to be attributed to the use of these stocks. One advantage is gained, which more than counterbalances any slight disadvantage that may attend their use, and that is, that they aid the dwarfing process, by growing less freely than pear stocks, and, consequently, tending to prevent luxuriance in the branches. If these are well furnished with fibrous roots, when permanently planted, there is little fear of their making satisfactory progress afterwards; for if what has been said of preparing the soil, and planting, is attended to, they will maintain their health and moderate vigour for a long time, and continue to yield good crops of well-perfected fruit. Quince stocks are, however, better adapted for clayey soils than for gravelly ones.

A one-year-old shoot of a pear-tree, after the fall of the leaf, is usually simply furnished with small pointed buds; some of these buds generally produce, the following season, shoots just like that which bears them; others do not elongate in the form of shoots, but put out a leaf or two, and extend a little from the main branch, bearing, by the end of the season, a plump, roundish bud at the extremity; this is a blossom bud, and by the end of the next year it has borne fruit; the upper part is generally removed in gathering the fruit, which causes lateral growth, and after the lapse of a season, this may be supposed to have become formed into a spur, with two, three, or more blossom buds, which bear fruit the next year. If these spurs are left to themselves, they will, every season, become larger, and will extend by degrees farther from the main branch; but it is some years before this becomes incon-

venient. If the branches are healthy, however, the spurs may be cut back to near the main branch, when the small incipient buds just visible at the base of each spur will be developed, and will go through the same regular course as the primary buds. If a few of the largest of these spurs are annually removed from the branch, it may always be kept with a sufficient number to bear a good crop of fruit, while the annual removal of a few of the most advanced will keep the branch in order, as long as it may continue in health.

EN QUENOUILLE TRAINING.

En quenouille culture is a form of pyramidal training, which latter consists in bringing the trees to one perpendicular stem, which is usually allowed to rise eight or ten feet in height. The side branches which issue from this main stem are spurred in, so that after the pruning season a tree thus trained should look like an upright pole furnished throughout with spurs, the lower ones being, of course, the oldest, and also the longest and largest. In the *en quenouille*, or distaff training, the side shoots are allowed to grow eighteen inches or two feet from the stem, being longest at the base of the tree, and gradually shortening upwards; these shoots are brought down in a pendent manner, by bending the point downwards and tying it with a string to the stem till its growth is finished. As more of these side branches than would be required would be formed annually, they must be thinned by disbudding to about nine or twelve inches apart, varying the distance according to the slender or vigorous growth of the tree, or whether it produces large or small foliage: the object being to thin them enough to keep the branches from becoming crowded. The tying down is done when the shoots are fully grown, about the end of July; and in the course of the winter the strings are removed, and the branches are found to be set in a curved manner. If any of them grow too vigorously in the summer, they are to be tied down again; the object of tying being to check their vigour, and to cause the shoot to expand itself in producing flower-buds.

This method has the disadvantage of the uppermost branches continually growing over, and shading those which are beneath them, though, as the points of the branches would be the most productive parts, the fruit would only be

shaded to a certain extent. The pendulous or umbrella training seems, however, to be the best mode of disposing the branches of dwarf standard pears. The most perfect form of pendulous training may be explained thus:—From the top of a straight stem, six, seven, or eight feet high (trees of a particular height should be planted together, for the sake of appearance), a series of seven or eight strong healthy shoots, as nearly equal as possible, should be selected; these may be obtained by pruning back the shoots produced the first year from the top of the stem, and retaining two or three shoots from each the following year, the most evenly placed being selected. When the requisite number of shoots is secured, train them outwards and downwards, so as to form a figure resembling the ribs of an umbrella. The stem should be firmly fixed upright; about level with the top of the stem, a circular hoop of wood, or stout iron wire, five or six feet in diameter, should be fixed, by means of tall stakes; to this hoop the branches are to be trained, radiating outwards from the centre; about three feet lower down, another hoop, seven or eight feet in diameter, should be fixed, towards which, as they extend, the branches are to be pulled downwards in straight lines; near the ground another hoop, ten feet in diameter, should be fixed more permanently than the others, and to this the points of the branches are to be fastened down by strings. The plant will thus be surrounded by three hoops at different altitudes, and gradually increasing in size downwards; the branches are to be led directly from the central stem to the uppermost hoop, and from this downwards to the other two in direct lines. The first series of branches will need to be cut back, with a view of producing two leading shoots, or more, in place of one; this, however, will depend entirely on the strength of the variety, and the actual diameter given to the tree. Branches enough must be secured to train in at about one foot apart.

PRUNING.

The first year after planting, the shoots should be cut back to about two-thirds of their length, so that another season will elapse before they extend outwards to the upper hoop; they may be fixed horizontally, by fastening each to a straight stick temporarily fastened between the hoop and the stem; this temporary support may be removed when no longer

required. By this pruning, a sufficient number of branches will be provided by the time the shoots reach the upper hoop; the pruning and management will then be to train the shoots downwards, and to spur in closely all the side shoots that are produced. The object is to cover each of these pendent branches with fruit-bearing spurs, and, except on the top of the tree, there is little difficulty in producing them. The points of the pendent shoots may either be led downwards by fixing a temporary stick from hoop to hoop, to fasten each to, or a piece of string may be tied (not quite tight) near the point of the shoot and fastened below, thus pulling the shoot into its proper position. When the skeleton of the tree is formed, all except the lower hoop may be removed. It is the general practice to do much of this even without hoops at all, or, if they are used, they are altogether removed; but, for the sake of securing the symmetry of the tree, the lower hoop might be permanently retained, and the points of the shoots fastened to it; this would keep them more regularly placed than they would remain were the hoops entirely removed. When the hoops are dispensed with, the branches are kept from springing upwards into their natural position, by circumscribing the whole by a band of pack-thread, which is passed round each of the shoots, and thus keeps them all tolerably steady.

The side shoots produced on the principal branches are easily converted into fruit-bearing spurs; and this may be done by summer pruning better than by pruning in the winter. The process is thus:—As soon in the spring as the shoots have extended two or three inches, or so far as to develop three or four leaves, pinch off the top of the shoot beyond the fourth leaf, using the thumb-nail for the operation; thus all the force that would have been expended in the formation of the roots becomes concentrated in the three or four buds which are formed in the axils of the leaves which are left. By chance one of these buds may afterwards break forth, and produce a shoot; but if such is the case, it should be treated in a similar way, and then, at the winter pruning, if the whole is found (as it probably will be) to be inconveniently long, the spur can be cut back to the bud next behind where the shoot started from. The greatest difficulty is with the crown or upper part of the tree; where the force of the ascending sap will be continually inducing the produc-

tion of vigorous shoots. Under these circumstances but little fruit is obtained from this part of the tree; nor is there any very ready means of checking the production of this useless wood; if the tree is in vigour, the sap will have vent somewhere, and it is in this upward direction that its tendency is the strongest. There is one advantage in having vigorous shoots produced at this part of the tree, for they furnish a supply from which to choose young shoots, to replace any of the older branches which may become diseased, or require removal. Much may be done towards lessening the drain they cause on the sap, by carefully attending to stopping them back in the early part of the season, as well as after Midsummer, when the second growth takes place. This would not be the case, however, unless the trees were quite as they should be at the roots; any undue vigour at the root would be sure to be developed in the branches, and thus the object would be defeated by the production of quantities of wood buds, instead of fruit buds. When the tree is once formed, the subsequent management and pruning is very simple. All the wood shoots that are produced are to be cut back nearly close, for the purpose of forming them into bearing spurs: this may be done either by summer pruning or winter pruning, but the former is certainly preferable. If summer pruning is practised, it consists in pinching off the points of the young shoot when two or three inches long, subsequently following up this practice throughout the season. If winter pruning is preferred, the shoot should be cut back to the small incipient eyes, which may be observed within about an inch of the base: these incipient buds may, for the most part, be expected to develop themselves as fruit spurs, if the tree is not growing too vigorously.

ROOT PRUNING.

We have frequently seen a pear-tree grow for years without bearing. In this case, the roots have got hold of ground in which they luxuriate, and until the head is large enough to make a full demand upon the roots, it will continue to grow; but in this case, we have to consider whether we will wait for the balance of demand and supply, or, by cutting off some of the supply, hasten the maturity of the head. We repudiate all the whimsical modes of promoting fruit-bearing, such as ringing the bark, or interrupting the flow of sap above ground,

and resort to root-pruning as the most effectual and lasting mode of accomplishing the object. Dig down to the roots, examine if there be a tap root below, or a thick rambling root spreading out, and if the former, we dig down and undermine sufficiently to saw through or cut through the tap, or follow the rambling root in the latter case, till we come to the portion that can, in our opinion, be spared, and cut through that. There is no occasion to take out the part cut off, because it can do no harm to the tree afterwards. The only thing to guard against in this matter is the cutting off too much; and if it happen that a tap root is so thick as to be a serious loss to the tree, we should lessen the head a little to compensate; but if the roots ramble much, we can follow them until we come to the part that it will bear to lose. If, however, there are good roots all round, we would certainly cut off the tap or downward root without hesitation, because the roots nearer the surface will soon supply all that is wanted; and there is no calculating upon the powers of a tap root, for we cannot get at it nor guess at its ramifications below, nor the depth it may reach. Root-pruning is unquestionably the safest and best method of checking the exuberance of a growing tree, and causing it to bear.

Root-pruning skilfully performed, as well as any other means of checking luxuriance, will cause a corresponding degree of fruitfulness; but it involves a good deal of labour and practical knowledge; it must be admitted, too, that it is rather an unnatural process. If a tree is growing moderately, and producing fair average crops of fruit, it requires no interference with its roots; but if, on the other hand, a tree is growing very vigorously, to the manifest injury of its fruitfulness, then to have it taken up and re-planted, shortening back some of the strongest of the roots, or to dig down and shorten the roots without lifting the tree, is the most likely means that can be adopted to bring it to a state of fruitfulness.

RENOVATION OF OLD TREES.

The renovation of old worn-out trees of this character is a matter of practical utility. In the process, the first thing is to take up the trees, and see that the soil is properly prepared and drained; then the roots are to be well cut in, all the perpendicular or descending ones quite removed, and the strongest of the horizontal ones severely shortened back, leaving the

fibrous parts near the stem untouched. The heads of the trees are also to be cut quite back, leaving the main branches only a foot or so in length from the principal stem. The plants, which look like bare stumps, are next to be planted, taking care to keep the base of the stem above the general level, and to have the roots laid out carefully in a horizontal direction; and the stems supported against winds. All this should be done in autumn; and in the following spring, if the varieties are not approved of, choice or favourite kinds may be grafted on the old branches, and thus both the trees and the collection of varieties may be renovated together. During winter, the ground about the roots should be covered with a thin mulching of half-rotten tea-leaves, or long littery dung from the yard or stable, in order to keep off the frost, and serve as a protection to the roots which are near the surface. The young shoots, which break forth in abundance, must be thinned out, reserving a good leading shoot to each branch, and treating the others for the production of spurs; unless grafting is resorted to, in which case remove entirely all the shoots put forth by the stock.

THE APPLE.

THIS highly useful fruit may be placed first among the excellent productions of the English orchard; and as the best varieties have a common origin in the wild crab, which is indigenous to England, we may fairly call the apple an English fruit, notwithstanding many fine varieties were raised abroad. It is probable, that many of the fine sorts were raised without any other trouble than saving the pips indiscriminately, and growing them up to bearing condition; but within the last half century, there has been as much pains taken to impregnate one fine sort with another with a view to obtain the good qualities of both, as there ever was to improve the breed of cattle. Those, for instance, who desire the flavour of the Golden Pippin with the size of the larger apples, might

fertilize the Golden Pippin with the pollen of the Alexander ; or if they wanted the beauty of one kind, with the flavour of another, the probable way to obtain it would be to cross the handsome one with the Ribston Pippin, or some equally high flavoured variety. The raising of new varieties is a task somewhat discouraging at first, but the result often amply repays for all the trouble and anxiety of the cultivator. Nor is the work so long about as many people expect. If, indeed, we wait until the seedling bears fruit of its own account, we must begin with a good stock of patience ; but when the plant raised from a pip is as large as a tobacco-pipe, it may be grafted on a seven-year-old stock, if you have such, and soon be got into a bearing state. We do not mean to say that a thousand seedling plants raised from the pips, and one year old, are to be all grafted on stocks ; but when they are in full leaf examine them all, and it will be strange if nineteen out of twenty do not indicate that they are mere crab stocks ; but here and there you will find one with foliage unlike that of the crab, with habit and wood different. Those which have evidently gone out of the ordinary track, and which indicate novelty, are the plants to have grafts from to place on strong healthy stocks. The plants from which the grafts are taken are still grown, but, in all probability, the graft will bear fruit before the original plant, and you will be able to discover first, whether the produce is different to all others, and if different, whether it be better or worse than the sort which it most nearly resembles.

It will hardly be credited, perhaps, that some years ago the Horticultural Society of London had in their catalogue recorded no less than eight hundred and ninety-seven varieties of apple, all perfectly distinct ; that many of these went by half-a-score different names (the Golden Pippin by sixteen) ; and that the greater part have been proved, compared, and described, with all their synonymes. One would almost think it impossible to recognise either the forms or flavours of so many, and yet be able to distinguish them by some essential difference ; yet, so it is. The colour, the form, the degree of sweetness, the particular shade, as it were, of taste and smell, vary in some point so completely, as to enable a good judge to discriminate with great exactness, and even to recognise a variety when away from all others ; and yet every year brings new varieties, and the number is always on the increase.

PLANTING, SOIL, &c.

The best soil for apples is a sound good loam, and if this is a couple of feet in depth, the ground will simply require trenching. If the subsoil is bad,—that is, gravelly or sandy,—and comes near the surface, the soil must be taken out two feet deep, and be replaced with better. If, as is almost always the case, the surface for some little depth is good enough for ordinary purposes, the best way to manage is, to throw out, from a three or four feet circle, the top or good spit, or half-spit as the case may be, to a heap, and dig out the remainder to place in another heap, so that you may pare the top spit all round for some distance to fill up the hole with, and spread about the bad or hungry soil; for as the tree covers the space in time, and little good comes of the crop under trees, it is better to let the tree have all the benefit of the space. This, of course, refers to the planting of an orchard. In a garden—from which, however, apple trees, except in the form of dwarf bushes or espaliers, should be excluded—the soil would be good enough for them if suitable for gardening purposes.

TRANSPLANTING.

In transplanting, let the trees be carefully taken up, and if there be any of the roots that strike immediately downwards, cut them off, or at least shorten them considerably before planting. Let all the bruised or damaged and broken ends be cut clean off with a sharp knife; for nothing tends to neutralize the growth of a plant more than damaged roots. The holes made for the reception of the plants should be filled up almost to a heap; spread the roots out all round upon the soil when you place the tree in the ground, and the collar of the plant should be rather above the level of the soil, because, however it may be trodden down, the earth will settle lower. The ground should be prepared all over, before the trees are taken up, so that when they are removed the roots may not in any way dry, even at the most tender extremities. The earth should be allowed to settle for a few days, and then the holes for the roots must be got out; they should be dug out about a foot deep, and large enough to admit the roots without bending or breaking them.

A fine day, when the earth is in good friable condition, should be selected for planting. Lay out the roots straight

in every direction, and bruise the soil so that it will fall in among the roots ; as it is thrown in over the roots, let it be worked in among the larger ones by a blunt-headed stick, but on no account lift the tree, and shake it or swing it downwards from one side to the other, as is often done with the view of letting the crumbs of earth fall in among the fibres, the consequence of which is to bend and cripple the fibres. The whole should at last be trodden in firm, and the surface finally levelled with the spade. In treading in the plants, remember that the principal place to press the earth down is close to the ends of the roots, so that the fibres may be firmly fixed, and not close to the trunk. When this is finished, drive stakes down into the ground, to hold the trees fast by means of wisps of straw passed round the trunk, reversed or crossed between that and the stake, and tied with sack-ties or rope-yarn at the end outside the stake ; the trunk is thus grasped firmly by the straw, and the straw, being crossed, is made to grasp the stake as firmly, and the ends being tied fast, the stem is fixed. Care must be taken to drive the stake deep enough into the ground to be firm and steady, that the wind may have no power over the plant.

The distances for trees in an orchard should be not less than thirty feet ; but if the ground is to be used, the trees should be thirty feet apart in the row, and the rows fifty or sixty feet from each other. In small gardens and limited grounds, where immediate advantage is an object, and there is no permanent interest, the trees may be much closer ; in fact, so long as the trees have room to grow into bearing, they may be limited therein by pruning to any size or plan, for the standard tree may be controlled as easily as a wall tree.

ESPALIERS.

The planting of espalier trees differs only in the distances ; twelve feet apart will do for them in a limited garden, although they might be extended to meet if placed at double the distance. Iron or wooden rails are sometimes fixed for the purpose of training espaliers on them, but stakes driven into the ground upright in a straight line answer quite as well. The trees are brought trained on purpose for walls or espaliers ; and when planted, the two lower strong branches are tied horizontally within six inches of the ground, a centre branch being left, which may be cut down to a foot in length ; the

top three eyes may then be allowed to grow, the two lower to furnish shoots to train out horizontally right and left above the former ones, and the third to grow upwards, to be again cut down to a foot in length, to furnish other shoots higher up to be treated in a similar way. By this means a good pair of horizontal branches may be made every season until the tree is as tall as it may be wanted. If, however, the tree has been trained a year or two before you have it, all the branches may be saved and trained as nearly horizontal as they can be fixed; for a well-trained tree, well removed, will be in bearing almost directly. Espaliers are adapted to limited kitchen gardens, as they may be planted close to the paths, or at the back of borders next a path, or they may be made to separate the quarters, and they seem to occupy no available space.

PRUNING STANDARDS.

Standard trees are too generally neglected, and one half or more of the branches which form the head are not only useless, but take from the useful ones much of the vigour which should result in improved crops. The inside of the head should be kept sufficiently clear to admit sun and air to every part of the tree, whereas it is rare to see standards with other than crowded heads, all the inner branches being barren. This should not be. All branches that cross other branches should be cut clean away close to the base; the head of a fruit-tree should not by any means be confused, not to say crowded; and a lesson in pruning apple-trees might be taken from well-pruned gooseberry and currant trees in a market-garden, which are carefully thinned out. Standard trees are a little more troublesome, and are, consequently, seldom touched with the knife from year's end to year's end. Espaliers and wall-fruit trees are generally spurred,—that is, all the summer shoots are cut away to encourage the formation of spurs along the main branches; and this plan is very prolific, considering the much less room a tree occupies.

RAISING FROM SEED.

New varieties of apple, as of other subjects, are raised from seeds. For this purpose, prepare a piece of ground, and make a seed-bed of four feet in breadth, and having levelled the surface, then sow apple-pips, saved from the finest fruit that could be procured, or that have been crossed with a view to

the origination of improved varieties, the origin of the seeds being preserved either on a label or in a note-book. Sow them thinly and regularly, because it is desirable that they should stay the whole season in the seed-bed, and they ought not to be crowded. Let this be done in the early spring. When the plants are up, the bed must be hand-weeded, to keep the seedlings clear; and in dry weather let them be watered. Continue the weeding and watering, and let them grow the whole season. When they are in full leaf, examine them throughout, to see whether any of the foliage resembles that of good sorts, especially those from which they are saved, or whether, in fact, any of them exhibit any novelty or promise. If so, mark them, so that they may be distinguishable. It may be that the wood is the very first year large enough to graft; and if so let this be done at the proper season, upon a good paradise stock. In the meantime, take out the plants, and transplant them in good plain loam, in a very open situation; this should be done early in autumn. The whole of the seedlings should be planted out, the plants two feet apart in the row, and the rows three feet from each other. They will stand to grow up for stocks, if their fruit be good for nothing; or for trees, if they prove at all novel. It may be, that some of the least promising turn out well; but those which show foliage like the wild crab, will hardly be worth saving, except for stocks. The sole object of grafting the wood of any promising novelty, is to get the chance of fruit before it comes on the plant itself. Nothing need be done to the seedling plants in the way of pruning, except cutting out all weakly branches; for it is perfectly useless attempting to form them till it is known whether they will be worth the trouble.

GRAFTING.

Choice kinds of apple are increased by grafting, which may be done in many different ways; simplicity, however, in all such operations, is very desirable; and those who can splice a broken stick, can graft well. The conditions are few and simple, and may be summed up very briefly:—Choose a proper stock and graft; make a good fit before the sap has time to dry; let the bark of the graft and the stock touch each other on one side at least; tie firmly; cover the wound from the air; and operate at a right season. These conditions

insure the union of the graft and stock. The nature of the graft is almost secondary. If the stock be larger than the graft, the graft must be made to fit somewhere, in one of the following ways:—1. Cut a flat side to the stock, and a flat side to the graft, and fasten the two flat sides together, so that the bark of the graft shall join the bark of the stock on one side; and although the graft cannot cover half or a fourth of the flat space, it will unite and grow larger, till it covers the whole. 2. Cut an angular gutter down one side of the stock, and cut the graft to an angle, to fit it, with its bark outside joining the bark of the stock; and if it is a fit, nothing can stop them from uniting. 3. Cut a split up the graft, and shave out the inside like a clothes-peg, and cut the stock into a wedge to fit it, and the graft will be as safe as any way. It is always desirable to be quick over the operation, as, if the wounded parts have time to dry, the work will fail. The knife should be sharp, the cuts clean, the fit close, and the binding rapid. Then the stopping out of the air by either grafting-wax or grafting-clay is simple enough; whichever of these may be used, it should be put over the wound, but by no means into it. Grafting-clay is made of common adhesive clay, mixed with one-third of cow-dung, beat up and amalgamated until they are thoroughly mixed. If too stiff, a little water must be added; and if too thin, more stiff clay and cow-dung must be put to it. It ought to be soft enough to be squeezed in a lump over the union of the branch and graft, so as to keep out the air. Grafting-wax may be made with half bees'-wax and half resin, tallow enough being added to regulate the degree of hardness. It should dissolve to a treacly consistency, without much heat, and harden in the ordinary atmosphere enough to retain its place on the branch, even in the sun. Although the sun may soften it a little, it must not make it run. When used, the wax is warmed a little—not heated—until it is about as thin as treacle, and then laid on the joined part carefully with a brush. It need not be very thick, because it is only required to exclude the air. The season for grafting is just at the period when the sap is active, but before the buds swell too much; generally about February and March. The grafts may be procured a month before using, if necessary; but they are none the better for keeping, except that sometimes they would get too forward if left on their own trees, which are frequently more advanced

than the stocks. The stocks at grafting time should be in advance of the grafts.

GRAFTING NEW SORTS ON OLD TREES.

Worthless and inferior sorts in an orchard or garden may be turned to account by grafting. Cut back some of the best situated branches, and graft them with good sorts. The rest of the tree may be left to bear its own kind, in preference to going without any; or the tree may be sacrificed at once, and all the limbs not well situated cut close, while those well placed may be grafted with strong pieces of good sorts, and will soon make a good head. In this way an orchard of crabs, or of apples as worthless as crabs, may be rapidly converted to a collection of the most costly and valuable kinds in existence, and in all probability brought to a bearing state in two seasons; for with trees thus curtailed of the greater part of their head, only a portion being retained for grafting, the whole vigour of the trunk is thrown into the grafts, which rapidly grow into good bearing wood. There is no more difficulty in grafting large trees than small stocks; the graft has to be fitted in a gutter, or on a flat surface, or in any conceivable way, so that the wood is fitted close together, and the edge of the bark of each touches that of the other.

ROOT PRUNING.

When the trees are exceedingly vigorous, making long shoots, and bearing little or no fruit, they want some check to make them bear. The most legitimate way of accomplishing this object, is to prune the roots; for unless this be done, the plant may live and grow rapidly for years, without yielding an apple. Dig down to the roots, examine whether they are too long, or whether the tree has formed a tap root. If so, cut it off, leaving the rest as they were. If there be no tap root, shorten all the other strong roots enough to give the plant a check, but do not disturb the tree. It will be enough that it lose part of its roots, which is a check it will survive, and be ultimately the better for; while, if the plant were taken up, its health might be endangered.

THINNING THE FRUIT.

When the trees bear a very heavy crop of fruit, they ought to be thinned,—perhaps one-half removed, after they are

fairly set, and have begun to swell ; because, if the tree has to bear more than a good average crop, it suffers, often to the exclusion of fruit the next season ; in this respect, scarcity is almost invariably seen to follow abundance. The fact is, when the whole energies of the tree are wanted to perfect fruit, there is little or no good bearing wood ripened, and the contrary happens where there is no crop at all. Large apples should never be less than six to nine inches apart, and small ones ought to be three or four. All the superfluous fruit should be taken off while quite small,—as soon, in fact, as the setting of the others can be depended on.

The principal apples used as stocks are, the English Paradise, the French Paradise, Doucin, and Wild Crab ; the latter for vigorous standards, but the Paradise for all dwarf kinds, and sorts wanted to bear young and early. The less vigorous the stock, if healthy, the smaller the growth ; and the more vigorous the stock, the taller the tree. For small gardens, the trees should be grafted on the Paradise stocks, which will bring fine fruit at an early period after grafting. The day has gone by for planting large orchards in this country.

GROWING IN POTS.

Apples may be grown in pots ; dwarf plants must be used, and the growth of them must not be excited by rich compost ; plain loam, without dung, is the best for this, because the plants should be grown slowly. The pots size sixteen may be the first size, and the roots of maiden plants must be pruned, and the wood cut into two or three eyes. They should be potted in the fall of the year, and may be plunged in ashes, gravel, sand, or, for want of these, in the common earth ; but the objection to the latter is, the worms are apt to get into the pots, and they do no good. The branches that shoot the first season are to be pruned back to a reasonable length—say a foot ; or if they are not well directed round the pot all sides alike, they may be shortened still more ; but as the only object is to keep the head within a reasonable size for the size of the pot, the pruning will depend on the growth the plant has made. Let the pots be taken from the ground ; and if the root has gone through, it must be cut off, the plant re-potted, and the root pruned, so that it may go into the same pot again. They may be plunged again until the buds begin to swell, then taken up, and placed on the hard ground, or on

ashes, or a gravel walk, or on boards placed on purpose. Always remove weakly shoots, and keep the head well thinned out. Care must now be taken that the plants do not suffer for want of water, because the rains are frequently thrown off outside the pot, by the foliage of the plant; and while all things seem partially drowned by a wet season, plants in pots may literally be starved for want of water. An apple-tree in a pot is a pretty object. Of course they require to be on Paradise stocks; but at any nursery of consequence, the supply of proper plants can be had, if the purpose for which they are designed be mentioned when they are ordered or purchased. This is done more for the novelty than the utility of the thing; and it will be found that among a dozen or two plants, some will bear early and well, while others seem more inclined to wood than fruit. As they get too large for one sized pot, they may be shifted to a larger.

THE SIBERIAN CRAB.

THE Siberian or American or small crab is known by many names, but is commonly called cherry apple. The fruit is astringent, slightly bitter, yet somewhat agreeable withal. It is handsome, and has a very good effect when seen hanging on the tree, with somewhat the appearance of a cherry. It is chiefly used for preserves, but is not in any great repute. This crab may be obtained at any nursery where fruit-trees generally are raised. It will grow in almost any soil or situation, but a good substantial loamy soil is the most suitable for it. The trees selected should be from three to four years old, well formed, and as handsome as possible; for if there is no great use made of the fruit, the effect which it has hanging on the tree, and also the shape of the tree itself, should be considered, with the view of making up by ornament for the inferior qualities of the fruit. As a very limited number of trees will be quite sufficient for an ordinary establishment, they should be distributed among the others

in the orchard. One or two of the most handsome should be kept about the outskirts, and if there is a wood or plantation, a similar situation may be very properly occupied by an equal number.

As it is of no use training them in any other way than as standards, they should have stems at least four or five feet high, at the summit of which the branches should be encouraged to grow regularly. Remove all those shoots which may push out on the stems below the head, and those of which the latter is composed should be kept rather thin and regular all round, the object being to have the trees as graceful and ornamental as their habit will permit. In lifting them out of the ground, all the strong central roots should be cut back, and the laterals trimmed moderately. The branches should also be pruned according to the form which it is required they should assume. Thin out all the shoots which may be growing at the centre, and cut a few inches off the extremities of any of the others which may be too long and straggling.

In planting them in the places they are to grow in, let the holes be made wide enough to receive their roots without crowding or pressing, and do not place them deeper in the ground than they were in the nursery lines. The best way of making the holes is to form the bottom like a little mound; that is, the soil should be kept a little higher at the centre than at the sides, but made fine and well broken up. Holding the plant or tree with one hand, in its proper position, place a portion of soil about the lowest roots, keeping those uppermost uncovered till the earth has been raised to their level, when they should also be covered. Distribute the roots towards the line of circumference, keeping them regular and even, not huddled or crowded. When they are all covered properly, tread the earth lightly over them, and fill the hole till it is level with the rest of the ground. In order to keep the tree from being shaken by the wind, drive down a stout stake near the stem; but be careful the roots are not injured in doing so. The stake should be made sharp at the end to be inserted in the ground, as it will thus be more likely to pass the roots. Then wind a straw rope round the stem, to keep the bark from being rubbed off, and tie the tree to the stake at this point.

THE WALNUT.

THIS may be raised from the nuts, and this is the method by which it is generally propagated. From the spreading habit of the tree it is always trained as a standard, and it is found to be hardy enough to grow in most parts of Britain. In the southern counties of England especially walnut-trees are large and common, and great quantities are every year brought to the London markets.

The soil most suitable for this popular fruit-tree is a light sandy loam, but it will thrive in almost any soil which is not too stiff and retentive of moisture. In proceeding to raise plants from the nuts, prepare one or more beds in any open and moderately warm situation. These beds may be about four or five feet wide, having alleys between them about twelve inches wide. Dig the soil somewhat fine and make it even on the surface. The best time for sowing is early in the autumn, but the nuts should not be taken from the trees before they are completely ripe, which may be known by the outer covering parting readily from the shell. The nuts should be sown in their shells about six inches apart in drills a foot apart, that the weeds may be removed the more easily. When the nuts are placed in the drills, they should be covered with soil to the depth of three inches, and nothing more will be necessary but to keep the ground clear of weeds and mice.

The plants will come up the following year, and the earth may be stirred between them in the course of the summer while the weeds are being removed. The second season they may be planted in rows three feet apart, and the plants two feet from one another. At the time when the general digging is performed, the ground should be dug between the rows, but while engaged in this operation be careful not to damage the roots. At the end of the second season that the plants have been transplanted, every other tree may be taken up and

a new plantation made. After this, they must be lifted every three years and transplanted at greater distances in fresh soil, until they are large enough to be finally planted in the places where they are to remain. They may, however, be removed to their permanent situations when they are four years old with great advantage. In all this lifting and transplanting, much care is necessary lest the roots or branches should suffer any mutilation or other injury. In the process of lifting, dig a trench all round the tree to be taken up, at such a distance from the stem as may be about the line of circumference of the roots. Throw the soil to one side, and after the trench has been made deep enough, proceed to remove the soil from the roots, beginning at the trench and working inwards towards the stem. The best implement to use is a blunt-pronged fork, for the spade is apt to cut the roots. When the earth has been all removed from the side roots, the tree may be moved backwards and forwards in order to ascertain where it may be still attached to the ground, and the fork must then be used accordingly. If all the roots have been properly loosened at the sides, thrust in the spade in a slanting direction directly underneath, and with as much force as will cut the centre roots, which will completely detach the tree from the soil. It should then be taken up, and if the central roots are vigorous, they should be shortened; any of the others which may have been torn or mutilated may also be slightly pruned with a sharp knife. It is always advisable to prepare the holes in which the trees are to be planted a few days before the latter are lifted, in order that the soil may be acted upon by the weather, when it will be in the best state to receive the roots. These holes should be made sufficiently large to admit the roots without any pressure, and no deeper than is necessary to contain them at the same point at which they were in the places from which they have been removed. The earth should be removed to the depth of eight or twelve inches, and about three feet and a half in diameter, according to the size of the trees to be transplanted; and the bottom should be well loosened and formed into a little mound. No more trees should be lifted at a time than can be planted readily without exposing the roots to the sun and air for any length of time; and if the weather is dry and warm, the roots should be covered with damp mats till they are placed in the ground.

In planting, hold the trees by the left hand, placing the roots in the centre of the hole, or on the mound at the bottom, and spread out the roots regularly all round; then work the soil among those at the bottom, keeping the uppermost uncovered until the soil has been raised to their level, when they may also be covered. This done, tread down the soil lightly over them, and fill the hole till it is level with the rest of the ground. The best time to plant young trees is when the weather is somewhat moist without being quite wet; but if you plant in dry warm weather, supply the roots freely with water, that is to say, soak the soil thoroughly. When the trees are planted, and if they are rather large, drive a stout stake in the ground at every one, about four inches from the stem. To this the tree should be fastened by means of haybands, in order to prevent it from being much shaken by the wind.

It is not always necessary to raise the walnut from nuts, in private establishments, for trees of almost any size may be obtained at the nurseries.

The walnut occupies a large space; perhaps no tree grows larger in this country; it is not, therefore, everybody who can spare the room which it requires. There should be a clear space of at least thirty feet all round when the trees become large, but the ground may be cropped for many years pretty close to the stem with various sorts of vegetables. Or, if required, some trees may be grown in the back part of the shrubbery, where they may not grow so very large, but the best situation for them when wanted to attain a great size, is in an open park or paddock. When the trees are planted, they should be partially pruned, so as to regulate the branches properly, the object being to secure a good head. Cut away all the weak and ill-placed shoots at the centre, and retain only such of the outer ones as are strong and healthy.

In gathering the fruit, it is common to knock down the nuts from the branches by means of long poles or rods, but this practice is not to be recommended, as the branches are generally more or less injured in being struck by the poles. If the trees are not too high, it is much better to use a light ladder, or what is sometimes called a double ladder, as this enables the gatherer to pluck off the nuts by the hand, when they may be at once transferred to a bag. A considerable number of the nuts may also be detached from their stalks by

shaking the branches of the tree. When the nuts have been shelled, or rather when the shells have been taken off them, they should be spread out under cover, where they may be well dried ; if the sun can be admitted to them, so much the better. When properly dried, they may be laid in limited quantities in bags, jars, boxes, or similar vessels, to be used as wanted.

THE SPANISH CHESTNUT.

THE chestnut may be grown in any soil which is suitable for other timber trees. A strong moist loam is found very suitable for it. The process of raising the chestnut from the nuts is rather tedious, and, except by nurserymen who grow for sale, seldom resorted to. The best thing to do, therefore, is to procure plants from a nursery, in the beginning of the year, or after the fall of the leaf, and plant them in the places you wish to grow them. The best trees to select are such as have been grown in the nursery lines for two or three years, or which have attained a height of four or five feet, having good strong stems, and plenty of healthy branches. As the roots grow long and penetrate far into the soil, the trees should be planted where they can have plenty of room to grow. Almost any situation will do for them, provided they are not exposed to rough gales, or cold north winds.

In taking them out of the ground, the soil should be dug away all round their stems and clear of their roots, which should be preserved as entire as possible. Having formed a good wide trench, casting the soil to one side, remove the earth from the roots by means of a bluntly-pointed fork. If there is a sufficient depth of soil where you intend planting them, the tap-root, which grows very long and in a perpendicular direction, should be preserved entire ; but if the soil where they are to grow is rather shallow, or has a substratum of rock, the tap-root should be considerably shortened, and it will push out lateral roots, which are better adapted for such a situation. This point should be decided on before the trees are lifted, and the tap-root cut with the spade or preserved

entire according as the soil in which the trees are to grow is deep or shallow.

The best time to plant the trees is in October, or in February, and when the weather is rather moist or cloudy, but not wet. If the planting is made during sunshine, the roots of the tree should be carefully covered up with damp mats, or any other material which will keep the tender fibres from being scorched or shrivelled. In planting, be sure to make the holes large enough ; and as a long tap-root is characteristic of this tree, the holes must be made somewhat different from those generally formed for such trees as have their roots growing in a horizontal direction. Instead of making the holes flat, or raised in the form of a little mound at the bottom, they should be dug deep and rather narrow, so that the long roots may occupy their places without being twisted or turned up, as is very frequently the case in planting this tree. The trees should not be planted deeper in the soil than they were in the nursery lines, and when their roots have been properly covered, the ground should be well soaked with water, to refresh the roots and settle the soil about them. If the trees are high and stems rather weak, they should be supported by means of a stout stake driven into the ground a few inches from the roots, and attached by a band or rope of hay, until they have become so far established that this aid may be dispensed with.

In respect to pruning, the chestnut, being, in this country, grown as much for ornament or timber as for its fruit, is always planted as a standard in the open ground, and, therefore, it is only necessary to regulate the head of the trees while they are young, so as to have a good form. Shorten the shoots in the summer or autumn, if they are too long, and cut away all weak or useless spray from the heart.

To raise the chestnut from seed, the nuts should be sown in beds broadcast, or in drills, and covered with about two inches of soil. The best time to sow is in the autumn, or early in the spring. Those nuts which are imported from Spain are considered the best for sowing ; and the soil should be a good substantial loam. If the nuts which are produced by trees grown in this country are sown, they should be laid in the earth as soon as they are gathered in the autumn. As soon as the nuts are sown, means must be taken to prevent the ravages of mice and rats, which are often destructive to

this crop. The young plants will come up in the following spring, and from the time the nuts are deposited in the soil, the beds must be kept clear of weeds, which should be removed as soon as they are large enough to be handled. The young plants are taken up in the spring of the following year, and transplanted in nursery lines, about a foot apart, and five or six inches apart in the line. They will require to be frequently hoed in order to keep down the weeds; and the second year, they must be again taken up and transplanted in a different part of the ground, and at a greater distance from one another. The lines may now be twenty inches or two feet apart, and the plants eight or ten inches apart in the lines. They must be again transplanted if found necessary, but they will be fit for planting out at the end of the third year from the time they were taken from the seed bed.

When the trees come into bearing, the nuts should be partially thinned, and when quite ripe, they may be gathered and stored away in cloth bags or boxes, to be used as wanted.

T H E N U T.

THE usual mode of propagating the nut or filbert is by taking off the suckers which spring up at the base of the trees. It may be also propagated by layering and grafting, but suckers, if well rooted, admit of greater certainty, and do not require so much time as layers. The suckers should be taken up in the autumn, and with as many roots to them as possible. Some growers prefer young plants which have been raised from layers and which have been planted in nursery lines for a year or two. If you desire to raise the plants for yourself, there can be no harm in employing both of these latter methods. If you have a tree sending out plenty of suckers, these should be taken up with a spade, in such a way as to secure a good number of roots to the shoots. Prepare one or more beds four or five feet wide on a border which is moderately warm; make the soil rather fine, digging it deep, and adding a quantity of old leaf-mould or fresh loam, if it is

not rich enough. The suckers should be planted in rows across the bed about a foot apart, and from six to eight inches apart in the row. The planting of the suckers may be done either in the spring or autumn, and they will only require to be kept clear of all weeds, and watered for a week or two after being put in the ground, if the weather continues dry and warm. They will have acquired considerable strength by the following year, when they should be taken up and transplanted in other beds, at much greater distances from one another.

In propagating from layers, select those trees which have their lower branches somewhat spreading and near the ground; dig the earth round their stems at such points as may be most convenient for bending the shoots down and inserting them in it. It should be raised a little above the general level of the ground and made as fine as possible. When the soil is properly prepared, provide a number of stout pegs made in the form of hooks, and bend down those branches that are most suitable for layering. Taking one branch at a time, keep it in its position by means of a strong peg, and proceed to insert the terminal shoots regularly in the soil prepared for them. Remove with the hand as much soil as will serve to leave a shallow hole, in which the shoot should be placed, and pegged down; cover it over at the point where the peg is inserted, and let the extremity of the shoot project a few inches above the soil. Proceed to layer the rest in the same way. The following year the layers will have formed good roots, and they should be taken up by detaching them from the parent branch, which should be cut close to the ground. Dress or trim the roots of the layers a little, and plant them in beds in the same way as directed for suckers.

It is not worth while raising nut trees in private establishments, as good young trees ready for planting out may be obtained at any nursery where fruit trees are propagated. Those chosen should have a strong upright shoot, about three feet high, which, when finally planted out, must be cut down to about twenty inches from the soil. The stem then remaining must be kept clear of all buds or shoots, and all suckers, which are apt to push up from the root. The top will soon be again furnished with plenty of other shoots, which must be preserved to form the head of the tree, which should be planted early in the spring. From six to eight shoots will be

sufficient to preserve the first summer, and these should be preserved ; but if fewer shoots push out, one or two of the strongest must be cut back to three or four inches, or about half their length, which will induce others to grow from their base.

In training the trees, the head must be kept free and open, the branches being gradually inclined outwards at first, and subsequently allowed to grow nearly upright. The branches may be allowed to attain a height of five or six feet, and this will, in most cases, be quite high enough. The spurs which are produced on the branches must be preserved, and all the laterals regulated and shortened to a few buds, if they are longer than six or eight inches. The chief point to aim at is to insure a plentiful supply of fruitful spurs, and where the branches are accidentally deprived of these, it will be necessary to train up a strong healthy shoot from the base of the tree. The trees, when properly planted and trained, will require little further care, and, with attention to thinning, will last and produce good crops of nuts for a long time. They may be grown in rows in any open quarter, and about eight feet apart every way.

The nuts which you want to keep for a long time should be left on the trees until they are thoroughly ripe ; and when gathered they may be laid on a dry floor for a few days, and then stored away in jars, or boxes of sand.

There are many varieties of the nut, and the treatment need not differ for any of them. From the Horticultural Society's Catalogue we find :—

1. Blue shelled Filbert ; thick shell, of a bluish colour.
2. Bond nut ; very good, and shell thin.
3. Burn ; oval, shell thick, but nut good.
4. Cob ; large sized shell, very thick and hard.
5. Great Cob ; one of the largest in cultivation.
6. Large round Cob ; much the same, but more round.
7. Cosford ; good size, oblong, great bearer, shell very thin.
8. Downton, large square ; obtusely four sided, and shell thick.
9. Downton, long ; oblong, shell thick.
10. Filbert, frizzled ; great bearer, thick shelled.
11. Filbert, red ; kernel red, flavour good, thick shell.
12. Filbert, white ; kernel white, flavour good, shell thick.
13. Jeeves's seedling ; large, thick shelled, and round.

14. Jeeves's long seedling ; large, oblong, shell thick.
15. Late round ; middling size, thin shell, and late.
16. Northampton ; large, oblong, and thick shelled.
17. Primley ; middling size, oblong, thick shelled.
18. Prolific Northamptonshire ; middling size, oblong, thick shelled, and early.
19. Purple leaved ; of which no character is given.
20. Spanish ; oblong, thick shelled, and very large.
21. Barr's Spanish ; middling size, thick shelled.

With all these varieties reported on, independent of all the wild ones, of which there are several, there can be no difficulty in choosing, because everybody can understand that the large-sized nut, thin shelled, must be the best ; and after all, with respect to culture, many people plant the nut, and leave it to take its chance. Hedges and avenues of nut trees are not uncommon, and they are for the most part left to their natural growth : all we should do in that case would be to remove suckers as jealously as we should those from a rose stock ; for they never do any good, but often spoil the tree. They should always have but one stem from the ground, and let nothing grow from the root. If the trees then are left to themselves, and nothing done but their suckers destroyed, they will do well, and, when matured, bear well. The Cob nut, No. 4 in the list, is the best that can be selected for an avenue ; its growth is more upright than any of the others. For the mere fruit, the list is sufficiently descriptive to guide the cultivator in the choice of the varieties to grow.

THE ORANGE.

THERE is good reason for believing that this fruit would be as easily and as plentifully grown in this country as any other subject under glass, and that the leading cause of its failure, in nine places out of ten, is ignorance and ill-treatment. When we say "failure," we do not mean that the tree dies, because there are plenty of living evidences, but that neither fruit nor flowers are had with any certainty, or in any quantity, from thousands of trees that, nevertheless, have leaves and exist. There have been empirics who have written on the orange-tree, as on many other subjects, and nobody can form an idea of the mischief which such people do. Where the soil is composed of some proportions of wholesome loam, and dung, and vegetable mould, we can understand a little difference in the proportions used ; but where a man can sit down and recommend all sorts of filthy nostrums, we can wish he had been flogged at the cart's tail, before such stuff had been printed. We have, in the treatment of the auricula, had occasion to reprobate similar unwholesome composts, as freely directed to be used, and especially when the instructions emanated from persons who had been reputed successful in the culture. Mr. Ayres, who has written upon the subject, gives the following compost :—

Ten parts strong turf loam.

Seven parts pigeons' dung.

Seven parts garbage from the dog-kennel or butcher's yard.

Seven parts of sheep-dung.

Seven parts of good rotten horse-dung.

Ten parts of old vegetable mould.

We hear a good deal of assimilating the soil of plants to that in which they flourish in their natural habitat ; but tell us in

what part of the world the natural soil would be composed of garbage from dog-kennels or butchers' yards! We believe that the above mess might be mixed together, and be suffered so completely to decompose, that in time there would be but little if any mischief; just as the most violent poisons might be exposed to the air until their virulent qualities had departed; but there is nothing very nice or very natural in scraping together so much mischief and so much uncertainty, to be kept until it has grown harmless by natural decay. Miller, who was a sound, practical man, and seems in all he has done, to have been actuated by common sense, says the best compost is,—

Two-thirds fresh earth, from a good pasture.
One-third of neats' dung.

There is nothing revolting or unnatural in this compost, which Miller directs should be laid together a year, and turned, to rot the turf; but in all the composts we have recommended, we have considered the loam from rotted turves the staple; and, whatever may be said to the contrary, nobody can succeed so well without this as with it. The soil which is the result of turves cut as if for laying down as grass, or somewhat thicker, is rich in all the essentials to healthy vegetation. There is in itself, when properly rotted, a third of vegetable mould, the most useful and safe of all manures, and there is generally in pastures, that have been fed off, enough animal manure to form it altogether into a rich compost, in which almost anything will grow well. But Miller contemplates the top spit of the loam of a pasture, which will consequently be so much the poorer than the turves alone would be, that the third of neats' dung will be necessary. A glance at a few other composts recommended by different writers may not be lost in well studying the effect of soil on the health of the trees. In Italy, we are told, they are grown in the natural earth, which is strong soil, and for this purpose richly manured. So also at Genoa and Florence. At Naples, the soil is a good deal of it of volcanic origin, yet they thrive well. The French gardeners, as we are told by Mr. Loudon, on the authority of Bosc, seem to fancy that the appetite of the orange-tree is like that of a pig, and that they thrive in proportion to the filthy nature of the soil they are in. To a soil that is already composed of a third of clay, a third of

sand, and a third of vegetable matter,—in other words, perhaps a compost not very different to the loam of rotted turves,—they add an equal bulk of half-rotted cow-dung. The first soil is supposed to have been three years rotting. This cow-dung is to be mixed, and the next year it is to be turned over twice. Thus is a fourth year occupied in preparing compost; and the fifth year it is to be mixed again with one-half its bulk of rotten horse-dung, and be turned over two or three times; and, the winter before using, it is to be again mixed with—

One-twelfth rotten sheep-dung.

One-twentieth of pigeons' dung.

One-twentieth of dried night-soil.

Is not this six years' preparation enough to deter anybody from growing orange trees—that is to say, if there be any truth in it, or a man believes it all to be necessary? It is quite ridiculous to so clog the most simple and easily-managed operations with such unnecessary trouble, even if it were free from mischief; and we very much doubt if it be, as Mr. Loudon affirms, the practice of the French gardeners. We do not dispute that there may be such empirics in France as well as in England; but we do not join in the libel upon the good sense of a whole class of men, when perhaps the folly is confined to one or two whose fingers have itched for writing, and who want to be thought different from everybody else, or—which is very probably the case with all these quacks—want make the difficulties as great as possible, that there may be the more merit awarded to the writers for their success amidst such difficulties. Strange to say, the composts recommended by different people vary so much, that nobody who studied them could fancy they were for the same plant. We are told in the *Encyclopædia of Gardening*, that M'Phail and Abercrombie, who appear to have written on the subject, recommend the following:—

Three-eighths four-year-old cow-dung.

One-eighth sheep-dung.

One-fourth vegetable mould from the leaves of trees.

One-sixth fine rich loam.

One-twelfth road grit.

In this compost there are three-fourths manure to one-fourth of soil, such as it is, and the loam may also be charged with

manure. It is neither reasonable nor practicable to keep plants in soil like this—that is to say, they could not be kept in health. Mean, as we are told, recommends,

Leaf-mould, one-half ;

Decomposed cow-dung, one-fourth ;

Mellow-loam, one-fourth ;

with a small quantity of road grit added to the compost. We hate anything so indefinite as “small quantities,” because it must depend on a man’s notion ; a small quantity may mean a peck or a bushel—it means everything, it means nothing. But, without going to these trifles, here is a compost of three parts manure, vegetable and animal together, and an addition of a small quantity is to be made that will alter the relative quantities, inasmuch as sand is the opposite of dung or vegetable manure. If there be a bushel of compost as above, a peck of sand added would make the manure three-fifths instead of three-fourths. But, apart from all this, there is too much animal and vegetable manure for the health of any tree to be permanent in it, and we doubt if they ever tried it. We believe that many people who write have found that a little of some particular thing has improved their growth of a plant, and they have jumped to the conclusion that, if a little made a little improvement, a good deal would make a great improvement, and so written what they have never tried. Henderson, as we are informed, recommends—

Light brown mould (loam ?), one part.

Peat (such as heaths grow in), one part.

Clean sand, two parts.

Rotten hot-bed dung, one part.

Leaf mould, one part.

Here we have a compost consisting of two-thirds soil, and one-third manure, probably not differing very materially from Miller’s. But need we wonder that a healthy orange-tree is a scarcity, when so many whims and fancies sprang up among the gardeners of old, and when the Horticultural Society of London gives place to communications recommending garbage from dog-kennels, and other exciting and unnatural stuff, as the soil for them to grow in ? Few men used to grow orange trees in better health than an old man at Brentford, and hundreds of ill-used trees, in all sorts of tubs, boxes, pots, and contrivances, nevertheless exhibited all the signs of rude

health, plenty of good coloured foliage, abundance of bloom and fruit. There was nothing poisonous in the soil, nothing detrimental to the growth. In our experience (and we had many of his plants, some of all sizes), we followed Miller as nearly as may be; at least we began all our composts with one staple article—rotted turves, cut rather thicker than they would be laid down; and when this can be got from a good loamy pasture, there is nothing to be so well depended on. This, with one part of well-rotted dung from an old melon-bed to every two of the loam, will grow almost everything well; but the orange-tree, or the camellia, or myrtle, will flourish in it better than in any other compost that can be tried. It is true, that when the fruit is swelling, the tree is the better for an occasional watering with liquid manure; but it must be more carefully administered than many are in the habit of doing it; and if overdone, there is more mischief in a short time than can be undone in a season or two; and the best way, when a soil has been overcharged with any particular manure, is to re-pot the plant as soon as it is discovered. There should never be less than two waterings with plain water to one of liquid manure; and even then the manure should not be too strong. We therefore recommend the soil to be as nearly as may be composed of rotted turves, two parts; rotted dung from a melon bed, one part; or, if the loam be poor instead of charged with vegetable matter, let there be half loam, one-fourth leaf or vegetable mould, and one-fourth dung. It may be that the loam is of too stiff a nature; if so, a little sand, no more than sufficient to open it, and make it divide easily, should be mixed with the loam before you measure it; but as the sole object of the sand is to prevent the loam from being too adhesive, let there be no more used than will accomplish that object. We prefer, however, above all things, the loam of rotted turves two-thirds, and dung one-third, well mixed together, and broken through a coarse sieve. So much for the soil.

THE CHOICE OF PLANTS.

The object in view must determine the choice of plants; if it be to grow and enjoy the fruit, some of the most beautiful of the tribe are not edible, or rather are fit only for marmalade, being very bitter. The Maltese or blood orange is as rich as a sweetmeat, the peeling being as fine as the juice; it

is also an abundant bearer. But there are several other varieties of the sweet orange that are worth cultivating in this country for the sake of their fruit. If, on the other hand, the trees are wanted for their appearance only, and the fruit are to be allowed to hang till they drop, the bitter kinds are far better. They tempt nobody to pluck them for eating, and many of them have curious, interesting, or very handsome foliage; gold and silver striped, myrtled leaved, willow leaved, plain and striped, tricolor striped, and many others, showy as plants, but valueless as to their fruit. We recommend the sorts that can be eaten, and have no particular fancy for botanical curiosities. A striped holly is much handsomer than a striped orange. It is a tribe of trees that we above all others like to cultivate, and we should confine ourselves to the really useful varieties. The lemon and lime would have a place with us, and perhaps the citron, but certainly none of the shaddock tribe, for they are but mawkish, flat things, and in perfection are not to be compared even to a bad orange. The plants, then, should be chosen at a nursery, well-established, but not too large,—in good health, but not rapily growing. Choose plants with healthy foliage, short joints, stocky and bushy habit, good spreading heads free from weakly spindly shoots, and the grafting place or budding place clean, healthy and neat. Turn out the balls, without damage, as soon as you get them home; and if the roots be at all grown to the sides, shift them.

CHOICE OF POTS, BOXES, OR TUBS.

Ordinary sized plants in pots, and doing well, are in our estimation better than those in boxes or small tubs; but when plants have been shifted time after time, until they are in peck pots, they may be removed to tubs or boxes, because they become unwieldy, and it is only in wooden vessels that we can conveniently make provision for lifting about with poles. Tub is better than boxes, because the roots spread all round alike, and there is the same quantity of soil on all sides; whereas in a square this is unequal—the roots are, next the flat sides, growing too hard before the corners can be filled up with them. There should be hooks of iron fastened to the sides, so that, by putting two poles under them, two men can remove very heavy trees without difficulty. The inside of whatever it may be, box or tub, should be pitched

all over well. Plants are aided by pitch rather than injured, and the roots naturally cling to it wherever it may be found. The bottoms of carnation sticks are frequently pitched, to prevent them from rotting; one of these could not be pulled up at the end of the season without dragging the plant out with it, for the roots will have matted round it; while one that was merely charred before use would leave the pot without disturbing a fibre. Tubs or boxes should have a number of small holes in the lowest part of the bottom, otherwise water would lodge, and this is always detrimental. The bottoms of tubs are often highest in the middle, where the holes are; but if the sides are lowest, a dozen gimlet-holes should be made round, otherwise the wet would lie, and rot the tub as well as the roots.

SHIFTING THE PLANTS.

If you find, on turning out the balls, that the roots are matted, and the ball hard, it will be necessary to soak it a while in water; and if the soil appears too clogged, it may be desirable to wash it out from the roots: in that case, you will be obliged to reduce the plant, otherwise it will receive a check, and flag perhaps; so that the washing of the roots must be avoided, if the soil looks at all congenial. If the plants are in boxes, such as they are imported in from France, Italy, and Belgium, remove them into pots, whether they require a shift or not; for we object altogether to the square boxes: they are very well in exporting—they pack close, and the confinement to the plants, for the time, is no object; but when growing, the plants should be clear of each other; the most distant branches should not touch; there should not only be room to grow, but the air and light should be admitted freely, which cannot be the case if they are at all close. One-half the plants of every description localised in England, are damaged by the disposition to crowd as many as possible into a small compass. In shifting them from the square boxes to round pots, the roots should not be disturbed when it can be avoided. Of course there is no objection to rubbing off any of the soil that can be removed without disturbing the fibres, both from the corners and the surface; but if the roots have grown into the corners of the box, the round pot must be large enough to take in the square without any violence. They must be gently watered, to settle the new soil to the

roots; and, as we have before observed, if the ball is hard and dry, the soaking is necessary; the hard dry ball would never be penetrated by ordinary watering, for it would run through the new soil, and leave the centre as dry as ever: for the purpose of preventing this afterwards, it may be necessary to run a sharp iron rod through the ball from the surface in several places. The plants should then be placed in the greenhouse, each having plenty of room, and the temperature ought never to be less than 40° . These will soon grow, and as their heads progress, the pots will fill with roots. Like all other fruiting plants, the potted plants can be brought into bearing much sooner than those planted out in the conservatory; and both flowers and fruit will be produced annually, until they arrive at a size fit to plant out. The shifting is best done in the spring, and they should be watered all over the leaves with a syringe, as well as the soil in the pot. It has been the practice with some to shift orange trees but once in two years; but while they are of a manageable size, once a-year is better. Keep them in the greenhouse all the year; the placing them out of doors in summer subjects them to continual checks, sometimes for want of water, the sun and wind drying them much faster than most people imagine. In shifting them the second year, as the pots are larger, they require more attention. The drainage must be secured by crocks, charcoal, or coal-ashes, or a mixture of them, all over the bottom, one-fourth of the height of the inside, until it is three inches thick, beyond which it is not necessary to go, however large the tub or pot. If the roots appear rotten and unhealthy, they must be pruned in a little, and in some cases the same sized pot will do instead of a larger; but if the roots are healthy, they need not be disturbed. In this way, giving fresh pots every spring, they will soon be too large for pots at all, and then we must obtain half-tubs. The same kind of drainage will do; they must still be as distant from each other, in proportion, as when younger; no two trees ought to be near enough to let the closest of their leaves touch; and when large, there ought to be six or eight inches clear between the heads, and a foot or more would be better. The changes from pots to tubs, and from small tubs to larger ones, should go on, by right, as long as you intend the tree to grow larger,—the compost the same, watering well attended to, and all the summer, or from March

to September, the syringing over the leaves should be persevered in once a-day. Many omit this while the flowers are in perfection ; but we recommend a finer rose, so that instead of ducking them, the moisture should fall almost as fine as dew.

PRUNING.

The flowers and fruit are produced on the young wood of the current season in a general way, although there will occasionally be a few bunches come on two-year-old wood. The pruning, therefore, should be done with two or three objects ; first, to keep the branches from being too numerous, and thereby making the foliage too thick, so as to exclude air and light to a great part of the head ; secondly, to check those branches which grow too vigorously for the rest of the tree ; thirdly, to remove old and bare wood, and make way for the young. In pruning to keep the head thin and open, the weakest branches should be removed altogether ; and this should be done in February or March, before the spring growth : no fruit-tree requires more care in this particular. All fruit is the better for light and air ; half our orchard-trees are literally spoiled for want of the knife and saw : the sun rarely penetrates the interior ; whatever fruit there may be in the middle, or towards the middle of a tree, is smaller and coarse-flavoured ; whereas if the heads were kept thinner of branches, they would be as fine as those outside. With the orange-tree this is the more requisite, because, being an ever-green, it is always alike. The tree has not even the benefit which a badly managed deciduous tree has at the fall of the leaf. All the little spindly wood that has come weakly should be taken close off. Some of the branches may be advantageously cut off, or shortened, due regard being had to the shape of the head. All the shoots below the head should be taken off while young ; and in a general way, a shortened branch sends out young wood and flower, unless it be shortened too much, when the growth of the young wood may be too vigorous to bloom, and so spoil the appearance. The pruning to keep the tree from growing to an ill shape, through some branches taking to rapid growth to the detriment of others, requires but little judgment ; but it is well that even these should be shortened no more than necessary. If it can be spared altogether, cut it close off to the stock. With

regard to the removal of old and barren wood, it must be done with care. A succession of young branches must be nursed before it is taken away altogether ; sometimes it is necessary to remove it only a portion of the way, as when healthy shoots are running out from it ; in which case it should only be cut back to the first healthy shoot. But there is another kind of pruning applicable to old trees, which it is difficult to shift ; for, as the nourishment is more limited, the tree must have less to do ; sharpish pruning is then necessary. Every season will bring with it a fresh necessity for the free use of the knife. We are told that in France they actually cut back the heads so much, about every seventh or eighth season, that the tree is three years recovering itself : we prefer continual care and watchfulness, that the tree may not be made unsightly ; and when the plant will no longer grow well, and cannot have an increased quantity of soil, there is no remedy but a violent one—violent pruning of both head and root, and a move into a smaller tub, to undergo its shifts again. This should be done in the spring, before it begins to grow ; but the operation may be protracted a long while by timely sharp pruning and the application of top dressing and liquid manure, when the tub is filled with roots, and begins to feel a lack of its ordinary nourishment. It is not the orange alone that is in danger of ill health when the pot or tub gets full of roots. The nourishment being very limited, must be increased by extreme vigilance in watering, by the occasional use of liquid manure, and by top dressing, which is in its operation very like it, because the ordinary water carries it down, and it may as well be deposited in the water at once.

ORANGES AS WALL-FRUIT.

Orange trees may be grown on a south wall, but should be glassed in winter, and covered against frost ; or they may be planted in a border against the wall of a grapery, where the rafters only are used for the vines ; or in a pinery. The branches then must be trained carefully, the branches spread out well, and the young wood on which fruit are set must be supported, because they will not be so robust as when on standards, and the fruit will be heavier. The training and pruning bears the same relation to standards as that of pear trees—the saving of bearing branches, the removal of old barren ones, the neat and uniform disposal of those that are to

remain, so that they be not in each other's way, and fastening the young wood with its fruit, so as to derive support without being in any way cramped. The borders should be well drained; the soil as directed for pots; the trees planted with the collar close to the surface. When planted against a south wall, the plants should be dwarf, and the nearer they are trained to the ground, the better. The glass should fit against sloping supports, and there should be partitions for each tree; the wall should be coped, to prevent the wet running down the surface; about two, or if narrow, three lights to a tree. The partitions being to prevent the draught or current of air that would run from end to end, perhaps every third support might be a partition. If this wall be used at the back as a depository for hot stable-dung during the winter months, it would be found sufficient for all purposes, whether the trees be used for their flowers only, or for flowers and fruit. It is quite certain that the bloom is now an article of commerce, and at particular seasons brings much more than the value of an orange; so that where the cost is nothing but the glass and the use of the dung, such a contrivance would pay well even in a commercial view. It is the custom in France to thin the flowers, and leave on only a moderate quantity to bring fruit; but there the flowers are used as preserves or for distillation: here they are only valued as cut flowers for bouquets; and although we have seen them made French fashion, with wires through the single pips of bloom, the bouquets thus formed are little better than bunches of artificial flowers. It is a contemptible fashion, and such as the higher classes will discard, changing the fashion to half-a-dozen sprigs, or, may be a single sprig, instead of a mass patched up for an hour and hung on wires, like so many children's play-things. Here, therefore, it would be the bunches of bloom to thin, instead of the individual flowers in a bunch; and this might be done sometimes to advantage, for the bunches are occasionally very numerous. Air may be given in mild weather, but not when the temperature out of doors is below 40°, and never in windy weather. Not more than one fruit should be allowed to swell on a bunch; they should be thinned, when they are about the size of a green gooseberry, to two; and directly it is seen which of them takes the lead, or promises to be the most handsome, the worst should be taken away. These trees will rarely require water; the roots

will seek for themselves the moisture required, but the syringing once a-day will be beneficial; and they may be shaded during the mid-day sun, in the early months, by transparent cloth. In June, there will be no artificial heat required, so the dung may be removed; and it must be remembered that, in the hard winter, the glasses must be thickly matted, notwithstanding the heat imparted by the dung. Of course other contrivances may be used for warming walls; and it is scarcely worth while entering the field as the champion of any one sort of heating, now there are so many answering the same purpose. We have had oranges on a south wall without any artificial heat, but they required great attention in covering up, whenever there was an inclination to cold, and always double-matting at night, in the winter months. The trees grow vigorously when their roots are in the open ground, and the border has been made for them. About two feet deep of the proper soil is required, and below that there should be a bottom of brick rubbish, a foot thick.

AS STANDARDS IN A CONSERVATORY.

There is scarcely a subject in the British gardens so well adapted for a conservatory as orange trees; and when they have been grown to the full size we have described, in the largest tubs, they should, if practicable, be turned out, but not unless there be ample room for the development of their natural unrestrained branches: and, be it remembered, they form noble objects, worthy of a house to themselves; for they are when at maturity, or approaching it, always beautiful—they will exhibit fruit ripe and unripe, and bloom at the same time, and, if the place be suited to them, be continually yielding fruit in perfection: when we consider the general appearance of one of these trees in perfection, we think almost everything might give place. An orange-tree in the centre of a conservatory, is an ornament worthy of the very best associates, and forms a beautiful object among the noble flowers of the *Camellia japonica*, the *Hoveas*, *Azaleas*, *Rhododendrons*, and other gay subjects. The only care required is the occasional cutting of an ill-growing branch, the removal of barren wood, and the cutting out of any light thin spindly shoots, that now and then will come in the heart of the tree.

RAISING FROM SEED, AND INARCHING.

The objects to be attained in raising this tribe from seed are, first, to procure new varieties; secondly, to provide stocks for grafting, budding, and inarching the known varieties upon. Choose the ripest fruits, and the best sorts; make up a hot-bed, as if for cucumbers or melons, in the spring of the year, and sow the seeds in compost such as we have recommended for plants, in a wide-mouthed pot, the seeds an inch or so apart. When they have come up, and expanded their second pair of leaves, pot them singly, in pots size forty-eight of any of the potteries, and replace them in the hot-bed; give an occasional watering, and proper air by tilting the glass a little behind. If the bed declines in heat, take away the outside linings, and renew them with hot stable-dung. As soon as the pots fill with roots, shift into others, size thirty-two; and during all the time, the plants must be shaded from the mid-day sun, but they must not be darkened. As the plants get nearer the glass, and require room, the bed will have again declined enough to allow of the pots being sunk; and in July, the glasses themselves may be raised a little. If the pots again fill with roots, which they may by August, remove them into the greenhouse, giving them plenty of room on the shelves, and treat them as established plants. If they are for stocks, you will continue to grow them until they are the size you wish them to be for use. If for new varieties, the sooner they are inarched on other strong stocks, the sooner they will bloom and bear: for this purpose, they must be taken to the stocks that they are to be tried on, and their pots so adjusted by props or otherwise, that they may be level with the portion of stock to which they are to be united. A clean cut on the side of the stock, just through the bark, must be made on the side next the plant; and the portion to be united must be cut nearly half through, perfectly flat, so as to fit against the stock, where it must be tied, so that the bark of the stock on one side the cut and the bark of the branch may come in contact. No matter how much of the cut on the stock shows, so that the bark of the plant engrafted is in contact with the bark on one side of the cut, which in a large stock is always wider than the cut of the branch, and unless it be a large stock, it might as well be on its own plant. When this has been tied a few weeks, it will have united, and that part of

the stock which is above the union may be cut down, and the plant below the union may be severed. The engrafted portion now becomes the plant, and the increased vigour of a well-established stock will bring the flower and fruit two or three years sooner than if its own original root had to maintain it. But it will naturally occur to the grower, that to try many seedlings would be involving great expense, occupy great room, and be very troublesome. On this account, it is the practice only to select such seedlings as indicate novelty; probably in hundreds of seedlings, not half-a-dozen would be thought worth the trouble. The habit of the young plant may be different to ordinary stocks; the foliage, or some other peculiarity, or its likeness to some approved sort, may determine the raiser to try, but otherwise they are all allowed to grow, to be used as stocks for others. Those, therefore, in the habit of raising seedlings, have soon a number of stocks for the second year, to work approved varieties on, and in three or four years, with good attention, large enough to try seedlings upon.

PROPAGATING BY GRAFTING.

Grafting by inarching we have already described in the raising of new varieties from seed; it is also applicable to propagating approved sorts, and enables us to use a much larger branch, or a branch with fruit on it. Other modes of grafting are done with detached scions, and may be varied much. Grafting is simply uniting, in a join perfectly fitting every way, a piece of one tree on a portion of another tree. The stocks, which are two seasons old before they are well adapted for the operation, are raised from seed or cuttings; the former are the better. The scions are best when they are the same size as the stock; this should, for dwarf plants, be cut down within two or three inches of the surface, a sloping cut should be made, and the scion should be also cut in a slope to fit; these require only to be bound together with bast matting, or coarse worsted, and covered with grafting wax, or grafting clay; the former made with beeswax and resin, equal parts, and sufficient tallow to make it melt at a temperature that will allow of its application in a melted state without scalding the wood, and to harden in the ordinary atmosphere, even in summer; the other is made with well-beaten clay, mixed with neat's dung (fresh), which, when well

kneaded together, makes a pliable composition coat, which will not crack when dry. This covering is to keep off the external air. The operation is performed in the spring, before they begin growing; and it is very soon discovered whether the grafts have taken or not. Two-year-old wood is the best to use for scions, and the place of contact with the stock may be any age. Standards plants are usually grafted at the height the stems are to be, after the manner of the rose. It is a common practice abroad to put on two grafts, one on each side a strong stock: our opinion, grounded on experience, is against more than one; their plan leaves a flat top, on which the wet lodges, and often rots the centre, whereas by sloping the stock, and only inserting one graft, you have a much more sightly union, and the stock continues as sound as possible. The stocks for standards must not only be a given age, say five years or more, but the lateral branches must have been removed all up the stem the whole time, and only the top few branches be allowed to grow every year; therefore there would be the under branches taken away, and all undergrowth completely stopped. The graft having taken, the management of the head is very simple: the first year, cut down to two eyes, or three at the most; the second, shorten all the branches to two eyes; the third, remove those which are useless, or in the way of the others, and only shorten where there is not sufficient wood to fill out. The pruning then may go on as before directed for established plants, for such they are. Among the various modes of grafting for dwarf plants or standards, we like the saddle graft or the cleft graft; in short, so that a piece of two-year-old wood, with one or more buds on it, be cut so as to fit a stock of two years or more of age, it will unite and make a plant; and the plan to be adopted may be varied to suit the several kinds of scions or buds that can be most easily procured.

RAISING BY CUTTINGS.

There are various modes adopted. Wood of two years old requires a cold frame, and the result is not certain. Wood of one year old, that has done growing, requires bottom heat. The former is adopted after sharp pruning in the spring, to give all the wood a chance of striking; the latter is adopted as a matter of business. Plant in the same soil they are grown in, cover with a bell-glass, water and plunge them in

tan or a hot-bed not too powerful. Wipe the glasses every morning, shade from the burning sun, and when struck, pot into forty-eights, thirty-twos, and twenty-fours successively, as the plants advance and fill their previous ones with roots. No difference is required between the treatment of seedling plants and struck cuttings. While young, they must be shaded; in all other respects they should be the same. The cuttings of more matured wood that have been put into a cold frame will in three or four months have struck or died or callused. If the latter, they may be put in separate small pots, be submitted to bottom heat, with a bell-glass over them, and they will soon push roots, when they may be treated like established plants, and be changed as soon as the pots are filled with roots.

GENERAL REMARKS.

The Orange-tree has been set down among the neglected plants, and many in this country which still exist have, perhaps, never had a change of soil for many years. Constant top-dressing, perhaps, keeps them alive, though not in health, and they drag on a miserable existence, yielding neither flowers nor fruit, except almost by accident, and becoming unsightly and valueless. It would be invidious to mention names, but we have recently paid visits to an establishment in which the gardener takes no heed of the orange, lemon, citron, and lime trees, and literally does nothing but remove them into the orangery (as a dark, miserable room, with a brick wall for the back, and plastered ceiling for the top, and half-a-dozen arched windows to the ground, is called) in the fall of the year, and putting them out on the lawn in summer, lets them take their chance; the consequence is, they live and that is all. On remonstrating with him upon their condition, all he could say was, they were too old to be trifled with, and "he was afraid to tackle them." It was clear that he did not understand them. He had read what this man said and the other had said, and found them contradicting each other on the very soil they grew them in, and therefore there was no chance of knowing what to do; they had not been shifted since he had been there, and that was five years, and he did not see any difference in them from what they were when he came. But this is not an isolated instance; it is the case with many establishments, and likely to continue so, unless

the employers rouse their gardeners to a sense of the fact, that the whims of the new school do not compensate for the neglect of duties that were performed by the old. The decayed state of the Physic Gardens at Chelsea, and the Royal Gardens at Kew, until we routed the authorities up a little, was only a sample of hundreds of private establishments, in which the proper duties of the gardener were neglected for some whimsical tomfoolery, that did no good to the employer or the employed. Nothing will sooner make a good show, in some establishments we could mention, than a complete reformation in the condition of the orange tribe. We say by them, as we said by Kew Gardens and Chelsea,—have them in proper condition, or do away with them.

MONTHLY TREATMENT.

JANUARY.—All the orange and lemon tribe should now be in the house; and if the temperature out of doors be forty, or upwards, they may have all the air that can be given; but if below that, they should be closed, and the house kept up to forty degrees (which is the minimum heat to be kept up), either by matting the house, or, if necessary, by the aid of a little fire in the flue. They should not be kept wet during the winter season; for, whether mild or otherwise, they will not be doing much in the way of growth. A strange notion, entertained by some of the old writers, cannot be too soon got rid of; though there are too many books always being made up from old writings by people who never, perhaps, grew the plants they pretend to write about, to get rid of such foolish instruction altogether; and so, because somebody once wrote a foolish thing, we are constantly served up with it, generation after generation, without the exercise of common sense. The notion we speak of is that of having dark orangeries, as if the tree flourished better in an unnatural state. The orange-tree requires as much light as any subject in cultivation; yet we were told, up to a late period, that the north wall of an orange-house may be opaque; and, practically, this tribe have been treated as if the light were an objection—many of the old orangeries have not even a glass roof. All this is a mistake. An orange-tree will flourish nowhere so well as in the conservatory, which is glass to the ground, and all over alike light; the principal object, during the winter months, is to keep the temperature at or above forty degrees.

FEBRUARY.—Before the plants begin their summer growth, do what pruning is required. Shorten any branches that have grown out of form, and remove altogether such shoots as are in each other's way; then cut the heads, so that light and air and sun can find their way through the branches: nothing conduces more to the health and vigour of the tree than these judicious prunings. If any require shifting, now is the time to perform that operation; and in doing this, remove such fibres as are matted close together, or rotted, or dried up; and if the same tub or pot is to be used, some of the earth must be shook out of the roots, and the roots themselves be trimmed: but in this case the head must be considerably reduced also, as the roots, after pruning, would not keep up the nourishment required by the head, if left the original size; therefore shorten the principal branches, cut out any that can be spared, and so lessen the quantity as to compensate for the weakening of the root, which will soon grow again, and re-establish the head. Where the ball is to be put into a larger tub, do not disturb it any more than you are obliged; merely remove any dead fibres, and take care to poke the compost down between the ball and the side of the tub, box, or pot, without hurting the fibres that are next the side. This may be done towards the end of the month, as well as all the pruning; but if the weather be very cold and unfavourable, the only thing that need be done is to take care of the temperature, make hot-beds, and sow seeds.

MARCH.—Operations the same as last month, except that, whereas they *may* be performed in February, they *must* be performed in March, or rather, must not be delayed beyond it. The cuttings from the trees that are pruned should be used either for striking or grafting. Use good stocks, not less than two years old; but the more advanced the stocks are, the more vigorously will the graft proceed. Any seedlings that, from the peculiarity of their foliage or habit, indicate superiority or novelty, may be grafted on healthy stocks of three or four years old, because the object is to try and get bloom and fruit before they would come naturally on their own bottoms. Grafted stocks should be placed in gentle heat, and the orangery generally must not be allowed to recede below 40°. The surface of the soil in all the pots and tubs should be stirred as well as it can be without disturbing the fibres, and the loose soil may be removed and fresh compost

put on. Seedlings that have come up may be potted off, one in a pot ; and, after being watered, to settle the earth about their roots, be replaced in the hot-bed, which, if declined in temperature to any extent, must be lined with fresh stable-dung, after the removal of the present spent lining, and the heat be kept up for some weeks. Put in cuttings to strike under a bell-glass. Syringe all over the foliage every morning, but be careful to keep up the temperature.

APRIL.—The grafting by inarching may be performed this month. It is only when you desire to make a forward plant that this is worth while. In this case, you select a vigorous branch of the plant from which you are going to propagate, and a healthy stock of proportionate strength, certainly not less than two years old ; bring the stock and the plant into such proximity that they can be easily tied together, and then shave off the bark and a little of the wood, so as to make a flat place in the stock and a corresponding flat place on the branch to be inarched. Let these be fitted exactly, tied securely, but not too tight, and let them grow. There need not be any tongue made, as is usual with many hard-wooded plants. The two flat surfaces will soon unite ; after which the branch is cut from the plant it originally belonged to, and the top growth of the stock should be also cut off. You have then a strong plant, that will grow rapidly, and soon make a good tree or bush, as the case may be. If anything was omitted last month as to pruning and grafting, the error must be repaired, as well as you can repair it, by doing it now. The seedlings must be looked to ; any in the seed pans or seed pots must be potted off, and those potted off and growing must be tended. If the pots are filled with roots, give them larger pots ; for seedlings ought not to be checked. If the plants are getting too tall for the glass, sink the pots into the soil, or, as the heat has by this time declined, you may sink them down to the rim, if necessary, in the dung itself. When they grow still taller, the frame must be propped up all round with bricks, turves, or some other contrivance, to make room by raising the glasses. Cuttings may still be struck of such wood as may not be actually growing when selected.

MAY.—In a collection of orange, lemon, citron, and lime trees, kept always in a moderate temperature, there will mostly be found some blooms ; but this month there should

be a general blossom on all of them, if they are properly attended to. Where there are evidently many more bunches of flowers than ought to be left to bring fruit, those which are the worst placed should be taken away in preference to those near the outer surface ; but unless the flowers are wanted, such as they do no harm on the trees. It is all very well to protest against a tree bearing too much fruit, but the time to prevent this is when the fruit sets ; for they do not generally set more than the trees will perfect, and the flowers are interesting on the trees. Nevertheless, a bunch of orange-blossom is so acceptable in a bouquet, that, whether it be to carry out or to decorate a vase in the drawing-room, it is quite a star. All we object to is, picking individual blooms, under the impression that the tree is the better for it ; however, that is not the case, and you are just as likely to pick a bloom that would set, and leave those who would not, as you are to do the reverse. Not that we object to nipping out small weakly flowers from a bunch, if there is no other employment for a person ; and, perhaps, if there be but two or three plants to look after, it may be done with advantage to their appearance, because those that are left would be more of a size ; but we cannot look upon it as a necessary operation for the benefit of the tree. The trees now require more liberal watering, greater care as to temperature, which should be advanced a little, and well secured by closing, lighting fires, and hanging mats, because the trees are more tender while growing rapidly, which they are this month. In fine bright warm weather, give plenty of air ; and however much you may be recommended to turn orange trees out of doors, be not in any haste to do it. They may be required for ornament on the lawn, or by the house, and therefore are removed ; but let no one move them out of doors for their health, because they are always the better for being kept within their house, protected from high winds, syringed daily over all their foliage, closed, when necessary, against the external atmosphere, with the advantage of receiving all the air when the weather is favourable enough. Orange trees are great and noble ornaments out of doors ; but for fruiting, flowering, growing healthy, and keeping in good condition, they have no business in the open air, exposed to wind and rain ; for although a gentle breeze and mild shower would be beneficial, heavy rain and high wind are downright injurious, and when once

removed to the garden, they cannot have one without the other. The advantage under glass is, that they can be protected from what is injurious, and get all that is beneficial; for the syringe is a good substitute for a mild shower, and there can always be air enough admitted when the weather is mild. During this flowering month, the syringing must be applied with the finest rose, so that it falls on the plants as fine nearly as the dew itself. Shift seedlings that have filled their pots with roots to those of a size larger.

JUNE.—Watering is of great importance to the trees this month, and the temperature in the night should not be less than fifty or fifty-five degrees; and whenever it is up to seventy-five by sun heat, pains should be taken to keep it at that, as near as may, by shading with a transparent cloth, giving a free air all through the house, syringing the ground, and other cooling means. When the fruits have set, they may, perhaps, be four or five times as numerous as they should be; in this case, thin them, while very small, to about double the quantity that should remain; and as these swell and show which are the best to leave, they may be reduced to the proper quantity. This is far better than thinning the blooms before the fruit sets. Look over the grafted stocks and the plants that were inarched, and examine whether the former have grown, and the latter have united. The grafted stocks should have all the growth of the stock removed, so as to throw the strength into the graft; and the inarched plants, if united, should have the grafted branch cut from the plant it belongs to, and the top and all the other growth of the stock cut away, that nothing but the inarched branch should grow. If any of the trees have strong growing shoots advancing more vigorously than the rest, cut them clean out, if they can be spared, or materially shorten them if they are where stuff is wanted; for if a branch which thus takes a lead be left unchecked, it will actually grow almost to the extinction of the other portions of the tree. With regard to watering, if any of the tubs or pots are found to retain the water too long on the surface, as if the drainage was not free, or it runs down the side and not through the ball, a small pointed but smooth iron rod should be thrust down in two or three places in the middle ball of earth, in the latter case; but the draining must be examined in the former case, and remedied at once, for no tree can by possibility be healthy

long together with an imperfectly drained soil to grow in, and all the mischief may be done before the tree shows it. Look well, therefore, that none of the tubs are imperfectly drained, and satisfy yourself that the water you give a plant moistens the whole ball.

JULY.—The gradual swelling of the fruit renders it very necessary to be liberal with the watering; not two days should pass in very hot weather without both watering and syringing the leaves. Air, and plenty of it, should be given all day. Syringing is best now in the evenings. The seedlings may be removed to cold frames, or even to the open air, if the place be sheltered; but the cold frame is the best, because they are more easily and securely protected against heavy falls of rain and high winds, which do no good, and may do harm. If there be any fruit too close together, or rather too many on any of the trees, the superfluous ones should be removed. There will be at all times a disposition in some of the trees to grow and bloom, even while the fruit is on them. If we were very particular, we should remove the flower-buds as soon as they came; but we are far from disliking these little sports of nature, and this tribe is so pretty in all its stages, that, except thinning the fruit to prevent injuring the tree, and cutting away too vigorous a branch to prevent it from robbing the rest, we should let bloom come, and not disturb a bud.

AUGUST.—Orange trees may be propagated by budding, in the same manner as roses, plum-trees, cherry-trees, and the like. This is the season for it, and it is particularly applicable when there is a great stock wanted, and but little to work from. The same piece that would be used as a graft, would make many buds; and when the buds are inserted and have united, there is a plant which, with new sorts, is saleable, although they are generally allowed to have a season's growth. Watering must be well attended to this month, and the house so closed at night as to prevent the temperature going down too low. Checks would be injurious to the fruit, prevent its swelling, and spoil its flavour; besides, heat will not hurt them now. The seedlings in the frames may, if intended for standard stocks, have some of their lower branches cut off close to the stem; if for trial of new sorts, they should not be touched with a knife until two years old, and then be pruned so as to loose as little wood as possible, as every inch is

valuable with a new sort of fruit ; each bud that is produced being available for the propagation of the variety.

SEPTEMBER.—If you have been obliged to put any out of doors, return them to the house without loss of time ; but the fruit will have been checked, and the tree all the worse for its exposure. Some of the nights even of our summers are too cold for an orange-tree and its fruit. Water must not be so liberally bestowed now as before. The house must be prepared for the resumption of fires, not only for the sake of keeping up the temperature, but to dry it. The floors should be kept dry, and free from dead leaves ; and the plants should be examined and cleaned, any bad shoots and broken parts cut out, any weak-growing branch cut away, and the whole placed in their proper winter positions, giving plenty of room between the plants, and so disposing them all that you can get at them easily. Seedlings must be put into their winter quarters ; they will live in a cold frame, but they would do better in a greenhouse or pit, that you could heat without difficulty when required ; for even these should not be under forty degrees of heat at any period. The stocks budded last month must be examined, to see that they do not want for water, and are not too cold.

OCTOBER.—The treatment now resolves itself simply into the giving air in mild weather, keeping up the temperature in the night and in cold weather, keeping the plants clean, and giving them, at proper times, the water they require ; but this last is not wanted often. Keep the house from getting damp, for that is injurious to all plants.

NOVEMBER.—The budded plants may be untied, to examine whether they have taken ; and if they have, they need not be tied again, but be regularly released. The grafted plants and seedlings must be placed in the orangery or greenhouse, which, for their sakes, ought to be kept up to the proper heat.

DECEMBER.—The winter months require but little difference in the treatment, except as far as it regards the presence of bad or good, mild or hard weather. The general rule never to let the temperature be under forty degrees, suggests that fires, coverings, and other ordinary means must be used to prevent the inconvenience arising from frost and cold ; for, as we have before observed, an orange-tree will bear a good deal of ill usage before it is killed, but very little carelessness may do it much injury, and nothing more than sudden change

from heat to cold ; nor ought any water to be given in the winter while the soil is at all moist ; but this must be made apparent to ordinary observers. A covering round the glass will always go a good way towards keeping up the temperature ; but it may be taken for granted that there must very often be fires to keep up the degree of forty, even in the mild periods of winter.

THE MELON.

PROBABLY there has been more written about the culture of the Melon than upon any other single subject, and yet we find hardly two persons recommending the same plan, or following the same practice. Nor is there much difficulty in producing fruit in great plenty, of good flavour, and handsome appearance. Formerly the melon used to be an article of great consumption. It was not uncommon to see a market gardener with his three or four hundred lights of melons, producing week after week large quantities, and getting rid of them at good prices. Now it is rare to see any quantity grown, and the foreign melons, though unfit to eat, seem to usurp at the market the places of their betters, at a price that would scarcely pay an English grower for cutting them and bringing them into London, even if they cost nothing to grow. The market gardeners' mode of growing the melon is simple enough. The hotbed is made in the ordinary way ; the plants are put out on a little hillock under the centre of each light, common loam is added until it is ten or twelve inches thick all over the beds, a little air and occasional water until the plants are fairly set off growing, and there ends their culture. As soon as there is fruit likely to swell, they put a bit of tile under to prevent the earth from discolouring it, which it always will on the under side if it lie on the bare earth. We have ourselves seen three hundred lights of melons treated in this rough way, and producing, upon an average, three fruit to each plant, coming in good season with very little trouble or attention, but merely giving air in the

heat of the day, and closing and covering up with mats at night. There would be no immediate occasion to go to work so simply as this with a choice variety of melon ; but it would be quite as unadvisable to set about it with any vast preparation ; and as to the soil in which it is to grow, nothing that has yet been recommended beats a rich strong loam, fully charged with decayed vegetable matter. The turves cut to lay down for lawns, if laid together and rotted, form the very best compost than can be used, taking growth and flavour into consideration. It is, however, requisite that such compost should be freed from grub, wire-worm, and all other vermin, which turves are too frequently full of about the time the sward has rotted, as in almost all cases wire-worms and grubs are in among the roots themselves, and are removed with the turfs. Decayed turves are in almost all cases sandy enough, strong enough, and rich enough, and require very rarely anything else. If, however, contrary to ordinary cases, the stuff may appear too adhesive, the best addition that can be made is road scrapings ; but we have rarely seen rotted turves that were not every way adapted for the earthing of a melon-bed. We are not going here to speak of new modes of heating, confident that nothing we have seen at shows or tasted at feasts have beaten the productions of an ordinary dung bed. We shall speak of those only, in the first instance. Whatever substitutes may be found in hot-water pipes, tanks for bottom heat, open gutters for moisture, and what not, may be treated of in their several places. In the meantime, we set out with the most choice variety of melon, and nothing but well-prepared dung and a three-light box, with the loam formed of rotted turves for our compost. It may, however, be well to observe, that these rotted turves may be considered half good loam and half vegetable mould ; for the turf, as it is growing, forms more than half the bulk, and is, by the time that it is wanted, pure vegetable mould.

This fruit can only be raised well on a hot-bed, as it wants the combined heat of the dung and the genial influence of the sun to produce it with an excellent flavour ; and it is not worth forcing by those who have but small means, as it has many chances against it. A melon is worse than a turnip, if it has not a good flavour.

PREPARATION OF THE BED.

Keeping these facts in view, it is not recommended to begin the formation of the hot-bed before the beginning of April for sowing the seeds, nor before the beginning of May for putting out the plants. Early in April, therefore, commence to make up a bed for a one-light box. Collect a good quantity of stable dung, and lay it up in a heap to ferment for some days, and then turn it down, shaking it well with a fork so as to mix it thoroughly, leaving it again in a heap for a few days longer. If it is fresh and the heat very strong, it will require another turning, after which it may be formed into the bed according to the size of the box. Having chosen the locality where you wish the bed to stand, lay down the box or frame on the ground, and drive a stout stake into the ground about a foot from each of the corners. These stakes will serve as guides in forming the bed. Remove the frame, and proceed to lay down the dung regularly over the space within the stakes. It is not an uncommon practice to dig out the soil to six or eight inches, so as to raise the bed in a square area or hole, as this helps to conserve the heat of the dung at the bottom of the bed. Whether this practice is followed or not, the dung should be laid on as even and as lightly as possible; no treading or heavy beating is allowable, but it may be gently patted down with the fork. As it will gradually sink down after being raised, the height of the bed may be about three feet above the surface of the ground. When the bed is properly completed, put on the frame with the light, leaving the latter open an inch or two at the back, in order to allow the steam of the dung to escape. Should the dung be rather dry, a little water must be thrown over it while the bed is being formed. Thrust one or two stout sticks into the heart of the bed, at the sides, and by drawing them out occasionally you may ascertain if the heat is too little or too much; in the latter case, it will be advisable to remove the frame and spread down the dung more or less according to the intensity of the heat, as failures in growing melons are frequently caused by the dung being put together before it has sufficiently fermented. In a few days, however, when you find the temperature of the bed rather moderate—about eighty degrees—you may lay in a small quantity of good rich soil. This bed will

serve to raise the plants from seed. They are to be subsequently removed to another bed of larger size for fruiting.

SOWING THE SEED.

The seeds should be placed in pots about six inches wide, three seeds in each pot; the pots should be filled with a mixture of good loam and well decomposed leaf soil, and plunged in the bed about half way up their sides. As soon as the seeds have sprung up, and you can see which are the best plants, leave the best two and take out the third. Some recommend only one plant to be left in the centre of each light; others have two, and some even say three. The plants thus withdrawn may, if wanted, be planted two in a pot of the same size, and watered to prevent them from flagging. When they have made two pairs of rough leaves, pinch out the centre bud.

THE FRUITING BED.

About the end of April, or the beginning of May, they will be ready for the fruiting bed, which should be previously prepared in the same way as directed for the former, and raised about four to five feet high, and a foot wider than the frame every way. Place the frame on, and the glasses should be kept close for a day or two. As the heat and steam increase, tilt up the back of the light a little to suffer the vapour to escape; and thrust a stick into the dung, so as to reach the centre of the bed, and by withdrawing it now and then you may ascertain the temperature in the middle of the dung, and if too hot, it must of course be taken down, and well shaken up and further prepared. The bed must in that case be reconstructed. On the top put three or four inches of old half-rotten dung. Supposing that the temperature of the bed is not found to be too high—from seventy to eighty degrees on the average is suitable—about three or four days after the frame has been put on, put two inches of good loam all over the dung under the frame, placing a heap of about a peck in the middle. Make a hollow in the centre of the heap the day after, and then you may begin to place out the plants which were raised in the first frame. Turning out the ball of earth containing the plants, sink it in the soil in the centre, so that the plants may be about a foot from the glass, laying the loam carefully round the ball, and water the whole with tepid

water, to settle the soil around the plants and refresh them after being removed. If there be more than one light to the frame, a similar heap is to be formed under each light, to be filled in the same way with plants. In a few days, if they progress favourably, the roots of the plants will be seen coming through the sides of the heap, and it will then be necessary to put more soil about it. Subsequent additions must be made from time to time, as occasion requires, until the soil becomes level all over the bed, and from eight to ten inches thick. If the frame be shallow, the loam may be laid all over the dung, so that the frame may stand on the mould. As the plants advance, their shoots must be trained or spread out so as to cover the soil regularly and equally. When they have made considerable growth, if the branches exhibit no signs of fruit, they may be pinched shorter. As the fruit comes, there ought not to be too many allowed to swell at the same time on a plant. Three are as many as ought to be retained swelling on one vine at a time. If you do not wish to have large fruit so much as a good quantity, you may suffer a greater number of fruit to remain without thinning them; but they attain a greater size, and have a finer flavour, when the number is rather limited.

WATERING.

In respect to watering, if you are always on the spot, it would be better to do it only when the plants begin to flag; but it is dangerous to trust to this indication of drought if you are not always near the plants and on the watch. Melons do not, at any rate require much water, and they ought not to be supplied with it until they actually want it, which may be ascertained by the foliage becoming somewhat inclined to flag or droop. The proper plan is to give them a soaking, using the water tepid, when the fruit begin to swell freely, and then they seldom require more than an occasional sprinkling.

SHADING.

In respect to shading, it will be proper to cover the light during strong sun, while the plants are young and the fruit swelling. Two or three hours in the middle of warm days will be sufficient. When the fruit begin to swell, when they are approaching ripeness, cease to shade or water.

TEMPERATURE.

The temperature of the bed must not be under sixty-five degrees until the fruit shows, nor under seventy-five degrees when the fruit is swelling ; and this heat must be kept up by linings of hot dung. A gentle syringing of the foliage, in the early part of fine days, will be of considerable benefit ; and in very warm evenings it is advantageous to remove the lights altogether, so that the plants may be exposed to the dew ; but, of course, such nights are not very frequent. Should the weather happen to be cold during the night, a partial covering should be laid over the frame, which will tend to conserve the heat of the bed. This is not always necessary, and need not be resorted to except in actual cases of changeable or cold weather. Besides, if air is admitted to the plants during the warm part of the day, they will become sufficiently vigorous to withstand any sudden change, so far as they can be affected in the frame.

LINING THE BEDS.

If the heat of the bed begins to decline too soon, it will be necessary to bank up the sides with hot dung, obtained direct from the stable, and not turned over to ferment. In sustaining the temperature in this way, remove the old dung from the sides, close up to the frame, and even digging out a portion from below, according to the increase of heat wanted. Then lay up the fresh dung firmly against the bed, in the place of what has been removed, raising near the top of the frame all round. But it is safer to renew one side only at a time, as there is danger in increasing the temperature too suddenly, or to a great extent, after the fruit have made some progress. It is of no little consequence to cut the fruit at the right time ; for if too long on the vine or branch, they lose flavour ; and if cut too soon, they will not have arrived at their best condition. Experience alone will enable a cultivator to hit the proper period for cutting. It is, however, better to cut a little too soon than a little too late, as some melons begin to crack when ripe, others change colour ; but there is no rule that applies to all, more than the perfume they emit.

When the fruit begins to ripen, the plants should have no more water; and if a vine has given three good fruit, we need not complain.

RIDGING THE PLANTS OUT.

Melons may be ridged out somewhat like cucumbers, in the open ground; that is, with a very trifling amount of heat to start them, and then no more than is secured to them by their being covered with a frame: in this way, in a hot summer, they may be frequently had very fine. This practice is, however, seldom followed in modern gardening, where the convenience of a hot-bed and frame is available; but in the height of summer this delicious fruit is certainly within reach of every one who can command a few loads of dung and a common garden-frame. If they are to be grown out of doors, the plants must be got forward under glass, and be put out any time in June. They should be allotted a warm border, protected by a north wall, and having an open aspect; and if they can be planted on a surface sloping towards the south, so much the better. The more dung you put into the ridges which should be formed for them, the better they will thrive; but though they require artificial heat, they may be grown, in fine summers, without any other subsequent aid than the warmth of the sun. When the plants are sufficiently advanced in the hot-bed to be transferred to the open ground, prepare the soil where they are to grow. Form the earth into ridges or little mounds, in lines from north to south, or rather from north to south-west, and make a hollow, at distances of three or four feet, to receive the ball with the plants. Take out two or three of the pots at a time from the hot-bed; and having removed them to the border, turn out the balls carefully, so as not to break them or injure the roots. Place each ball entire in one of the hollows made in the soil, and cover it completely all round to the stems of the plants; then saturate the soil thoroughly about with tepid water, which will promote their growth and refresh them after being removed from their warm bed. They must be covered with hand-glasses until they are fully established. These glasses should, during hot sun, be covered over with garden mats for an hour or two in the middle of the day. The glasses should be removed altogether during warm showers.

As the plants progress, their shoots should be distributed

regularly all over the ground, so far as they extend ; and if too numerous, the weakest may be cut away. If any of them are growing too luxuriantly or straggling, they may be shortened ; they will then throw out lateral shoots, and begin to set for fruit. The plants will now require little further attention than occasionally stopping, and watering in hot dry weather.

MALADIES OF THE MELON.

The maladies which affect the melon are chiefly that caused by the ravages of the red spider, and what is known by the name of mildew. When the leaves are attacked by the red spider, they become covered with brown or rusty spots, which are produced by the fleshy substance of the leaves being eaten away by this troublesome insect. But we may observe that nothing helps to generate the red spider in a close structure so much as a dry hot atmosphere ; and the best preventive, as well as the surest remedy, is to keep the foliage moist by means of syringing, when the bed loses that humidity which it is desirable to maintain. When you have occasion to syringe the foliage for this reason, be careful to apply the water on the under side. It may be observed, however, that when the atmosphere becomes so dry as to generate the red spider to a great extent, it is an indication that the bed wants water, or that the dung has become too far spent, in which case the temperature should be raised by applying fresh dung to the sides. The practice of sponging or rubbing the leaves is always injurious ; and as the red spider may be surely kept down by syringing the under side of the foliage this method of keeping the plants perfectly clean presents no difficulty. The best time to syringe is in the morning, and when the weather is mild and warm, early in the afternoon, when the frames may be shut up close for the sake of retaining the sun-heat.

Mildew generally arises from a cold damp atmosphere ; and to counteract its effects, plenty of air should be admitted to the plants, and the heat increased by adding fresh hot dung to the sides of the bed. When the surface of the soil in the bed becomes soddened, it should be stirred carefully by means of a pointed stick, or a portion of the top may be removed entirely, and replaced by fresh good soil, spread out evenly by the hand, so as not to injure the shoots of the plants.

GROWING IN TAN.

In cases where dung is scarce and tan plentiful, the latter *may* be used to supply the necessary heat. Endeavour to obtain the tan as fresh and rough as possible. If it can be had direct from the pit of the tan-yard, so much the better. Lay it up in a heap, in a shed or other sheltered place, for a few days, to ferment; it should lay from six to ten days before being used, and turned over once or twice during that time. It will then be in a proper condition to be placed in a pit, which may be of any convenient size, according to the supply of plants wanted to fruit. It will help to sustain the heat of the tan if a quantity of good fresh stable-dung is laid in the bottom of the pit; from twelve to eighteen inches thick will be sufficient; the tan may then be placed over it, and the light of the pit placed on, leaving a small open space at the back for the egress of the steam.

The tan should be filled in till it reaches near the glass, as in a few days it will sink considerably, and should it not sink far enough by the time the heat has come well up, you must take out as much as is necessary to admit of the soil not being too close to the glass.

When you find the heat has come well up, lay in a quantity of good rich loamy soil under each light, (whatever number of lights there may be,) and raise it up in the form of a little mound, having a hollow on the top.

The plants having been raised from seed as already directed, should now be transferred to their places in the pit, and as they advance in growth, the roots will strike through the sides of the little mound in which they are growing; more earth must therefore be added, and so on till the whole space within the pit has been covered over to the proper depth.

Those who care to grow melons, when they see a fruit that is apparently very true to its sort and handsome withal, should retain it for their own consumption, and never lose sight of the seed, and as it will keep for many years, they may always depend on it. But melons can be grown from cuttings, which may be struck in the autumn and kept till planting time.

The present favourite sorts are Bromham Hall, Trentham, Beechwood, Lord Raglan's pet, and Windsor prize.

THE PINE-APPLE.

VERY few persons not practically engaged in horticulture will attempt to grow pines without the assistance of a gardener. There is, however, not much difficulty in the matter, provided a pit can be secured large enough to hold a load or two of some fermenting matter to generate bottom heat, for which tanner's bark is generally employed. The pit may be constructed in any stove which is occupied with plants and flowers; or a small house may be erected for pines, and in this vines may also be grown on the rafters at the same time. But we would recommend those who are not well acquainted with the proper treatment of the pine to buy plants which are already in fruit, and to adopt Mr. Hamilton's plan of growing them to maturity. This is the easiest and most efficient method when pines are only to be grown on a small scale.

Although much has been written about the culture of the pine-apple, and many authors have entered into details, puzzling enough to old gardeners, and altogether incomprehensible to amateurs, we may rest assured of this, that the pine-apple will bear a good deal of ill-usage; and as some of the best cultivators differ very much in respect to their method of treatment, and yet all succeed, it may be assumed that proper soil and plenty of heat at a proper time are the principal requisites.

HOUSE OR PIT.

Supposing a small house to be provided, and to contain a pit for tan; a score of fruiting pines might be procured of any reputed grower of this kind of fruit. For the sake of variety there may be more than one sort; these, being plunged up to the rims of the pots in the tan-pit, will require little more than occasional watering and air when the glass rises to

ninety. The pit must, however, be closed before it gets below sixty-five, all through the spring months. In summer, air may be given during the greater part of the day. Those persons who are always in their houses and attending to a vast number of plants, can observe and attend to many little minutiae which they think desirable; but it does not follow that it is all necessary. It is very gratifying to cut a pine from one's own pit, and if the fruit are not quite so large as may be seen at exhibitions, they will eat as well, and gratify us sufficiently.

PROPAGATION.

The pine-apple is principally propagated by what are called suckers, which are young shoots that grow up near the root of the plants after they have attained a certain stage of growth, and being taken off after or before they have rooted, and planted in soil, they soon grow into large plants. This is the easiest and quickest mode of increasing or raising the pine-apple. When you have cut a pine-apple, there may be a sucker or shoot on the side of the old plant. If so, endeavour to fill up earth to reach the bottom of this shoot, so that, besides drawing nourishment from the parent plant, it may also be able to strike independent roots into the soil; and if there be more than one such shoot, and you can do the same with these, they will also grow; but of course two or more on the same stock will not each attain so great a size as one alone would do. If there is any difficulty in earthing up the plant, place a rim of anything, such as tin or zinc, around their base, and this will contain as much soil as will be sufficient for the sucker to grow in. It is preferable to plant out into a bed of soil, rather than to keep them in pots; but in the latter case, if you have deeper pots, turn out the ball of earth with the plant, and put it into another where it may have more room. The pot into which it is shifted being considerably deeper, you may, by filling with earth to the rim, provide sufficient soil for the suckers to grow in. But pieces of zinc, sufficiently broad and placed just within the pot, will enable you to attain the desired object without having recourse to shifting the plant. These suckers, then, as they grow strong, provide us with a second crop from the same plants.

The more common practice among professional growers, and which is recommended by most writers on the culture of

the pine-apple, is to pull off these side shoots or suckers, and put them in small pots filled with soil, to strike root and grow them up to the size of fruiting plants ; but Mr. Hamilton has taught the economical lesson in striking the suckers which we have just explained, and it cannot be too closely followed by those who are their own gardeners. We strongly recommend amateurs to give away the crowns of the plants, and take no trouble to raise plants for themselves ; not because there is any great difficulty in raising them, but the room which they would occupy may be filled with other things, and because it is cheaper to buy fruiting plants than to raise them in small establishments. Otherwise, they may be grown in common hot-beds, till they are large enough to put in the houses. A sucker taken off a plant, and grown on to that stage in which it begins to fruit, will take from one and a-half to two or three years ; but when the fruit is already formed on the parent plants, they will, in all probability, perfect fruit in twelve months or less, and sometimes bear fruit as large as the original plants. In this case the sucker is not removed at all from the parent plant.

SOIL AND TREATMENT.

The general treatment of the pine-apple, from the time the sucker is formed, is, as we have already observed, not attended with any difficulty ; but it may be proper that we should detail the more important points. First, then, as to soil. Many cultivators differ in respect to the soil most suitable for pines, some preferring it strong and rich, others rather light and porous. We think the medium between these two conditions should be adhered to as much as possible ; and in most cases a certain amount of practice in growing this fruit will enable you to determine for yourself what is the best kind of soil to grow your plants in. When, however, you require to pot any established plants, use a soil composed of turfy loam and leaf-mould which has been well decomposed, mixed with a little coarse sand. Leaf-mould mixed with a little loam will be quite sufficient in which to strike suckers that are removed from the old plants without roots. Many suckers will be produced on the stem, as well as spring from the root ; but when Mr. Hamilton's plan is followed, it is advisable not to allow more to grow than may be compatible

with the ripening of the fruit, as well as the general health of the whole. It is therefore preferable to limit the number of the suckers to two or three at the most, and these will grow very well to a good size, and may either be allowed to perfect their fruit on the plant, or they may be taken off after they are well rooted without injury to the plant or fruit, if detached very carefully, and potted in soil such as we have already recommended. The pots in which they are placed should then be plunged to the rims in the tan-pit; or if there is not sufficient room for them there, you may make up a dung-bed on purpose to receive them. If the latter is preferred, the dung should be collected some time before the suckers are potted. Good stable-dung and leaves form the best bed for them, letting the former of course much preponderate. After the materials have been laid up in a heap, and turned over once or twice, lay down the frame which you are to use on the ground where the bed is to be formed. Then drive down a stake at about a foot from all of the four corners, to guide in making the bed. Remove the frame again, and if the dung has been well fermented, proceed to make the bed, which may be of any convenient height. Lay the dung down regularly all over the space within the stakes, and keep the sides as straight as possible. Do not tread it down, but pat it lightly now and then with the fork. When it is properly finished and trimmed neatly, let it stand for a day or two to settle down, when the frame may be put on with the light, leaving the latter open an inch or two at the upper side to let off the steam. In a day or two more, lay in as much tan or leaf-mould as will be sufficient to plunge the pots in.

It is at this stage of the preparations the suckers should be taken off the plants and potted. Preserve all their roots as entire as possible, and water them thoroughly when potted. Then plunge them in the tan in the hot-bed, the temperature of which should be as near that of the pit as it can be made. A little air should be given in mild weather by tilting the light up at the back about an inch, and if the sunshine is strong, the frame should be covered with some material for the purpose of shading the plants. As the suckers become perfectly established, and begin to grow, it will be necessary to water them occasionally; and they may also be syringed overhead in mild warm weather, but always in the morning

and evening, and with tepid water. The syringing is the more necessary if the frame is kept close, as by that means the atmosphere is rendered moist, which state is very desirable in order to promote the healthy growth of the plants.

MAINTAINING THE PROPER TEMPERATURE.

When you perceive the heat of the bed begin to decline, it will be necessary to apply fresh dung to the sides of the bed, for nothing is more essential to the proper development of the pine than continuous and uninterrupted growth, by maintaining the proper temperature of the place in which the plants are grown, from the time the suckers are potted till the plants ripen their fruit.

In applying fresh dung, let one side of the bed be taken down at a time. Beginning with the front side, remove all which is at the outside of the frame, and if you can at the same time cut out a good quantity from underneath the frame, so much the better. Let the fresh dung be then laid up firmly against the bed, so as to fill the space formed by the removal of the old side. Another side may be taken down and replaced by fresh dung if it is considered necessary, and so on with all the four sides.

SHIFTING THE PLANTS.

As the plants grow and acquire a larger size, they must be shifted into larger pots. The best way of ascertaining when they are ready for being shifted, is by making an examination of the roots. Turn out one or two of the plants, resting the ball of soil on the hand, and the stem of the plants, as it were, placed between the fingers in a downward position. If you find the roots have become numerous, or are growing thickly over the ball of earth, you may be sure it is full time to shift; and even before the roots have grown so much, it will be proper to place them in larger pots. In shifting the plants after they have become somewhat strong and vigorous, use a compost of turfy loam, with a little leaf-mould and sand. It is not, however, advisable in shifting to use pots that are much larger than those in which the plants are already growing, for it is most conducive to the uniform development of the plants to repot them in such pots as are only a size larger; but this may be sometimes exceeded, according to the strength and vigour of the roots and plants. If possible, the plants

should all be repotted at the same period, as this is certainly attended with the least inconvenience ; but it happens that plants do not all require repotting at the same time, owing to their difference of growth, which is affected by many causes not always to be controlled or regulated. You must therefore be content to perform the operation according as you find it necessary. Some plants will grow faster than others, even under the best treatment, and these of course require to be potted, while the others may not perhaps be ready for the same operation for a week or more later.

PRUNING THE ROOTS.

When you find that any of the plants do not keep pace with the majority, you may be sure there is something wrong at the roots, and therefore it will be proper to make an examination. In cases where you find decayed or decaying roots, cut them away, and shake out all the soil of which the ball is composed. Having made the necessary pruning of the roots—without, however, cutting those that are healthy, or likely to feed the plant—place the plant in fresh soil, using a pot which is considerably smaller. Plunge such as are thus treated in a warm part of the bed, and if they have not been too far gone before being examined, they will soon strike root again, and grow vigorously ; but they must be kept close, so as not to be exposed to the action of the air, and only very sparingly supplied with water till they begin to grow. This practice of disrooting is recommended by some writers as an operation which requires to be performed on all the plants at a certain season, whether they are sickly or not. But we think it must be very obvious, that if the roots are healthy nothing more can be desired ; and, consequently, to disturb them by shaking out the ball of earth cannot be conducive to the general progress of the plants. We therefore recommend that the roots may not be disturbed so long as the plants give no indication of ill health. Plants that are more than two years old will, however, form an exception to this rule. The roots of the pine are formed in the first instance at the base of the sucker, and by-and-by on the stem upwards. In the course of time the roots which were first produced become exhausted and decay, while fresh roots are continually formed above them. In the case of a plant which has been grown several years, the lowest part of the ball of roots becomes

useless, and may be cut away without injury to the plant, or the fresh and vigorous roots by which it is sustained in health. In performing this operation, it may not be quite necessary to shake out the entire ball of earth, but only that portion which is situated around the withered and mouldy roots to be removed.

When the plants which have thus been established in the hot-bed have become strong, and when there is room in the bark bed in the stove—or in the pit, whichever may be used—they should be removed to the latter structure, and plunged up to the rims of the pot as before. Be careful to provide the pots with plenty of good drainage, as, if the water is allowed to become stagnant about the roots, the plants will be injured.

A common, and also one of the most economical and simple modes of growing pines, where there is convenience, is to construct a pit of any convenient size, and filling it with tan, to plunge the plants in it. A pit of this kind may be of any length, according to the supply wanted. This pit should be provided with frames, and may be filled either with dung and leaves, or simply with tan. The last is most commonly used in such structures. If pipes of hot water can be carried round the wall at the inside, connected with a small boiler at the end, so much the more certainty can be ensured in the regulation of the temperature. When the suckers are potted, they are plunged in this pit, and shaded for some time during sunshine, which practice is necessary to keep the plants from flagging while they are being established. Little or no air should be admitted to the plants for some days after they are potted, as they thereby strengthen the more readily. During the first few weeks after the suckers have been potted, the temperature of the pit should range between sixty and seventy, the maximum being more frequent than the minimum; and when the plants are properly established, both air and water may be supplied with freedom. In the absence of hot-water pipes inside, the heat of the pit must be kept up during winter and spring by means of dung laid against the sides all round. The frames should also be covered at night with common mats, or canvas. Very little air is necessary at this season, and should only be given while the weather is quite favourable. Water also is less requisite, and should be given with much caution. The plants will have made con-

siderable progress by the month of June, when repotting should be attended to. Those plants only which are sufficiently advanced, and have made strong roots, should be shifted into pots a size larger than those they are growing in. The soil used should be a compost of turfy loam and well decomposed leaf-mould. At this stage the balls of soil in which the plants are growing should be carefully preserved entire, as there will be no roots formed but what are wanted to nourish the head. For the purpose of effecting this shifting, it will be necessary to take out the plants. Begin at one end, and take out as many as may occupy one light, or even more; stir up the tan to the depth of twelve or eighteen inches, and then plunge the plants as before as soon as they are repotted. In this way the whole may be gone over, and those which are not sufficiently advanced to require shifting should be kept aside, and, after the rest have been repotted, placed at one end by themselves, or in a line along the front. Early in the autumn the operation of repotting is repeated. Those which are the most forward should now be removed to any structure in which there may be a good and regular command of heat, such as a vinery, or stove, having a bark bed. Here the temperature should be kept somewhat high, in order to facilitate the rooting of the plants, and in mild weather air should be frequently admitted to them. The atmosphere within the house should also be kept moist by sprinkling water on the paths and walls when excessive dryness is felt. The bark bed should be turned over in the spring, and some fresh tan laid at the bottom. The plants should also be examined and trimmed, by removing any mutilated or useless leaves, and the surface of the soil removed, and fresh soil added. Plunge the plants partially in the tan, and give a little heat to start them again into growth. When the fruit begins to swell and ripen, very little water must be given, but a good supply of air should be admitted.

BOTTOM HEAT.

Pines always require a good bottom heat to grow in well, and various methods have from time to time been contrived for effecting the desired object; but experience has shown that the best bottom heat for such plants is that which is produced from tan, stable-dung, or leaves. These may all be

mixed together, or employed singly. Where dung can be procured in sufficient quantity, and at a moderate cost, it should be used to form the body of the pit, leaves being laid on the top to the depth of one or two feet, to afford material to plunge the plants in. Tan is commonly used for growing pines in pits, and though to be had for a trifling sum, it is of no further use after it is exhausted in the pit. Leaves are considered to form a moderate and steady heat, producing a vapour which is beneficial to the plants, and when exhausted they form an excellent manure. If they can be obtained in sufficient quantity, they form an excellent and very cheap heating material. It is only, however, in large establishments, where there are plenty of trees, that they can be readily made available. They are collected in the autumn, and laid up in a heap to accumulate, and then transferred to the pits at the time of the autumn potting. They are trodden firmly down to prevent them from sinking afterwards. If put in the pit at once, the leaves require to be freely watered, especially if they are dry. But where it is desired to keep them in store against a future occasion of using them, they should be gathered perfectly dry, and laid in a heap under cover. If not quite dry at the time they are gathered, they should be spread out till they are in a fit condition to be laid up in store. For the purpose of keeping through the winter and spring they may be laid in a heap quite dry, in any place, or at several places among the trees, and thatched over with straw or fern. There will be little fear of their heating, provided they are kept quite dry. When leaves are extensively employed as a plunging material, they do not leave so neat a surface, nor are they so readily kept close to the pots as tan; and, therefore, though leaves may be used to produce the heat of the pit, as much tan should be used as will suffice to contain the pots. Leaf-mould for this purpose is preferable to tan, and if it can be had in sufficient quantity, should be used. If the leaves have been properly gathered and laid in the pit, they will preserve their heat for a long time.

The pine-apple will be benefited by a free admission of air at all times when the weather is favourable. The sashes should accordingly be tilted up early in the morning, if only an inch or two, and if the sun is strong, a covering of mats should be thrown over the frames for the purpose of shading. Moisture should also be well kept up by syringing the

plants from time to time, especially in the morning and evening.

The pine is sometimes attacked with insects, such as what is called "mealy bug," and one or two others; but the best preventive against their ravages is to keep the plants growing and perfectly clean. If a plant is infected with insects, it may be considered as an indication that it is not in a very healthy condition, and should be examined at the roots. If the plants are all healthy and growing freely while insects prevail, they should be taken out one by one, and being laid on a mat on the ground, syringed forcibly so as to knock off the insects. Many plans and nostrums have from time to time been prescribed for plants infested with insects, but that we have given here will be found the surest and safest to follow. Of course this operation requires to be performed when the weather is mild and warm; and if tepid water can be obtained, it should be preferred. Having laid the plant down on its side, partially propped up on the edges of two bricks, or stones, ply the syringe vigorously in all the recesses where the insects are likely to secrete themselves. The best plan for cleansing plants in this way is where the water used may flow into a drain, so that the vermin may be the more completely destroyed. If the syringe is good, and well applied, there is hardly any insect which it will not dislodge and wash off.

THE FIG.

THE fig is one of those singular kinds of fruit that are totally useless unripe, and however near they may come to perfection, anything short makes them worthless. When thoroughly ripe, they are very delicious,—when but a little short of it, they are mawkish, sickly, and even rank. It would appear that the last few days of solar heat changes the entire character of the fig, and if the fruit be gathered before this change, they are unfit to eat, and, unlike almost every other of Pomona's gifts, they will do for nothing but the pigs; they are of no use in tarts, they cannot be made into wine, and so far as we have been able to discover, they are good for nothing. Strictly speaking, they require protection to bring them forward, although they will fairly ripen in a hot summer, on the open wall in a southern aspect, and we have even known them, in very favourable seasons, to ripen on standards. They are something like the vine for bearing frost, and bringing fruit, and the season that will ripen the black Hamburgh grape, will unquestionably perfect the fig. Of the different modes of growing the fig we shall speak in the proper place. They are often grown in a house adapted exclusively to them; the back walls of a vinery, if the grapes are not allowed to cover the glass entirely, is a very good situation for a tree planted out. They may be grown in pots in any part of a grape-house. They do well in front of a stove—we mean outside—for the wall being always warm helps them on a good deal, and being near the ground they have the advantage of the sun's rays. On a south wall they will require but little covering, when they once start, and that is from the frost; anything short of a southern aspect lessens the chance of their doing well; and as to standards, although we have gathered them, or rather picked up a few fallen fruit under the trees, the great bulk have remained on

and with no very ready prospect of coming to perfection. Under these circumstances, we will give a few directions to those who wish to cultivate the fig, premising, that first, the sorts must be well chosen, well potted or planted, well protected, and well attended, to give us any chance of success. We will treat of them under the several heads, dividing the subject into—

1. The soil they grow in.
2. Their treatment on walls.
3. Their treatment in pots.
4. Their treatment planted under glass.

It will be seen that there is no more difficulty in growing figs than in growing grapes ; that the same general principles govern the one as govern the other. That is to say, the plant that has too many fruit to swell and ripen will not do it well, so that the fruit must be apportioned to the capacity of the plant ; the roots must be in good soil, and they must be watched and attended to throughout all their stages of growth, like so many bunches of grapes, and be no more neglected than a favourite vine. There are early and late figs, as well as early and late grapes, and according to our intended object of getting very early figs, or very ripe ones, so must we choose our sorts and cultivate them. It is well known that a goodly supply was kept up at Covent Garden, by Hill, of Hammer-smith, who grew them on the common walls of a kitchen garden ; while others, with to all appearance a better chance, were unable to produce a single ripe specimen. Situation and soil may therefore have more to do with it than we give them credit for, and it is only by trying the best known methods that we can hope to succeed, and even then may have more trouble than we anticipate.

We now proceed to the soil or compost. If good hazel loam from rotted turves, originally cut about three inches thick, could always be procured, not a single addition could be made with advantage. The quantity of decayed vegetable is at least one-third, or near half, and if the loam be not too adhesive, make no change or mixture whatever ; if, however, it is too adhesive or marley, or would hold wet when squeezed together, there must be an addition of sand, in such quantity as will effectually make it porous, and as much decayed dung, that is thoroughly rotted into mould, as will compensate for the quantity of sand introduced ; but in most cases turves cut

from a pasture, laid together and rotted, form the very best soil in which to grow the fig, and, though it is no part of our subject to touch on other fruit, we may add, most other fruit-trees, whether in the house, in the open air, on walls, or as standards. Other mixtures are resorted to and recommended, because rotted turves are not always to be had, and we then have to supply, as nearly as we can, a substitute for vegetable mould and for the dung which is in the top spit of all pastures. It has to be remembered, too, that the soil of the top spit of a pasture, which is the favourite store heap of loam in all gardens, is not so rich in vegetable mould by a great deal as turves cut three inches thick, or under, because the ordinary soil under the roots is three times as thick, however lightly it may be dug, and, consequently, there is only as much decayed turf in three loads as there should be in one, and the rest has to be made up. In making, therefore, the borders for figs, dig out about eighteen inches, put two or three inches of brick rubbish at bottom, sloping from the wall to the front, which must for any tree be well drained, and if the soil has a good appearance, that is to say, if it is good loam, mix a little leaf mould, or, for want of that, rotten dung with it, and return it so altered to its place. If, on the contrary, it is cold, black, or sour, discard it altogether, and substitute peat, loam from rotted turves, or loam, dung, and leaf mould, and, if necessary, sand, well mixed, and on that border, which should be a south wall border, plant the trees, which should be one or two years old; plant no deeper than the collar of the root, and tread well in. You may then regulate your border, but never use it for any crop that will keep off the sun from the roots. Crowding a fruit border is highly injurious to any fruit that is growing on it, for the roots require the genial warmth of the sun as much as the branches.

We are taught by some writers to grow figs as standards, but where they succeed in one place they fail in twenty, that is to say, they fail to produce fruit in perfection; they will bear, and sometimes nearly ripen their fruit, but rarely bring them to their full flavour. Espaliers are no better than standards. The fruit is never so good as on a wall, and it is a waste of room to grow them without that, except as a mere curiosity. Having planted your trees on the wall, or, rather, close to it, nail the lowest branches horizontally, and the others down as low as will give them only room, and thus

bring down the two sides as if arms of the tree, leaving the upper part or centre to be furnished by new wood. Thus far we have placed the fig in its proper soil and situation.

If, contrary to our advice, some are to be grown as espaliers and standards, all we can recommend is, that they be planted in a sheltered situation as near a south wall as they can be, and that stakes be driven into the ground to make standards fast, while the espaliers should be at once fixed on them, in the same fashion as they would be on a wall. A standard should be dwarf, the more so the greater chance of ripening the fruit, and the espaliers ought not to be more than six feet high. In the pruning of the fig as standards or espaliers, there is little else to do but to see that the branches are not in each other's way, not to cut back the wood of the present or past year, but to cut out whole branches that are too close, and cut them clean back to their parent stem, cutting out old wood always in preference to young, and, therefore, when it is necessary to take out a branch, cut that which has the least strong healthy young wood. The only chance for standards is to keep the heads open, that the sun and air may have free passage to all the branches. When it is necessary to thin the young wood, do not shorten any of it, but take out the weakest and thinnest close home to its base. The great fault of all pruning that we have observed, or nearly so, among out-of-door figs, has been the habit of shortening the young bearing wood, whereas this should be retained. There is only one exception, which is, that as the fig will struggle to yield two crops a-year, the spring shoots of wood yield a crop towards the autumn, and, if permitted, bear them just large enough to be totally useless, and to spoil the branches or shoots from bearing the next year; therefore the object is to advance the wood of midsummer shoots, which will bear the first crop in the early part of the next year, and to prevent the advancement of the spring shoots by way of encouraging the others. Therefore, when the spring shoots have pretty nearly attained their growth, they are broken off back to two or three eyes, which immediately push and ripen their wood by the autumn, and this wood gives you the spring crop, which will ripen; whereas, had the spring shoots been allowed to perfect their growth, they would have been full of fruit that would have fallen at the first frost not a third grown. In warmer climates,

both the spring and midsummer shoots produce their crops and perfect them.

RAISING AND PROPAGATING THE FIG.

Figs are raised from seed, and propagated by all the usual means of the most hardy plants, grafting, budding, layering, suckers, and cuttings; the two latter modes are by far the best. From seed there is a chance of new varieties, but the fig from its nature is hardly susceptible of much improvement, and the period required is much longer than by any of the other methods of obtaining young plants. They may be sown in a common hot-bed in the early spring, and planted out at the foot of a south wall in June, where, with due attention to the watering required in so warm a situation, they will grow rather fast until the cold weather cuts off their leaves and puts them to rest for the winter. While young they are more easily affected by frost than when advanced; a little loose litter, such as broken straw or peas-haulm, will protect them through the winter, and before they start in the spring, they should be all taken up, their long shoots pruned closer, and be replanted where they are to fruit, which may be on the same wall, at proper distances, or as espaliers, or even as standards, if the determination be to grow standards at all.

There is nothing obtained by grafting but the change of one sort of fruit to another. It may be available where there are already some of the worthless sorts in a good situation, because, by grafting better upon the strong old wood of an established tree, the foundation of a new head is the work of a very short time. The grafting employed for this may be any of the most easy. The cutting of an angular gutter or groove down the stock on the side, so as to go through the bark, and then cutting two sides of the graft in a form to fit in the hollow, so that the bark of the graft and the bark of the stock meet at the edges, is perhaps the best, because, in grafting old stocks, the wood to be worked is always so much larger than the wood worked into it; otherwise, when there are healthy branches that may be cut back only so far as to make the graft and the stock of the same size, a common splice will do as well as any other mode of joining; but it must always be borne in mind, that the more stock there is, the more danger there is of its growing, and, if neglected, it will soon conquer and outgrow the graft. In this, however,

as in all kinds of grafting, there are two or three conditions to attend to, and the rest may be managed any how. These conditions are, first, that the wood should be cut clean and square so as to fit close ; second, that one edge of the bark of the graft should exactly meet one edge of the bark of the stock ; third, that the juices of the wood should not have time to dry before the graft is fixed and tied ; fourth, that the external air should be excluded from the place of union until the parts are united. The relative size of the graft and the stock, the mode of joining, and all other points, are matters of little or no consequence ; some will cut a slice down the stock and pare the inside out almost like the inside of a common clothes-peg, and then cut the graft wedge-fashion to fit it ; others will cut the graft in that manner, and cut the stock into the form of the wedge ; others, again, will merely cut two long slopes, as if they were about to splice a broken stick ; but it matters not how it is done, so that the above conditions are attended to, and the season chosen is the proper one, which in all cases should be when the stock and graft are upon the eve of growing. The lesser operation of budding is performed with little difficulty. The incipient bud, with a small portion of the bark attached, is inserted beneath the bark of the stock, which is slit down and crossed for the purpose of lifting it the easier from its wood, that the bark of the bud may be placed next the wood, and the bark of the stock lapped over it and tied down. There is no particular object attained by budding, unless it be that where the sort wanted is scarce, every bud will form a plant, whereas, in a general way, half-a-dozen buds may be obtained from a piece that would only make one graft ; yet the grafted plant will be sooner in bearing by a good deal, inasmuch as all the eyes will push at once and almost form a head the first season.

The propagation by suckers is a self-operation. The roots of the fig, like those of many roses, currant-trees, gooseberry-bushes, and other shrubby-growing subjects, wander and throw up suckers in profusion ; and there is scarcely anything more detrimental to a tree or shrub than neglecting the removal of such suckers, always excepting when we desire to propagate by such means, and even then they should be removed before they grow too large. Suckers should be taken off with roots attached at the fall of the leaf, and be planted

at once where they are to fruit, or in nursery-beds, to grow into strength. If they are wanted for training, they should be cut down to three or four eyes; if for standards, they must not lose their leaders. But perhaps the layering is the most ready means of propagating strong plants. The branches for this purpose should be not the most vigorous; on the contrary, the sharp-jointed wood is the best. The branches have only to be pegged down two inches under the surface, and the end bent upwards rather suddenly, for the roots will protrude very rapidly from the joint where the bend is most sudden, and there is no occasion to cut a notch; but if it be determined to notch the place by way of directing where the root shall come, let the notch be just below a joint, but on the upper side of the branch. You will have to be careful that the joint be not broken off by the pegging down. If the operation be performed any time before the spring growth commences, the layer will be rooted enough to take off at the fall of the leaf, when it may be treated as suckers and seedlings are treated. Perhaps, however, the best plants are from cuttings; these should be taken from good short-jointed bearing wood, that is, ripened wood of one season. Cuttings about a foot long, taken off at the heel, with a shield of the old wood at the base, may be put in pots, with the heel close to the drainage, and placed in slight bottom heat in early spring; see that they are regularly watered, and have air as soon as they grow. The cuttings may be taken off in the autumn, and plunged into the ground up to their tops, but they must be covered with litter or they will lose their tops. They are none the worse for either cuttings or grafts for their separation from the tree; but if there be the convenience for giving bottom heat, they will grow early in the spring and make good progress before they need be planted out or placed in the open air. These plants may be kept in their pots till the autumn, when they must be planted out or repotted in larger pots to use for forcing or growing under glass.

TRAINING AND PRUNING ON WALLS.

The fig, like many other subjects for wall culture, will grow best when trained fan-fashion; but the blunder which too many make in fan-training is neglecting to begin low enough, as if the fan were to be half open instead of quite open. The lowest limbs ought to be horizontal, and within

four or six inches of the ground ; there is no difficulty in filling the walls upwards ; the branches immediately above the lower ones should be brought down to only a reasonable distance from the lowest, and all other branches be placed at regular distances, so that the wall, as far as the branches will reach, shall be fairly covered ; as newer shoots come upwards, let them also be brought to their proper distances, so that in time the wall will be fairly covered. The horizontal growth should be encouraged, and the tree will in a very few years cover ten or fifteen feet on each side of the stem, and it is not desirable to encourage tall growth under any circumstances. The spring shoots will bear fruit in autumn if allowed to grow ; but except where they are wanted to fill up the wall, and the ends of the branches extending sideways, all these spring shoots should be broken back to three or four eyes—not broken off, but broken down. Midsummer shoots, as they are called, will come from the eyes below the break, and these shoots will bear the crop in the following spring. Of course the tree looks untidy while the ends of the branches are hanging about, but if they were cut off instead of bent down, they would bleed and weaken the branch ; in the autumn they are pulled or cut off, the shoots from the unbroken part being properly tacked to the wall. In the spring these shoots will bear the crop that will ripen. The new shoots of the spring will go on as before, and would, if not disturbed, bear a crop that could not ripen ; but by breaking them again as soon as they have nearly done their growth, the midsummer shoots come from the three or four eyes left undisturbed, and again produce the wood for the next year's spring crop.

Many gardeners pull off a good deal of the foliage, that the sun may get at the fruit. This may be carried to an extreme very easily as in the vine ; but as every leaf a tree loses without the branch belonging to it, weakens it in some respects, the system is bad. Take care that the branches are not too close together ; and to prevent this, the precaution of lessening the number must be taken in the early growth of the spring, for just as the bud pushes off a branch not wanted, it should be rubbed off. You have therefore to consider, when the tree first pushes, first, that every spring shoot shortened back produces three or four midsummer shoots to bear fruit the spring following, and therefore that you ought

not to allow one more spring shoot than is necessary to grow at all ; by rubbing off the buds, all the vigour of the tree goes to the few you allow to grow, and the chances are that you will require no thinning of the foliage ; a leaf over a fruit is not too much shade, but if branches be allowed to grow too thick, it may be much too shady to allow of solar heat at all.

TREATMENT OF FIGS IN POTS.

This of course is in cases where there is the means of protection, if not of absolute forcing. We have already provided for the striking of cuttings and raising of plants in pots, the next consideration is, how to fruit them. The grape is not unlike the fig in the treatment it requires, therefore we may be safe in placing the pots in a vinery ; but they will, like the vine, do in the common greenhouse, and all other houses for forcing. The plants must be checked in a very different way to those out of doors. It will be taken into the account, that if the potted plants are kept in a vinery, they will yield two crops a-year, and therefore that there must be no shortening or breaking the spring shoots ; let them go on to bearing, because they will, if well managed, go on continually bearing and ripening one lot of fruit while another is only swelling, so that it will be found quite possible, and even probable, that three crops may be had in a year.

The soil for pots should be the same as for the open ground ; in thirty-two sized pots they may be made to bear ; and, if the fruit be not so large as those in the ground, they will be quite equal, if not superior in flavour to any other. As, however, we want no knife-pruning, or, at least, no more than we can help, there must be some watchfulness at each separate start of growth, because, if we allow a dozen branches to grow where there should be only half the number, the plant will require that which is an enemy to bearing, amputation with the knife : rub the buds off before they attain any growth of consequence, it is the only way to keep the plant within bounds. When the wood gets old, let young shoots come, and remove a whole branch to the very stem, by which means we keep up a succession of young wood, and get rid of the old ; for, let it be perfectly understood, that any system of shortening to keep a fig-tree in order, is bad, that is, detri-

mental to the bearing. "I prune my figs every year very carefully, and I never get any fruit," said a gardener to us one day; and his wall-fruit trees generally were excellent and effective. "Let them alone very carefully," said we, "and you will see a difference." He did as he was told, and then he had two crops, one of which ripened, and the other did not; from this time, however, he adopted the plan before laid down for figs on a wall, and he succeeded. We have known a market-gardener to cover his autumn formed fruit all the winter, except mild days, and to save them by that means; but when he built a small house against the wall, and enclosed one tree, he could ripen all the fruit, and grow little fig-trees in pots in the size thirty-two, and produce a dozen and a half of ripe fruit at once on a single little plant. It is to be inferred, that the warmer the temperature of a house, the earlier will the fruit ripen; but it is possible to over-heat a fig-house at a time when it will cause all the fruit to fall off; let the fig, however, share the fate of a vine or a cherry, and there is no danger.

It is necessary to pot the fig up to the size thirty-two; but, if it is in a good bearing state the second season, and unless you want to increase the size of the plants, let size twenty-four be the maximum. At the end of the summer, when the fruit is gathered, say September, the plants should be turned out of the pots, the matted roots be removed with a sharp knife, and, from the thirty-two, increase the pot to a twenty-four, putting fresh soil round the ball, and pressing it down close between the ball and the pot; place the plant anywhere out of the weather and out of the way. If necessary to check the exuberance of the plant, keep it in the same pot another year, but remember that there be no shortening of young wood; cut small branches clean out if you will, and it is a good plan to do so when there are any, but it is far better to be looking out in time, and to rub off the buds instead of allowing weakly branches or shoots to grow.

In pot-culture a good deal of water is required, for the roots cannot travel after it, and especially when pots are small in proportion to the plant; when the fruit is swelling, the watering is a most important object, and liquid manure may advantageously be applied if the pots are full of roots, and this is far better than enlarging the pots, except at the proper seasons. The largest pots that should ever be used for figs

are sixteens ; these are as large as can be lifted about easily, and are quite sufficient for growing the best fruit. These pots should be placed in the grapery, stove, cherry, peach, or greenhouse, rather in the shade than otherwise, and there, according to the climate, or rather the temperature, kept up ; so will the fruit advance, and it will not be at all uncommon to find the fruit in two or three different stages, but there will be abundance of it, with only the ordinary care and means that we have described. Fig houses are seldom erected, partly because, so far as temperature is concerned, the fig wants no other than the vine ; it will force, or come natural, or be merely aided a little ; in cold or heat it is equally healthy, although not equally prolific ; it is not worth while to bestow a house upon the subject ; but everybody who has glass, from a greenhouse up to a stove, ought to grow a plant or two of the fig in pots, if they do nothing else with it.

TREATMENT OF THE FIG UNDER GLASS.

The fig planted against the wall of a house requires the same soil as elsewhere, and the house, or rather the roof of it, will be all the better adapted for it if there be a vine trained along the rafters, so as to partially, though not wholly, shade the tree from the burning sun. The sorts may be chosen from those we have mentioned, the descriptions will decide which are best adapted for the purpose ; the planting, training, pruning, and general treatment must be founded on the rules already laid down ; the forcing should be begun gently in January, February, March, or April, and the heat gradually increased as the growth advances ; but if the vines on the roof be forced, there needs no difference on account of the fig ; the border in which the fig is placed being under glass, and consequently deprived of the usual supply of rain which would be its portion out of doors, must be regularly supplied. If the fires are begun in January, the fruit will be ready to gather in June or July, according to the sort ; and this does not prevent a continuance of the growth and of the bearing ; but we cannot help considering the culture of the fig on walls under glass a loss of room, and not worth the trouble. We recommend, most particularly, pot culture under glass, because you can regulate the seasons, the crops, and the quantity, by taking them into heat sooner or later, and in more or less

quantity ; all not in use may be standing out under a south wall, but constantly watered and looked to as well as if they were in the house.

GENERAL OBSERVATIONS.

The fig is perhaps understood as little as any fruit under culture in this country, and, in general, as little cared for : certainly three-fourths of the figs produced at the desserts of the rich, or the markets of great cities, are of very inferior flavour to those imported ; they have, for the most part, a rankish, earthy, and unpleasant twang ; the best are but mawkish and insipid. This entirely arises from imperfect ripening ; and the same fruit, if well ripened, would be very different. They are as precarious as melons, and vary from insipidity to extreme richness ; but the former so greatly predominate in number over the latter, as to be the rule instead of the exception. At the various horticultural shows, where we are to presume the gardener produces his best, they are very often poor, though we have discovered here and there a few samples that remind one what the fig must be in its own country and climate ; but, inasmuch as we can produce the grape, the pine, and the orange, as fine as they can be in their own land, there is no obstacle to our producing the fig in equal luxuriance and quality for flavour and ripeness. To accomplish this, pot culture is the safest, and the half dozen sorts we have recommended are the best : vary the houses, the temperature, and the subjects which share the room in the houses how you like, you will soon find that the fig-tree is as obedient as the vine, and will yield to proper treatment, at all seasons, plenty of good fruit, which may be produced, by a little trouble, at as many different periods as the grape, and in quite as great perfection.

THE BERBERRY.

THE berberry is useful in tarts ; it also makes a first-rate pickle, and is preserved in some peculiar way by which the colour is retained, for the purpose of garnishing dishes. As an ornamental shrub, it is somewhat pretty when in flower, and showy when in fruit. It grows to a large size, and is rather troublesome to manage. In general habit it is somewhat strong, thick, and crowded, and there is no tree more troublesome to prune, as it throws up an immense number of suckers from the roots, which in time form an impenetrable bush at the bottom ; while the thorns, or prickles, cause much pain if they happen to penetrate the flesh, or even scratch the surface of the skin. The principal thing to attend to, in the young state, is to thin them out well, so that the main branches shall not be too close ; and the instant suckers appear above the ground, cut them off close back to the root, or remove them. The berberry bears racemes of yellow flowers, and the fruit is about as thick as a barley-corn, and as long as three corns, bright scarlet, like any brilliant coral, with a strong acid taste even when quite ripe, and hanging, of course, in bunches, not so long as currants, but six or seven on a bunch. Even the gathering of the fruit is troublesome on account of the spines.

The berberry is very seldom planted regularly for the sake of the fruit, and it is rarely seen at market. It is generally planted in shrubberies ; or two or three bushes are placed at different points of the ground for the sake of ornament, for which it has some considerable claims. If they were planted for the sake of their fruit, the bushes would require to be placed at about ten feet from one another every way ; but few persons are likely to require so great a supply of the fruit as to want more than an odd plant or two about the premises, and we never saw a plantation of them. There are two classes, or sorts—the common, which has the seeds in the fruit, and which are as troublesome as the stones in currants—

and what is called the stoneless, which has none. Whether they are distinct species, or merely accidental seedling varieties, we know not ; but whichever plant is wanted can be obtained at a nursery ; and they may be propagated by layers or suckers of the old plants ; indeed, scarcely anything can be propagated with so much facility. They do best, however, raised from layers of branches above the ground. They thrive almost in any soil and situation ; but when you are about to make layers, dig the ground round the stool, or parent plant, about a foot deep, and raise it a few inches above the general level ; make it rather fine and even on the surface ; then bend down such branches as may be most conveniently situated, and which have a number of strong young shoots on them. Having bent each branch down to the surface of the ground, fasten it firmly by means of a good strong stick, about twelve or fifteen inches long, and formed like a hook. The hooks, or, as they are usually called, pegs, are best made of birch twigs, which, having secondary shoots at the head, are cut to about three inches in length from the hooks. The branch of the tree, then, is fastened with one of these, and then the younger, or previous year's shoots, are placed an inch or two in the soil, and the extremities, having two or three buds, are kept above the surface, of course in a sloping direction. The shoots thus placed are called layers, and it is usual to secure them in their position by means of smaller pegs, or by treading the soil firmly over them. This operation may be performed with the berberry at almost any season, but it is always best done in the spring, or in autumn, when the weather is mild and dry. In layering the shoots it is necessary to twist them at the part to be covered, so as partially to stop the circulation of the sap, and induce young roots to grow at the bruised part. The following year they will have become sufficiently well rooted to be taken up and planted out at once where they are wanted to grow. If wanted for fruit, they must be frequently pruned and kept in an orderly regular form ; for the habit of the bush being so straggling, and the branches so thorny, it is extremely difficult to gather the berries if pruning is not frequently resorted to.

There are many species and varieties of the berberry, but most of them are purely ornamental, and have no claims whatever in respect to their fruit.

THE TOMATO.

THIS is a plant of very easy culture. It is of strong, vigorous habit, and thrives well in any moderately rich soil, being reared in pots placed in a frame. About the middle of February or the beginning of March, prepare a hot-bed, if you have not one already in working order for such plants as cucumbers. Lay the dung up in a heap to ferment for a day or two, then turn it over, mixing it well with the fork, and placing again in a heap as before. It will depend much on the freshness and strength of the dung whether it will require another turning; but in order to make sure that it is well sweated, the operation should be repeated, and when you think the dung has fermented sufficiently, proceed to form the hot-bed. Lay down the frame you intend to use, on the ground where the bed is to be erected, and drive in a stake at about a foot from the four corners of the frame for the purpose of guiding you in the formation of the bed. Then remove the frame and proceed to lay the dung evenly and regularly all over the space within the stakes. Do not tread down the dung, as is the practice with some people, but lay it on lightly, patting it down now and then with the fork, and the heat will not only be more uniform, but it will last the longer. If the dung is rather dry, pour a little water on the bed now and then in the process of raising it. When the bed has been raised to the height of three feet and a-half, draw down the loose litter from the side and clean the ground round it, throwing the litter on the top of the bed. Then lay on the frame and light, leaving the latter open an inch or two at the back, for the purpose of allowing the steam to escape. If the dung has been turned over twice or thrice while in the heap, and if it has been regularly laid on, the heat of the bed will not likely be too great, but in order to determine this point satisfactorily, thrust in two or three

sticks, which should be long enough to reach the middle. By pulling out these sticks now and then and feeling them by the hand, you can easily ascertain if the bed is too hot, and if it is, turn down the dung again either partly or entirely, and spread it out for a day or so, when it will be fit to form the bed. Supposing, however, that the dung has been properly fermented, and the heat has come well up in the bed, lay in a portion of any good vegetable soil for the purpose of forming a plunging material or bottom for the pots. This done, fill to within an inch of the rim a number of six-inch pots with good, light, rich loamy soil, placing plenty of drainage in the pots. Sow the seed thinly over the surface, and cover them lightly with a little fine earth. Give the pots a good watering, using a pot having a fine rose attached to its spout, and then place them in the frame, partially embedding them in the soil, and keep the frame close for a day or two, or until the seeds have germinated. When the young plants appear on the surface, admit a little air to them by tilting the light up an inch or so at the back. If the soil in the pots appears dry, supply the plants with tepid water passed gently through a fine rose or syringe. When the plants have grown two or three inches high, pot them off into three-inch pots of good rich soil which has been made rather fine by sifting. Two plants in a pot will be quite sufficient, and when potted they must be again placed in the frame, and kept close for a day or two until they have made fresh roots, when air should be admitted to them, and they must be watered from time to time as occasion may require. During the middle of the day, when the heat of the sun is intense, it will be proper to shade them by means of a common garden mat thrown over the light for an hour or two. If, on the other hand, the nights are cold or frosty, the frame must be carefully covered up to protect the plants. As the weather becomes mild the plants should have air admitted to them freely; and during fine mild weather the lights should be entirely removed, so that the plants may be the better prepared for the open ground, for which they will be ready about the second week in May.

In turning them out, let them have a place between the apricot, peach, and plum trees along the bottom of a north wall, placing the contents of each pot in a hole a few feet apart from one another. As the plants advance in growth,

they must be trained and nailed to the wall, and watered from time to time, especially after being planted. When the first two trusses of bloom have expanded on each shoot, the latter should be stopped by pinching off the portion which is beyond the leaf above the second truss; and no more lateral shoots should be suffered to grow; but the leaves must be carefully preserved, especially those near the trusses of bloom. The number of shoots on each plant will vary according to the strength and vigour of the particular plant, but from three to five will be quite sufficient, leaving from six to ten trusses of fruit. Remember, that by thinning the fruit, and removing all the smallest, you have a much more handsome crop.

As the fruit ripens, it must be well exposed to the sun, and for this purpose the leaves should be kept off them, or removed entirely. There is nothing gained by allowing a great many fruit to ripen. The number which we have given will be as many as the plants can well ripen during our ordinary summers, and they will be much finer and larger than if they were more numerous.

Where the plants cannot be conveniently trained to a paling or trellis, from the want of such structures, a bank, or ridge of earth, will be found a good situation for them, but here they should have a south aspect, and the shoots must be stopped, and the leaves kept from shading the fruit as it attains its full size. Such of the fruit as are smaller, or ill-placed, should be removed, which will tend to improve those that are retained, which may be kept apart by the support of a string and nail, to prevent the berries from becoming damp or mouldy. The fruit should be gathered when perfectly dry, and laid on shelves in some place where they may be kept in a dry atmosphere and have plenty of light. In such a place, if not quite mature when gathered, they will gradually ripen, and continue to be available for a considerable period.

A few fruit of the finest and the earliest should be allowed to ripen thoroughly for the sake of the seed. When they have become quite rotten, squeeze them up in water, wash and dry the seed carefully, when it should be laid in paper bags, to be used in raising a crop the following year.

THE GOURD, OR PUMPKIN.

IN ordinary seasons, the weather is not sufficiently warm out of doors for these plants till the end of May, and they require to be raised in a frame before that time. About the end of March, or beginning of April, collect a quantity of good stable-dung and lay it in a heap to ferment, turning carefully over once or twice at intervals of three or four days. When it is properly fermented, lay down the frame you intend using on the ground where the bed is to be formed, and drive down a stake at each of the four corners, clearing the frame about a foot. These stakes will serve as guides in the formation of the bed. Remove the frame and proceed to lay down the dung evenly and regularly all over the space within the stakes, until the bed is raised three feet high. If the dung is rather dry, pour a quantity of water over it in the process of making the bed. It should not be trodden down, but gently patted down with the fork now and then. After the bed is raised to the desired height, trim the sides and clean up the ground round about it, casting the litter on the top. Lay on the frame and light, leaving the latter open an inch or two at the back to let the steam escape. When the heat has come well up in the bed, put in a quantity of earth to the depth of six or seven inches. Then take a number of six-inch pots, and fill them to within an inch of the rim with fine rich soil; place four or five seeds on the top of the soil, and cover them over lightly with soil of the same kind. Water the pots so that the soil may be well moistened; but, in doing this, be careful to use a fine syringe, or pot having a rose attached to the spout. Place the pots in the frame, inserting them a few inches in the soil of the bed, and keep them close for a day or two, or until the seeds begin to vegetate, when a little air

should be admitted, and the pots freely syringed with tepid water. As soon as the seed-leaves expand, pot the plants into small pots, say about three inches wide, and only one plant to a pot. Place them again in the frame, and keep them close till they begin to grow, when air should be admitted to them, and they should be again syringed with tepid water, continuing to repeat the operation as often as necessary.

The plants will be fit for removing to the open ground about the end of May. Prepare a number of beds for them in a warm and sheltered situation ; let the beds be about four feet wide, and make the soil rather rich, by digging in a portion of well-decomposed dung, such as has been used as a hot-bed the previous year. Turn out the contents of each pot carefully, and place the ball of earth, with the plant, in a hole formed by the hand, at about thirty inches apart in the middle of the bed. Draw a portion of soil round the ball and stem of the plant, and, having watered the ground freely, place a hand-glass over the plants until they have begun to grow, when the glasses should be raised on stones or bricks for a week or ten days, after which they may be removed entirely. As soon as the shoots begin to extend, whether before or after the hand-glasses are removed, they must be trained regularly all over the bed, thinning and regulating them as may be necessary.

Another crop may be raised as a succession, if the first sowing was not sufficient ; but it will do to sow in the open ground at any time in July, when the weather is warm enough to produce the plants without artificial heat. If sown as late as August, on a warm border, the plants will come into bearing and keep up a supply until they are destroyed by frost.

THE VEGETABLE MARROW.

THIS is raised from seed, which should be sown in pots filled with any light rich soil, and placed in a frame. About the end of March prepare a hot-bed, if you have not one already in operation for other things. Let the dung be taken fresh from the stable, and laid in a heap to ferment for a day or two, when it should be turned over and again laid up in a heap for a few days longer. When it has fermented sufficiently, commence to form the hot-bed. Place a garden frame on the ground where the bed is to be made, and drive a stout stake in the ground at about a foot from all the four corners of the frame: for the purpose of guiding you in the formation of the bed. Remove the frame and proceed to spread the dung regularly and evenly all over the space within the stakes, shaking and tossing it gently at the same time for the purpose of mixing it well. It must not be trodden down, but lightly beat now and then with the fork to keep it even. Raise the bed about three feet high, and trim the sides neatly with the fork, casting all the loose litter on the top. If the dung is rather dry, sprinkle it now and then with water while the bed is being formed. After the whole has been properly completed, place on the frame with the light, leaving the latter down a few inches at the back for the purpose of allowing the steam to escape. Thrust in one or two sticks in the bed, and at different places, for the purpose of ascertaining the heat of the dung, which may be effected by drawing out the sticks now and then, and feeling them by the hand. When the heat has come well up, lay in a quantity of light rich soil to the depth of five or six inches, and spread it evenly all over the bed. Then sow a quantity of seed in six-inch pots filled with good vegetable soil. Three or four seeds to a pot will be quite enough. Cover them lightly, and give the soil about them a good watering, using a pot which has a

fine rose attached to it. The pots should then be placed in the frame and kept close for a day or two, when a little air should be given by tilting up the lights at the back for a few inches. As soon as the seed leaves expand, the plants should be carefully potted off singly in small pots, and placed again in close heat until they begin to grow freely, when they should be topped and gradually hardened off.

They must be planted out singly in the early part of May, where they are to grow, allotting them a place on a warm, sheltered border. Prepare a number of beds, three or four feet wide, and having small alleys between them; then knock out the plants which are most advanced, preserving the ball of earth as entire as possible, and place them carefully in the beds at about two feet apart, and in the centre of the beds. Cover the balls by putting earth round them; and after supplying the plants freely with water, place hand-glasses over every one, until they are well established, when the glasses should be raised on stones or bricks, so as to let the shoots of the plants spread out. When the plants are growing freely, regulate the branches, training them so as to cover the bed without being too numerous or too confused. They should not be left to grow into a mass of shoots and leaves, but moderately thinned. When they are properly established, the plants will require very little attention, except that any shoots which grow too straggling or irregular should be adjusted and pegged down.

It is a common practice to turn out the plants after being raised in a hot-bed on the top of rotten dung-heaps or old spent beds of the previous year, but it is better to have them grown on a warm border, and the soil can easily be made rich enough, although it is matter for consideration whether the selection of a much poorer soil would not be more productive of profitable results than the method in question. It seems reasonable to conclude, that were a poor piece of ground selected for the purpose of growing the vegetable marrow, the plants would be much more easily managed; and by a judicious application of water, or liquid manure, their luxuriance of growth could be checked or increased according to requirements, and the production of fruit would be more certain, and in greater abundance, than under the old system of planting in exceedingly rich soil.

If you have not the convenience of a hot-bed, sow the

seeds in the open air in May ; where they are to fruit they will come quite as fine, if not so early, as from plants raised in heat.

If the quantity obtained by the first sowing is found to be insufficient for the supply required, a second sowing may be made in July, but this should be on a border having a warm aspect. When the plants come up, and have made a few leaves, they may be planted out into beds in the same way as those raised in the frame. But the seed-bed, and also the bed in which the plants are afterwards planted, must be frequently supplied with water when the weather is dry and warm. Seed sown so late as the beginning of August will even come into bearing and continue the supply until the plants are killed by frost. When planted in the open quarters, these plants must have the same treatment as other crops in respect to weeding and stirring the surface of the soil, and nothing is more essential than plenty of water during dry weather. The vegetable marrow is a kind of gourd, the fruit of which is eaten when young or half grown. Many other of the gourds are equally good if used in a similar way.

THE CUCUMBER.

THIS may be grown in the open air, under hand-glasses, with or without artificial heat; and in pits, frames, or in the stove.

The most simple and generally successful manner of growing it on a small scale is in a common garden-frame, upon a heap of dung formed into a hot-bed. To make a hot-bed for growing this vegetable, mark out the place you intend raising it on; then lay the frame on the ground, for the purpose of ascertaining the size you will require to make the bed. Drive down temporarily, a little distance from each corner of the frame, a stout stake, for the bed must be so large that there may be six inches of dung all round at the outside of the frame. The object of marking the proper size having thus been obtained, you must remove the frame, leaving the stakes in the ground. This operation may be performed either before or after the dung has been prepared, as follows:—Collect as much good stable dung as you think will be sufficient to make the bed to the size wanted. Mix it with a dung-fork well together, and lay it up in a heap for two or three days, when it should be turned over and thoroughly mixed as before. The usual way of turning the dung is to fork it lightly, toss it up as you lift it, and lay it down in a heap close to the place it first occupies. The number of times which the dung should be turned over in this manner will depend to a certain extent on its strength and the heat you require in the first instance in the bed. The safest rule, however, is to turn it well over several times, at intervals of two or three days, until the heat has been moderated, and the rank steam has been let off. Much injury is often produced to plants so succulent as the cucumber by the beds being hastily formed, or the seed or plants too soon introduced. When, therefore, you find that the dung has been properly and suffi-

ciently fermented, you may commence to form the bed in the place marked out by the stakes driven in the ground. Lay the dung evenly all over this marked square, tossing it up and mixing it well as you proceed. Keep the sides straight from stake to stake, and let the dung be patted lightly down with the fork every now and then, to keep it all compact, but on no account trodden on or pressed hard down. When the bed has been built up like a portion of a hay-rick four feet in height, leave it to settle for a day or so, and then put on the frame and glass. Thrust a stake into the bed, so as to reach the middle portion of the dung, and by pulling this out daily, you may, by feeling it, ascertain how far the heat has advanced. And if the dung should have become too hot, it must be taken down in part, and shaken or spread out again. It is not often necessary to resort to this expedient, and we merely mention it to enforce the greater care in fermenting the dung properly, previous to the formation of the bed; for if this point is not properly attended to, success in growing the crop, whatever it may be, is more or less affected; and therefore, though at the expense of additional time and labour, it is much better to turn down the dung again, when found to be too hot, than spoil the bed and the crop also. In general, the heat will have come up in about four or five days, and then a barrow-full of light rich soil may be put in the centre of the bed, in the form of a little mound, but the top depressed like a shallow basin. The steam which comes up from the dung through the soil must be let off by lifting or tilting the light up at the upper end, and supporting it on a small wedge of wood; or even a stone will answer the purpose.

The plants to be planted on the mound of earth in the frame should have been raised from seed, while the preparations just detailed have been going on. The seeds are sown in pots in a small bed formed in the same way, but not so large as that intended to grow the plants in, unless indeed you wish to raise a sufficient number of plants to occupy several frames. After the seed-bed has been formed and properly "sweated," some very light soil should be laid in, say to the depth of ten or twelve inches. The bed should then be left for a day or two, in order to warm the earth, and the seeds may be sown in pots of any convenient size, and in very rich vegetable soil. Fill the pots half-way to their rim with soil,

and having made the surface even or smooth, drop in two or three seeds of the sorts wanted, covering them carefully up. Plunge the pots in the earth in the frame, rather more than half-way up their sides. If you find the soil become rather dry, it should be watered. The young plants may be expected to push up in a few days, and considerable care is necessary to keep the temperature of the bed moist and wholesome at the same time. If the steam should increase much, or smells rather strong, the light should be tilted up a little at the back for an hour or two during fine weather. Though much depends on the extent to which air is admitted, and the vapour of the bed allowed to escape, it is difficult to state the precise limits to which it should be practised. Much will depend on the weather and the condition of the bed; but in general the light should be lifted only a very little. In bright weather greater freedom may be exercised. Should very cold weather prevail, the bed must be covered either with common mats, canvas, or oil-cloth, especially during night. But in using covering be careful to see that the lights are close at the bottom; for if the steam of the dung at the outside of the bed is allowed to enter the frame under the covering, the plants can hardly escape being injured. If air is at any time given to them at night, the lights may be raised about half-an-inch at the upper side, where the covering should be adjusted so as to form no impediment to the ascent of the steam from the outside of the bed; but be as careful to guard against the admission of cold air, if the weather is severe; for this purpose it may be necessary to place the covering a little over the opening. In all cases of covering, the mats should be removed as early as possible in the morning, in order to give the plants the benefit of the light. To prevent injury to the roots of the plants, examine the bottom of the pots from time to time. If the pots are too hot, they can be raised a little out of the earth, or set on the surface altogether. The seedlings will be ready for planting in the bed intended for them at the end of a week, or perhaps sooner. When there are four rough leaves, pinch off the tops. The usual number of seeds placed in every pot is three. The pot of plants so raised is then turned out with the ball of earth entire, and sunk in the middle of the heap of mould, as far as the lower surface of the concavity which was formed; it should then be supplied with water, and the frame shut up.

Air must be given by daylight, and the frames should be shaded during the hottest part of the day. Additions to the mould on the frame will have to be made as the roots come through the sides of the heap, and these additions must be continued until there is a general level all over the surface, the edge of the basin, or concavity at the top, being, as it were, levelled down after the first few days. As the plants advance, they must be spread out, so as to cover the surface in the course of their subsequent progress. They should occasionally be stopped by pinching off the ends, to induce the formation of side shoots.

If the cucumbers are produced very thickly, they should be thinned, so as to allow not more than three fruits to be on the same vine, until they are nearly the size they are wanted, when others may be allowed to swell off. If, however, a profusion of fruit is required, or preferred to a selection which could be grown large, the operation of thinning may be considerably limited. As soon as you find the heat begin to decline, it will be necessary to add a fresh quantity of dung to the bed at the sides. For this purpose all the dung which occupies the external sides of the frame must be taken away, and replaced by good fresh dung, which may be taken direct from the stable, and put round the frame at once; for the hotter it is the better. The best way to do this is to begin in front; take down the dung close to the frame, and rather take out a portion of that immediately under the frame, than be too sparing. Then pack the dung, fresh and hot, close to the bed, in place of that which was removed. Lay it up in this way in sufficient quantity to form a bank rather than an upright front, and considerably beyond the limits assigned to the bed in its first formation. This being done will impart fresh heat to the bed; and if the temperature comes up to the original point, the back part of the bed may be left without being banked up with fresh dung until there is a slight decline again, when the dung at the back is to be changed in the same way as that in front, and after a while the two sides may be also renewed.

Growing cucumbers on ridges out of doors and under hand-glasses may be managed with about half the quantity of dung used in the formation of a bed. A quantity of soil is dug out in a warm situation, so as to form a pit or trench about two feet deep and four feet wide, and any convenient length.

This pit is filled with hot dung, level with the surface of the ground in front, and raised from six to twelve inches behind. The dung must be laid down regularly all over, and patted with the fork to keep it compact, but it should not be pressed very much. After a sufficient quantity has been laid down, it may be left for a day or two to settle, and then covered with a good rich soil to the depth of six or seven inches. When the soil has acquired a moderate warmth, throw on about six inches more. Then turn out the plants, which should have been raised in the meantime in a bed similar to the others already mentioned. Preserve the ball of soil about the roots entire, and plunge the contents of each pot in the centre of the small bed, at distances of three or four feet, according to the length of the bed. Then cover each with a hand-glass, which may be tilted up behind during strong sunshine, but closed towards the evening, as soon as the sun begins to decline. The preparations for growing the cucumber in this way may be commenced about the middle of April; and as the plants advance in growth, stop the vigorous shoots and coarse lateral ones, in order to induce them to fruit. When they have grown so much that they more than fill the space under the hand-glasses, the glasses should be propped up with flower-pots or bricks, to let the shoots spread out; and continue to cover the whole with mats at night, until perhaps the middle of May. The glasses may be finally abandoned altogether, when you find that the weather is warm enough, and that the branches or shoots grow too large to receive any benefit from them.

To grow cucumbers in the open air, without having recourse to any covering, such as hand-glasses, or artificial heat, and after the plants have been raised from seed in a hot-bed, they may be turned out about the end of May, on a warm, sheltered border, and in a soil which has been previously made sufficiently rich. Keep them about four feet from patch to patch, there being, as usual, three plants in a patch. After the plants have been placed in the ground, they should be well watered at the roots, and unless the weather happens to be unusually cold, they will require no protection whatever. They must be kept very clean, and the shoots should be pegged down as they advance, to prevent their being disturbed during high winds. The management of the cucumber afterwards depends entirely on what is wanted. If a great number of

small fruit be the object, all that "set" may be allowed to grow, or at least thin them but very little. If the cucumbers grow fine, there are enough to be swelling at the same time on one vine.

For the purpose of pickling, cucumbers may be got ready to plant out in July or August. The plants may be raised either in a hot-bed under glass, or in the open ground. The principal object in the training of the plants is to make them cover the space allotted to them, and to keep their shoots so arranged that they may not be in the way of one another. When they have sufficiently filled the space, the shoots must be stopped by pinching off the points; and then you may begin to prune away all the old wood or branches that have ceased to bear, in order to make room for those that are young and fruitful. In general the cucumber only requires a good, rich, mellow loam, mixed with a third part of well-decomposed leaf-mould, or half the quantity of cow-dung or horse-dung, rotted into mould.

Under ordinary circumstances, when the cucumber is grown in the open air, the flowers which are produced on the stems are impregnated by the agency of bees and other insects, which, seeking their food within the petals, carry a portion of the pollen from one plant to another. The flowers, being male and female, do not fructify in the same way as those of other plants, which have the organs of fructification within themselves, and therefore require no artificial or accidental agency. In order, therefore, to impregnate the flowers when the plants are grown in frames, we must have recourse to mechanical means. Accordingly, when the flowers are perfectly expanded, the following operation becomes necessary. With the thumb-nail, if sharp enough, nip off one of the male blossoms, which may be known by its having the greater number of stamens with powdery anthers: cut it off with about an inch of stalk, by which it can be conveniently held in the hand; then carefully remove the petals, without injury to the anthers, and holding the remainder of the flower between the thumb and finger, touch the stigmas of the female flowers with the anthers, gently rubbing the powder over them, by twirling the flower between the fingers. The powder thus rubbed on to the three stigmas of the female flower will fructify, and in a short time afterwards the fruit will be seen to set and swell. The other flowers require to be treated in

the same manner, as they expand. The operation of impregnating should always be performed, if possible, when the weather is bright or mild.

The shoots or branches of cucumbers are familiarly called "vines," from their trailing and twining habit. They must be kept in a regular position, and not allowed to grow too numerous or confusedly; and when they begin to produce fruit freely, their terminal parts should be pinched off, more especially if the fruit is wanted large. The plants in the frame should be occasionally syringed with water which has been made slightly tepid. A pot full of water may be kept in a corner of the bed for this purpose, as it will then acquire a temperature corresponding with the atmosphere in the frame. For the purpose of having the cucumbers quite straight, it is usual, in modern practice, to insert them in long cylinder glasses, which are made for the purpose, and may be obtained of any glass dealer.

Those grown in the open ground do not so much require to be impregnated artificially, as the bees and other insects, by flying from flower to flower, carry the pollen on the hairs of their tarsi; and thus, where the plants are exposed, the process of impregnation is generally effected without any trouble.

In saving the seed of cucumbers, select the earliest and handsomest fruit, which is commonly to be found growing near the base of the branch. When it is well ripened, cut it off and take out the seed, which should be laid in a paper bag, and kept for a year or two before being used.

THE MUSHROOM.

FEW persons who have a garden neglect the cultivation of this useful adjunct in cookery; but so easily is it produced, that those who are really partial to it may cultivate it in a cellar or a cupboard. Of the numerous methods of growing the mushroom, we may mention several as the more general. On the floors of vineries they are often forced; against the wall of a garden on a sort of bank of dung; or in an open place on a bank of dung with two sides to it; in a shed where it is under cover from rain; in pots in a common greenhouse; on shelves in a cupboard or a cellar. In short, the process is simple, and may be carried on anywhere, so that the beds can be kept from the wet weather by some kind of protection. Take horse-droppings, or the very short dung from the stable, and after turning it over and over until it possesses a genial but not violent heat, choose out your place and plan of the growing. If in the open air, a wall should be chosen, and against this wall make a bank of this dung; say it shall reach three to four feet high, and as wide at the bottom; lay the dung on a regular slope, and pat it down as you proceed, but you must not press it; when this has lain two or three days, and the bed is getting warm, it may be what they call spawned; that is, the mushroom spawn placed in it. Buy at the nurseries as much as you think will do; it is sold in cakes, and to use it you break it in pieces about the size of a hen's egg, and tuck the pieces, six to nine inches apart, all over the bed, and just under the surface of the dung; then put two inches of mould, damp but not wet, up the whole surface, patting it smooth with the spade, and cover with straw the whole surface thick enough to keep off wet and cold. If the bed is made away from a wall, it must be twice as wide at the base as it is high, but the process is the same; and there ought to be some contrivance to keep on the straw or, which is better, a

tarpaulin suspended over it. If in a shed, or covered place, it will do as well by itself as against a wall of the shed, and of course will give two sides instead of one, which is an object. If on shelves, the same process will do; the wider the shelf the more productive; and there should be a two-inch edging to the shelf to make a trough, that the dung may be at least two inches thick, and if a little thicker the better; as, however, it rises in the same proportion as the larger ones, a good wide shelf will produce a great many. It is perfectly immaterial whether the place is dark or light, indeed it is quite necessary to keep them covered with straw if the place is light, and it is necessary to do so in the dark for the sake of warmth, if the place be not warmed by artificial means. To grow mushrooms in pots, use the sixteen or twelve size—fill all but three inches with horse-droppings, lay a bit of spawn as large as an egg in the dung, so that it may be just below the top of the dung; on this put two inches of mould in good order for working, neither too wet nor too dry; place the pots anywhere in the greenhouse, propagating house, or vinery; the warmer the house perhaps the sooner they come in general, but not always; the stove would be too hot in general. But, grow them where you will, or how you will, the genial heat of the droppings, or short dung, promotes the spreading of the spawn and the consequent production of the mushrooms. Nor must you be disappointed if there be more delay than you wish, because we have known a bed to disappoint for a considerable time, and then be so prolific as to exceed all expectation. Another thing we have known, because it happened to ourselves;—we made a bed in the open ground, but against a south wall, and were vexed that it brought us nothing for some months; at length, in the height of vexation, we used it to dress a quarter of the ground to be planted with cauliflowers; and we have taken up a peck of fine large mushrooms in a morning occasionally, but they continued growing in that quarter for months; and had we been a little patient, we might have had the crop perhaps in another week or two on the bed itself, which we could have protected from the weather, and by that means have protracted the supply for weeks after the weather had stopped our out-of-door production. But this shows that you may spawn the ordinary ground and obtain mushrooms, if the circumstances are favourable, which we take to be moderately light soil, rich in vegetable and

animal manure, of a peculiar stage of dryness when the spawn is inserted ; but we have no doubt that the spawn had so spread itself that the entire bed was a mass of spawn. The mushroom spawn is sold by all seedsmen, nurserymen, and jobbing gardeners. The time of year to form beds is of no possible consequence ; for out-of-doors the spring is the best ; but in-doors whenever you please.

THE ONION.

THIS is a vegetable that cannot be grown to perfection without a very highly manured soil. It will, indeed, grow anywhere, but will never attain a large size or handsome form in poor soil, nor in a confined situation. The soil, therefore, which suits the onion should be made as rich and substantial as possible. Let a piece of ground be well dug and manured, for everything depends on this condition ; make it very fine by bruising all the lumps, and lay it out in beds of any convenient length and about four feet wide, with alleys between them about twelve inches wide. Rake the surface even, and sow the seed thinly and regularly all over the beds, broadcast or in drills ; throw a thin covering of earth over the whole, from the alleys, and then, with the back of the spade, beat down the soil firmly. It is even advisable to tread down the soil over the seed, and then make the whole level by beating with the spade.

The first sowing may be made in March, or early in April, according to the weather and other circumstances. As soon as the seed has been sown, give the beds a good soaking of water, which should be repeated if the weather continues dry ; but watering will not be necessary if there are occasional showers. The best time to sow the onion is when the ground is moderately dry ; and if it is wet, the sowing should be deferred, though you may lose a little time. Rake the alleys neatly, and trim the edges of the beds. All weeds must be carefully removed as soon as they can be handled, as if they are allowed to increase or grow large, they cannot be taken out of the ground without injury to the seeds or young plants.

As soon as the onions appear, and if the weather is very dry, the beds should be thoroughly watered, in order to refresh and invigorate the young plants, which, when they have grown two or three weeks, must be hoed or thinned, so as to leave only one to every four or six inches. Be careful to clear out all the weeds at the same time, using both the hands and the hoe for this purpose. In three weeks more they will require hoeing again; partly because by that time there will be a fresh growth of weeds, and partly because there will be found many onions that had not come up, or escaped notice, at the first hoeing; and therefore a second good hoeing, weeding, and thinning are quite requisite. When this operation is performed, the beds ought to be so clean as to require nothing more, unless it may be occasional watering when the weather continues very dry and windy; for wind is almost more powerful than sun heat in drying the soil, and thereby injuring the plants. As the crop advances, however, weeds will, of course, grow, and they must be removed before they attain much strength.

The onions are continued on the ground until the leaves turn yellow, when they should be pulled up and left on the surface to dry before being stored away for winter use. If the weather be very wet when they have arrived at this stage, they had better be placed in a shed where the air can reach them without being exposed to rain; and if they are so placed that the sun can reach them, so much the better is it for the bulbs, which, thus exposed, become thoroughly dry and fit for keeping.

Another method of treating the onion is to make a sowing in August, and let them grow until they ripen or attain a very small size, which will be all that can be expected of them at such a season; but they will be large enough for pickling, if wanted for that purpose; or if not, then in the spring of the following year, say April, they should be planted out, in very rich ground previously prepared, keeping them six inches apart, and the base half an inch below the surface. Here they will swell, and become as fine as any from Spain or Portugal, if the seed be good and true.

The seeds of pickling onions should be sown on poor ground, late in the season, and should be of the sort called the Silver-skinned. Onions may also be sown at any time, for drawing and cutting young; but the best season is, of course, the

spring, when those for keeping are sown,—that is, in March, April, or May, or at any time till June : those intended to be used as spring onions need not be thinned, as is the practice with those raised and grown to be stored for winter use. They may be allowed to remain as they come up, unless the sowing has been badly performed ; and in that case a partial thinning becomes necessary where the plants grow very thickly. Let the largest and strongest always be first drawn, and in this way the onion will continue to be useful for a long period. But if you require a second crop, make another sowing in June, in very rich soil and in beds, in the same way as directed for the principal sowing.

The manuring for onions is generally somewhat coarse. Night-soil is, in our estimation, better than any other manure, provided that it has first been thoroughly decomposed. If a layer of night-soil and a layer of loam were continued till a heap were formed as high as wanted, the night-soil would soon be disinfected and decomposed ; and after lying up for a year, it might be used with great benefit, but should be sparingly mixed with the earth. Two inches of this compost may be forked into the ground, so that the first six inches of it would be manured. This would be attended with great advantage, especially if it were well incorporated with the soil ; for on this point very much will depend. Pigs' dung, again, is not too strong for onions, which, in fact, are grown by many cottagers oftener in soil manured with pigs' dung than horse dung ; and these unpretending people frequently surpass the gentleman's gardener in the production of large and fine bulbs.

For the purpose of mixing in salads, a small sowing of onions may be made in a hot-bed at any time in the spring and summer, either by itself or along with other things. If to be sown by itself, it may only be necessary to make a moderately large bed, collect a few barrow-loads of good stable-dung, light and littery, and lay it up in a heap to ferment for a few days, when it should be forked over regularly, and again left for two or three days longer. It may then be turned down with the fork, and formed into a bed sufficiently large to take on a frame with a light. Drive in the ground four stout stakes, at such a distance as may include the bed, one stake to be driven in at each corner. These will form a guide in the formation of the bed. Lay the dung down evenly and

regularly all over, raising it perhaps to about two feet in height. Then place the frame on it, and lay in about six inches of good rich earth. It is better, however, not to lay the earth in till a few days after the bed is formed, as it requires a little time to throw off the rank vapour; for this purpose the lights ought to be left open a few inches at the upper end. When you find that the bed has properly "sweated," lay in the soil, and rake it evenly all over. Then sow the earliest sort you can obtain thinly and regularly over the surface, and beat it down with the back of the spade. The young onions will show themselves above the ground, which should then be watered, using rather tepid and good soft or rain water. They must have plenty of air when the weather is mild and warm, but the light should be merely tilted up behind during heavy rains, and very little air should be given if the weather is cold. If the sowing is made very early in the season, it will be proper to protect the plants by covering the frame with a common garden mat in the evening, when frost may be apprehended. When grown in this way, much attention is required in keeping the onions clear of weeds, which, accordingly, should be removed as soon as they can be handled. Occasional waterings must also be given as the plants advance; and when they have attained a few inches in length, they may be drawn, for mixing in salads or other purposes for which young and green onions are generally employed. When raised in a hot-bed they grow fast, and soon become very sweet and mild, compared with some that are grown slower.

In cases where the convenience of a hot-bed cannot be made available, the early crop may be sown on any warm and sheltered border, and protected with a covering of mats supported on hooped sticks across the bed, during severe frost and more particularly at night. The seed should be sown in beds, thinly, and beaten down with the back of the spade. In three or four weeks the young plants will spring up, and they must be thinned and weeded as soon as possible. In this case, however, the thinning must be confined to the parts where the seed has been sown very thick; because, as they will be drawn as soon as they are large enough, there is no use in thinning them.

In storing onions it is usual to tie them by the stalks together in long rope-like bunches; they are plaited into

these bunches by means of dry and slender straw ropes, and then hung up in a cool and airy room. When onions are spread out on a floor, they should be occasionally examined, and such as have begun to sprout, taken away from the rest, and planted in rows, either in beds or spare patches of good soil, in the spring, as early as the weather will permit. These may be used as "scallions," which form a good substitute for young onions in the early part of the season.

Though onion seed is seldom considered worth growing in private establishments, yet if you wish to secure the seed of any large and handsome bulbs, plant them out in any convenient and sheltered spot, and before they begin to grow. Let them be in a row by themselves, so that a few sticks and a line running along the row on each side will protect the heads, which grow on long stalks or scapes, from the action of the wind. When the seed ripens, cut off the heads, and keep them laid out on a sheet, either in the sun or on the floor of a loft, until they are thoroughly dry, when the seed may be thrashed, and put carefully in a bag and hung up, or laid on a dry shelf, till wanted for sowing. Onion seed is apt to spoil if kept in a damp place, and therefore care should be observed to lay it in a room in which the atmosphere is dry and moderately warm.

The variety known as the *Potato Onion* produces no seed, and therefore requires to be treated differently from the common kind. It is quite hardy in our climate, and is raised by planting the offsets or small bulbs which form on the parent bulb. It requires, like the other kind, a rich soil, having plenty of dung mixed with it. In the autumn prepare as much ground as will be sufficient for the supply likely to be wanted. It cannot be too rich, and it should be made rather fine by the lumps being broken or bruised. Then, any time between October and March, proceed to form as many beds as you require; let them be about five feet wide, and have twelve-inch alleys between them. Draw shallow drills across the beds about a foot apart, and plant the bulbs or offsets at a distance of six inches from one another in the row; then cover them over with about an inch of soil. The beds may be freely watered if the weather is dry; and the weeds removed as they become large enough to handle. As the plants advance in growth, clear away the soil from the bulbs so as to expose them: and water twice or thrice a week with dilute

manure water. They will be ready to take up during the summer, and should be laid in some place where they may have the heat of the sun and plenty of air. When they are properly dried, tie them up in bunches, in the same manner as is practised with the common keeping onion, or spread them out thin on the floor of a dry airy loft. Frequent examinations will be necessary in order to pick out any that may have become rotten, or otherwise unsound.

The principal onions desirable for garden cultivation are the Deptford, for a main crop ; James's Keeping, for a store crop ; and the Silver-skinned for pickling. When very large bulbs are required, the Tripoli may be grown : the latter is the variety most suitable for sowing in autumn to transplant on to rich ground in spring.

T H E P E A.

THIS is one of the most popular of all vegetables, and is now grown in such great variety, that the amateur is puzzled how to choose his sorts. In general, it is better to consult a respectable nursery or seedsman, for there are sundry chances against your being any forwarder by other means ; thus, for instance, if the sort you ask for is unknown in the locality, or is not in the stock, you have to come to the dealer's recommendation at last ; or otherwise, if not an honourable man, he may probably give you something else for the sort you seek, or the nearest approximation to it that he has in his shop. We may safely conclude, that nobody wilfully sows seed of any sort that is not a good bearer, therefore we are unlikely to buy inferior articles ; and as to flavour, a well-grown pea, fresh out of the garden, well boiled in salt and water with plenty of mint, has seldom a bad flavour. For early crops, the soil in which peas are grown should be light, dry, and moderately rich. The situation should be well sheltered ; and therefore the best place is on a border having a warm, open aspect, in which the crop may be protected from the north by a wall, and at the same time have all the benefit of the sun during the earlier part of the day. For the principal and

later crops, less care in respect to situation and aspect will be necessary; but the soil, instead of being light and dry, should rather be somewhat stronger and retentive, without, however, approaching an extreme degree of moisture. The necessity for this difference in the soil will be apparent, when we consider that the later crops are exposed to greater heat; and where the soil is light, a considerable amount of labour is requisite to keep it sufficiently moist during very dry and scorching weather.

Peas are always sown in drills; the dwarf ones from twenty to thirty-six inches from row to row; and a space of five feet is not too much for the tall-growing kinds. Never attempt to grow peas unless you have a plentiful supply of sticks suitable for training them on. In some cases, the dwarf kinds do not attain a height which makes it necessary to provide them with sticks at all; but the majority require sticks three or four feet high. The tall-growing kinds must have sticks from eight to ten feet at the least, and in some cases they require them even taller. In sowing peas, many people waste a good deal of seed, the effect of which, when the plants grow up, is, to keep them crowded and weak for a considerable time, until a few take the lead, and the others die off altogether. If a drill were two inches wide, and the peas were put two inches apart from side to side, so as to form a double row in the same drill, it would be quite sufficient. We would only have as many peas in the row as the drill was inches long; because there would be two rows two inches apart, and the peas would also be two inches apart in each row in each drill. We mention this to give an idea of the quantity of peas that is commonly wasted in thick sowing. They ought, in fact, to be sown thinly in the drills. No two peas should be nearer each other than an inch in the whole length of the drill, and the branches will be more vigorous and prolific in proportion as they are exposed to the light and air. The depth of soil with which peas should be covered is rather more than an inch; and after they have been covered in, they should be gently pressed down by treading with the feet.

After they come up an inch or so above the surface, the soil should be lightly stirred, and all the lumps bruised, and a portion of the soil should be drawn up to their stems with a hoe. In about a fortnight more, the earth may be drawn higher up the stems. At this stage the sticks should be

brought out and placed in the ground. They should be thrust into the ground some inches from the peas, so as not to touch the tender roots, and in a sloping direction, so as to lean over the peas. Every alternate stick should be on the opposite side, so that they, in fact, cross one another, forming a canopy, as it were, over the row. The sticks should not be too bushy, but strong and branchy, with a flat surface.

The dwarf kinds which do not require to be stucked should be inclined to one side, by a greater portion of soil being drawn to their stems on the opposite side. They must first, however, be earthed up in the regular way, and gently pressed to the warmest side of the row at the second earthing. They should have plenty of soil placed on their stems to keep them in the proper position, so that the wind may the less readily move the branches to and fro. The peas will now require little further attention, except an occasional weeding. Long coarse weeds, such as groundsel and sow-thistle, will frequently spring up between their stems, and they must be removed by the hand when the soil is moist, so as to disturb the roots of the peas as little as possible. It will also be useful to stir the surface of the soil lightly with a hoe, to keep the ground clean and open. In very dry weather it will be necessary to water the rows; and, when engaged in this operation, you must take notice that a good soaking of all the ground once a week is better than watering the rows only once a day without properly moistening the intervening spaces. The taller sorts of peas may be allowed to grow six inches high before they are stucked. Their sticks must be tall and branchy, and be thrust into the ground upright, about six inches from the peas. Thin sowing is requisite with all the large sorts, as such peas grow very straggling, and send out many branches; and therefore, however thin they may seem at the bottom, they will ultimately spread over all the branchy parts of the sticks above them. They may be sown at about two inches apart in a straight line, and if the seeds do not fail, they will be found to be thick enough.

If the weather is mild, the season for sowing peas begins about the month of November; and many people who are fond of a constant supply, sow as many as they think will make a good crop once a fortnight; but for those who are content with an ordinary supply in season, March and April are the best months to sow. The best way is, to sow the

early and late sorts the same day, as their periods of ripening are sure to be wide enough apart to yield a crop at different seasons. Some people prefer dwarf peas altogether, and sow the same kinds once a fortnight during the months of March, April, and May. We may observe, however, that it is difficult to be out of season with peas.

Those who are anxious to have an early crop of peas sometimes make sowings in pots of a convenient size, in light rich soil. These are raised in a temporary frame, having a gentle bottom-heat, and when the peas attain a good size they are planted out in a warm border, some time in April. But, perhaps, the very best method of obtaining early peas which has been adopted is, to provide a number of pieces of ordinary turf, cut as if for laying down to form a lawn; if possible, they should be thicker, and have a greater quantity of soil underneath. These pieces of turf should be divided into two equal parts, each part being twelve inches wide and eighteen inches in length. These, again, are to be cut down the middle. Place them on any shelf in the greenhouse, with the grass side downwards, and make a slit on the surface of the mould, so that you can stick the peas in an inch apart. You must now keep the turf somewhat moist, and the peas will grow luxuriantly. They may be planted out in the open ground with convenience and perfect safety by the first week in May. It will only be necessary to carry out the pieces of turf with the peas growing in them, and place them in open drills previously prepared for their reception. Here they are to remain, and they must be properly covered in and stuck without delay. Many people prepare their early peas in this way; beginning at Christmas to plant out as soon as the peas are ten inches high, and continuing this until those sown out of doors are ready to follow on. This is a better way than sowing them in pots; because you have merely to make a trench or drill of a proper size, to receive the pieces of turf with the peas all up and doing well; and it must be obvious that they do not receive the slightest check, as the tender roots are not disturbed in any way whatever, unless the turf happens, from carelessness in its removal, to be broken.

Though the method we have recommended for obtaining early crops of peas is decidedly the best for general adoption, it may be worth while to detail the ordinary practice of forcing peas in pots, &c. to be transplanted in frames under glass.

In November, having selected the earliest sort, sow them somewhat thickly in pots, pans, or boxes, in rich loamy soil, and place them in a frame near the glass, where they should remain until they are strong enough to be transplanted. At this stage, take them out, carefully keeping their roots from being broken or otherwise injured. Plant them in frames or pits, in rows extending from the front to the back, two or three inches asunder in the row, and the rows from fifteen to eighteen inches apart. They must be freely watered with tepid water, and have a free admission of air during the day, when the weather is mild; but cover the frames carefully at night, in order to protect them from frost. The temperature of the frames or pits may be about 40° Fahr. at the time of transplanting, increasing it gradually with the growth of the plants, until they are in flower, when it may range from 55° to 60° ; after this, it should be gradually increased to about 65° Fahr. Frequent supplies of water will be indispensable, especially during the time of flowering, and when the pods are beginning to swell.

Peas may also be raised in pots to be planted out in the open ground, by pursuing the following method:—In November, provide a number of eight-inch pots, and fill them nearly to the rims with light rich vegetable soil, and sow a few of the earlier sorts of peas over the surface, covering them lightly with a portion of the same soil, and remove the pots to a cool frame or vinery. Give them a little tepid water from time to time, particularly after they have germinated, and protect them carefully during severe frosts, as well as from the ravages of mice, in their infant stage. The pots will be full of roots, and the plant six or eight inches high, early in March, when it will be time to prepare for having them transplanted. Select a well-sheltered and warm part of a south border, and make in lines across the border a number of holes large enough to contain the contents of each pot. Watch for a mild, warm, and dry day, to remove the pots from the frame to the border, and carefully taking the plants out of the pots without breaking the balls or injuring the roots, place them in the holes already formed, and cover their roots all round with soil. The distance between each row should be about four feet, and the balls in which the peas are growing may be nearly two feet apart in the rows, placed alternately. A quantity of water taken from the stove or vinery should be supplied to each

ball as soon as placed in its new position. In order to prevent the plants suffering from frost during very cold weather, and particularly during night, they should be protected by having large flower-pots or the common sea-kale pots inverted over them, or some other protection applied. This must, however, be removed every morning, unless the weather happen to be cold and frosty; and it is to be taken away altogether at the end of a fortnight or three weeks, when the peas will have become sufficiently hardened, and the weather mild enough. The peas must now be properly earthed up and sticked; each little clump having a separate set of sticks around it. All the dwarf-growing sorts of peas may be raised early in this way very well. A dish of green peas raised in this way may generally be obtained early in May.

In sowing peas during warm and parching weather in the open ground, endeavour to do so early in the day or late in the afternoon; and it will be advantageous to water the drills thoroughly either before or after the peas are deposited in the ground. It will in some cases be advisable to give the ground as well as the peas a good soaking, the evening previous to sowing. The effect of this treatment will be, to cause the peas to germinate rapidly, and take a good hold of the ground at once, so that they will come up with regularity and vigour. But, in the absence of rain, it will be proper to continue watering the soil near around the peas every evening and morning. If the earth is drawn from the middle of the row to within five or six inches of their stems, so as to form a little canal, the water may be given in greater abundance and with more certain effect; for it generally happens in very dry soil, when water is freely given at once, it runs down to the hollow part of the ground between the rows, and is consequently lost to a certain extent. But by the formation of these little canals, it can be kept as it were to the roots of the peas, and when it has properly soaked in, a fresh supply may be given; and in the morning the ground should be carefully levelled again.

Besides the usual way of sticking peas with branches of trees cut and gathered during the felling season, it may be useful to observe for the benefit of those whose conveniences are limited in this respect, and who may be anxious to grow a few of the tall-growing kinds of peas, that there are certain expedients not undeserving of notice. The best one is that

of placing a number of stout stakes or larch poles, at distances of eight or ten feet along the drills. The length of these poles must be proportioned to the height of the peas, varying from four to ten feet, exclusive of the part which is driven into the ground. They should be fixed on each side of the row. A small cord line should be fastened from one to another the whole length of the drill. Having tied the line to the pole at the end, a few inches from the ground, carry it on to the next, take a turn round that, and so on with all the others, going and returning from one end to the other, keeping each line a little higher than the preceding, until the tops of the poles have been reached. This mode of sticking peas is somewhat neater than the ordinary use of branches, but it involves a considerable amount of labour; for the tendrils of the branches require to be directed to the lines now and then, in order to train them in a proper direction. But the trouble of attending to them in this way need not be continued beyond the earlier stage of the plants, as, after the branches once get hold of the lines, they will soon set themselves right.

Peas are more or less liable to the attacks of vermin, particularly mice, and at the time they are safe and beginning to germinate, great care is necessary to prevent their being injured in this way. When mice are prevalent, it is recommended to cut up a number of old furze-branches, and strew them over the drills rather thickly; from their prickly texture, these will generally be found sufficient to ensure the safety of the peas until they are an inch or two above the ground, when the mice will seldom attack them. Certain descriptions of traps are usually set by most people, and these should be kept in readiness, to be laid down in the immediate vicinity of the peas as soon as sown.

Peas intended for seed should be planted away from all others; for if they are situated near other sorts, they are very likely to be affected, and not come true to their kind.

THE FRENCH BEAN.

THE French beans are divided into two groups—dwarfs and runners.

DWARFS.

The soil for these should be light, dry, and rich,—that is, composed chiefly of good sandy loam and a little vegetable mould. The situation chosen for early crops should be on a south border protected from the north. Having made the ground fine and level, draw a number of drills, about two inches deep and about thirty inches apart. The first or second week in May will be early enough for sowing the principal crop; but a few drills may be sown about the end of April, if the weather is mild. In every case, choose a mild, warm day for sowing the beans, and they should not be nearer each other in the drills than six inches. For the purpose of hastening their germination, you may, in dry weather, water the drills with a fine rose, previous to or after covering them in. This watering will be the more beneficial during warm weather, and it should be repeated as soon as the young shoots appear. Some people make sowings in March, but unless the weather promises to be very mild, and the situation unusually favourable, April is early enough for the first crop. Excepting occasional weeding, which should be carefully attended to from the time the young plants come above the surface, nothing further will be necessary until they have grown a few inches, or expanded their first rough leaves. At this stage, you must draw a little soil to their stems, and in about a week more an additional earthing will be necessary. A successional sowing should be made about the end of May, and another every fortnight or three weeks, according to the requirements of the family; but it will not be safe to continue sowing after the beginning or middle of August, except in very warm localities. When the climate is more northerly and cold,

sowing should be discontinued about the end of July. But as French beans make a very excellent and desirable dish, too many sowings cannot be made, in order to keep up a continual supply, and especially where there is no scarcity of room. As the weather becomes more hot and dry, frequent waterings will be indispensable both in the evening and morning. It may not, however, be necessary to water the ground every day; for a thorough good soaking once or twice in a week is much better than merely wetting the surface of the soil twice a day. You must therefore be guided, as to quantity and time, according to circumstances, and rather keep the plants too moist than too dry. It will hasten the germination of the seeds if they are soaked in water for a few hours, or even a whole night, previous to being placed in the soil, and the drills may also be moistened at the time they are sown.

For the purpose of pickling or preserving, you may sow a number of drills, according to the quantity wanted, about the middle or end of May. These may be treated like the others, and they will be fit for gathering somewhat sooner than those sown for the main crop. They must be used as soon as they are ready, and not allowed to lie about after being gathered.

In order to obtain a crop of French beans about a fortnight before those sown in the open ground are ready, you must have recourse to a slight amount of forcing. At the end of March or the beginning of April, commence to prepare sufficient dung for a gentle hot-bed. Lay it up in a heap together, and turn over once or twice at intervals of a few days, and after it has properly fermented, prepare the bed in the usual manner. Place the dung as evenly and equally as possible to about twenty inches high. After the bed is properly completed, lay on a covering of good rich and light soil to the depth of six or seven inches. If there is the convenience of a spare frame with lights, it should be used, and placed on the dung-bed before the soil is laid over it: but in the absence of a frame, a number of hand-glasses may be used, and even a covering of mats supported on arched stakes would be sufficient, or at any rate the next best substitute for the frame.

Sow the seeds thinly in shallow drills, say two inches deep and about fifteen inches apart, and water the soil with a fine rose, and, if convenient, with slightly tepid water. In what-

ever manner the bed is covered, you must admit plenty of air during the day time, and, if the weather is not too cold, a little also at night for a few hours will be beneficial. As soon as the young plants come up, increase the air during the day, in order to invigorate them for being planted out about the middle or end of May, if the weather is mild and warm. They will be ready for removal as soon as they have formed their leading shoots. When they are so far advanced, take them carefully up out of the bed, and plant them in drills previously prepared, on a warm border facing the south. They may be either placed along the bottom of the wall, or in rows across the border. If the latter mode be adopted, keep the rows about eighteen or twenty inches apart, and in every case about five or six inches from plant to plant. The soil should be made very fine, and the plants may be placed a little deeper than they were in the hot-bed. The best way of taking them up is, to lift them gently with a garden trowel. They should be transplanted when the weather is mild and dry, and towards the evening, so as not to be immediately exposed to the sun. As soon as they are planted, and the ground neatly raked over, water them well with soft water; that which has been collected from the rain for some time is to be preferred: it is also desirable to make it somewhat tepid. Should the sun strike out very strongly during the day, a little shading should be afforded to the plants for an hour or two; and this may be continued for two or three days, when the plants will have become sufficiently established to make protection unnecessary. Draw a little earth to the stems as soon as you perceive it to be necessary, and repeat this operation as the plants advance in growth, when the leading shoots must also be pinched, in order to hasten the setting of the fruit. Be careful to keep the ground free from weeds, and nothing more will be necessary.

Besides the method just detailed, and which is chiefly adapted for those whose means are limited, Dwarf Kidney Beans may be conveniently forced in a pine-stove or other forcing-house of moderate temperature. Make up a hot-bed about the end of September; it may be thirty inches in height. The dung should, previously, have been well turned once or twice, in order to ferment. Make the bed large enough to exceed the sides of a frame about eight or ten inches; and when it has been completed, put on a frame with one or two

lights, according to the supply wanted. In three or four days lay in some good light vegetable soil, to the depth of seven or eight inches, and level it neatly, removing all stones, and making the surface fine. Then scatter the seed, not too thickly, over it; cover the whole with nearly two inches of soil, and beat it gently down with the back of the spade, which should be made clean for this purpose. Protect the bed in severe weather, by laying a quantity of light litter round the outside. As soon as the plants have made their rough leaves, which may be in the course of a week, commence to prick them into six or eight-inch pots immediately; and during mild weather they may also be potted into pans or long boxes, about six or eight inches deep, having holes at the bottom. The soil used should be made rich and fine, and a layer of well-rotted old dung should be placed at the bottom of the pots or pans. Having filled the pots about half full of soil, take up the plants carefully from the seed-bed with a small stick, having a smooth thin edge about two inches broad; three or four plants in each pot will be plenty, and if they are put in boxes, they may be kept at similar distances from one another. Spread out their roots towards the centre, and incline the stems a little to the sides of the pot, then cover the roots with a very little soil, say an inch thick, and water them slightly with tepid water. This done, remove the pots to a cool part of the stove for a few days, when they should be placed on shelves as near the glass as possible. They may also occupy the top of a flue, or other similar situation; but here the pots should rest on bricks or tiles, in order that the roots may not suffer from too much heat. They should not, however, be placed over any back flue which is far from the light, as the consequence would be to make them grow up weak and unfruitful. As the plants advance a little, pot more soil over the pots, but not quite to the rim. From the time they are placed in a warm situation, water them frequently, and always with tepid water; a gentle syringing now and then, especially during bright warm weather, will also be beneficial. Air may likewise be given occasionally, when there is no danger to be apprehended from cold. If you find any plants growing too freely, pinch off their tops, and see that they are not on too warm a bottom.

If it is necessary to keep up a succession of this favourite vegetable, you may every fortnight or three weeks sow a

quantity of seed in a frame, to be planted in pots as already described; but a fresh bed will have to be made as soon as the first is exhausted. You may, however, preserve the heat of a bed for a considerable time, by adding fresh hot dung to the sides. This operation is erroneously called "lining."

The leaves and stems of kidney beans are, when forced, much subject to the attacks of a small insect known by the name of *thrip*, and which is always to be found among certain kinds of plants kept in a hot temperature, especially if in a dry condition. The best remedy, therefore, against its depredations is to syringe frequently underneath the foliage, where this insect chiefly preys. It is also a good plan to throw a little water over the hot flues or pipes, and fumigation by tobacco may be resorted to in extreme cases. It is always best to keep the insect from increasing to any considerable extent, and this may generally be done with such plants as beans when forced, by keeping the atmosphere of the house somewhat moist, and using the syringe freely on the under sides of the foliage. As the plants advance towards their bearing state, it may be useful in some cases to give them the support of a stick; but it will be as well if they are so vigorous as not to require this; these sticks, if used, should be made small and round, and merely stuck in the centre of the pot; one stick to each pot will be enough, and all the plants which the pot contains should be tied to it if they require support. Give plenty of air during sunshine, and if the plants are near the glass, they should be protected by a covering of mats on frosty nights. If the temperature is kept somewhat uniform, and not too hot or dry, the plants will attain a fine, healthy, and fruitful condition; and when the pods are sufficiently large, they should be gathered immediately, while they are tender and well-flavoured. By keeping the pods from swelling and ripening their seeds, the plants may be kept the longer in a bearing state, but as the main crop in the open ground advances, it is not worth while depending on the plants in the forcing-house any longer than is absolutely necessary; and therefore only the earliest and best pods should be gathered. If there are plenty of plants, you may very properly thin the pods as they begin to form, and this will hasten the growth of those selected for gathering.

SCARLET RUNNERS.

These have a climbing habit, and when well grown are both ornamental and useful as a wholesome and nourishing article of food. The soil in which they are sown should be rich, light, and loamy; and the best situation for growing them is in an open but warm part of the ground. They may be sown in drills, either singly or several together, about six feet apart; or several sowings may be made at different parts of the garden. The drills should be about two inches deep, and drawn from north to south. Then sow the seeds very thinly, say five or six inches asunder, and cover them in with the rake. The first sowing may be made about the beginning or middle of May, when no danger from frost is to be apprehended. As soon as they have made a pair of leaves, draw a little soil to their stems, on each side, and as soon as you see that they begin to form runners or twining stalks, procure a sufficient number of stout, branchy sticks, about nine or ten feet long, and thrust them into the ground on each side of the row, and a few inches from the plants. They will soon grow up and twine over the sticks, requiring no further assistance. In dry weather, do not omit to water the ground thoroughly, and always in the evening or morning. It is also indispensable to hoe up the weeds as soon as they appear, removing those growing between the plants carefully by the hand. The pods should be gathered green when they have attained a tolerable size, for they are tender until the beans begin to swell; and if they are regularly gathered at this stage, the plants will continue to bear the longer. In proportion to the breadth of ground sown, the plants will furnish a supply until they are nipped by the early autumn frosts, when the haulm should be removed. If a crop has been raised on any patch or border which may not be wanted for anything else during winter, you should spread a little dry litter over the ground; by this you may secure, without much trouble, a good and early crop the following year. But the general practice is to sow fresh seed every spring, and perhaps it is preferable to any other.

THE POTATO.

THIS vegetable, which, next to bread, is almost the staff of life, is the most profitable of all the garden produce; that is to say, more people would be sustained by an acre of potatoes than on an acre of any other produce whatever; and more than this, it is less expensive to cultivate than any other; but it ought never to be grown twice in succession on the same ground. With plenty of dung, good digging, well keeping clear of weeds by hoeing, and once earthing up to cover the crop, it becomes the most certain of all crops. But no vegetable has been worse cultivated; year after year it is planted on the same ground, especially in Ireland; hardly attended to afterwards, until the digging-time, when the weeds smother the decaying haulm and endanger the crop. The usual practice among a vast number of cultivators is to cut potatoes into pieces, with one good eye to each piece, and to plant these sets from four to six inches deep in well-dunged ground. If this plan be adopted, the sets should be cut a considerable time before they are used, a little lime sifted over them, and turned occasionally for the first few days, until the cut portion has thoroughly dried; but we strongly recommend whole potatoes of a smaller size, in preference to any cut sets, and long before planting-time these should be sought, because they are generally sold very cheap, being too small for a gentleman's table. By obtaining all those of any one taking up potatoes, you may select the largest for seed; the smallest may go to the pigs. Potatoes of the sorts that come large, should be selected about the size of a walnut with its husk on it; the sets for the smaller kinds of early potatoes will do as large as a walnut without its husk. Above all things, plant such as have not begun to shoot. Thousands of tons of potatoes that are pitted in winter, have to be torn from a labyrinth of haulm grown from the potatoes, and these being rubbed off, the tubers go to market, look well, and some

get planted, to disappoint the owners with an inferior and damaged crop, or a failure altogether. Provide your sets before they can possibly have shot, or even swelled their eyes. In fact, at taking-up time, if in your garden, lay aside those which are a right size for sets, as well as those which are too small for anything; let the sets lie on the ground till they are actually green, for nobody can then eat them, and they are the better for it. Keep them in a dry place, free alike from heat and frost.

As to the time of planting, it is not of the slightest consequence, whether it be sooner or later, during all the months from November till May, or even as late as July, provided the eyes have not started; but we have always advocated autumn planting on this ground; not one in ten look after their sets till they want them; and if this be the spring time, they cannot know whether their sets have been growing much or little, whereas, if the planting is done in autumn, we are sure the sets cannot have been spent by growing. Of the many ways of planting we have little to say; we like dibbling best of all; we like drawing deep drills, so as to be able to lay the sets in, and cover them, in autumn planting, six inches, in spring planting, four. On a large scale, furrows are made with the plough, and the sower follows close, dropping the potatoes about nine inches apart, and they are afterwards covered by the plough; but in a garden, draw the drills with a large hoe, as deep as required, and then, after planting the sets a foot apart, cover with the hoe, by drawing back all the earth that you drew out to sink the drill. The drills for dwarf sorts of potatoes should be eighteen inches to two feet apart, and for the taller growing ones, two feet six inches to three feet; the medium, perhaps, may be the best, but much depends on the land; if it be rich, take the widest range, and if poor, the narrowest. When the potatoes are above ground, if it be before May, continue to cover them; but in any case stir the earth about them, and draw earth to their stems. When they have grown up a few inches, draw the earth to them, so that their tops are covered some inches. Let them be hoed very clean; nothing takes from the potato crop so much as foulness. Weeds draw twice as much nourishment from the soil as ordinary plants, as may be supposed, indeed, by their rank growth, if once left to themselves.

At the taking-up time, which is when the haulm has turned

yellow, fail not to select those fit for seed ; let none but the very smallest go to the pigs ; and if you are growing to increase your stock of a particular sort, let not one as large as a pea be wasted. It is true that such will not bring a crop, but with a new sort, or a sort we are anxious to increase, if they only give us a single potato, it is something.

We see now many fine potatoes, and there are some few recommended in the Garden Almanack, but we advise the trial of half-a-dozen sorts at least, because potatoes which are excellent in some ground are bad in other ground ; nor does it matter much what varieties you try.

Potatoes required early in the open ground should be planted at the foot of a south wall. Loosen the soil a little, and lay the sets in the corner next the wall ; take earth from the border to throw on them, and form a sloping bank, three or four inches thick, on the potatoes ; these, if planted early, will be up early, and being in the corner, it is easy to throw on litter for hard weather ; but frost will scarcely hurt them in such a situation ; the earth is warm, and the wall warm, and it would take some time to cool them. In fact, a frost that would kill down potatoes exposed to the ordinary winds and weather, would have no effect on anything at the foot of a south wall. These potatoes, still further protected by litter, will be ripe weeks before others planted at the same time in an open space.

Potatoes may be forced in a common hot-bed. Put three inches of soil on the top of the dung, and on this lay the sets nine inches apart every way ; cover with three inches more soil ; they must have all the air you can give them in mild weather, with due regard to the escape of the heat, which, however, must not be very great. Melon and cucumber frames, when done with, would, if fresh lined, do very well for potatoes, stirring the earth all over as deep as it goes without touching the dung ; place the potatoes within three inches of the dung, and make up the covering to three. When they are up three inches high, put fresh mould to the bed two inches thick all over, because they cannot be earthed up in the common way ; these may be planted in the autumn, and eaten at the beginning of the year ; they are rarely allowed to grow their full size, because small new potatoes are more esteemed than large old ones.

There has been of late years a new kidney potato called

Chapman's, which is planted in July, and taken up in November, or covered over in the ground to preserve them from frost, and taken up as they are wanted; these are as handsome as new potatoes from December to May, and thousands have been sold for new potatoes. If they are taken up in November, they are buried or pitted as others, with this difference, that, instead of being pitted by themselves, they are pitted with earth to fall between them. Whether the market gardeners, who grow large quantities, and sell tons' weight at sixpence per pound in the spring months, take this trouble, we know not, but filling the earth in keeps the skins whiter, and their appearance is generally equal to the finest new potatoes. These Chapman's Kidneys are a little like the Ash-leaf Kidney, but are not the same potato, though some have affirmed it.

New varieties of potato are readily raised from seeds. The berries, or potato-apples as they are called, should be gathered when ripe; separate the seeds by bruising the berries, wash them from the pulp, dry them, and put them by in papers in a dry place until the spring. They should be sown about the middle of April, on a bed for transplanting, or thinly in shallow drills, to be singled out to six or ten inches apart. It is, however, best to sow on a bed for transplantation, because, in raising seedlings of any kind for the chance of obtaining improved varieties, every plant should be grown and tested, or it is probable that the best in quality may be destroyed. It is, therefore, recommended to plant out the seedlings when large enough into rows two feet apart, and the plants ten inches or a foot in the row, giving them rich soil, and keeping them clear of weeds, and properly earthed up as they grow. It is possible some may exhibit their qualities the first season; and in this case they may be retained or at once rejected, as their qualities may deserve; but, usually, it will be desirable to give all the plants a second year's trial, in order to ascertain their real qualities. To this end, every plant should be taken up separately, and some of the best of the produce kept separate, and planted in a row by itself the following spring. If carefully managed, this growth will be a sufficient test of their qualities as to earliness, productiveness, and flavour—the three qualities of most importance in a potato.

CHIVES.

THESE are very highly esteemed for culinary purposes, and are sometimes substituted for young onions. They are generally used for soups and mixed in salads, to which they impart an agreeable pungent flavour. They are propagated with the greatest ease, and may be grown in almost any situation for nearly the whole year. We have grown them with considerable success in moderately strong sandy loam, but any common garden soil will suit them. The plants are to be obtained from a nurseryman or market-gardener. Make up one or more beds in the spring, of the usual size, and anywhere that is most convenient. Rake the soil evenly, and keep the alleys or little paths about twelve inches wide. Plant the chives in rows, about a foot apart, and eight inches from plant to plant in the row; then rake the ground, and give it a good soaking of water. The plants will soon grow to moderately-sized tufts, which in a year or two will be so close together as to make it necessary to circumscribe their limits a little by cutting them to a smaller size and making fresh plantations with the offsets thus obtained. The plants should not be allowed to run to seed, as their flavour becomes impaired; and when they are gathered, they must be cut close to the surface of the ground. Those thus cut will send up fresh leaves, and a supply may thus be secured for great part of the year, without any protection to the plants being necessary, except in situations much exposed to cold cutting winds or unusually severe frost, when a quantity of dry litter may be lightly bound over them by means of branches or hooped sticks.

This is the common way of growing and gathering the chive. Another and a preferable mode is to separate the bulbs while dormant in autumn; plant them in rich ground, and take the crops of bulbs thus produced for use, instead of the green tops, as is at present generally done.

THE CABBAGE.

THIS is one of the most useful of vegetables ; and from its hardy character, its utility in all stages of growth, and even in decay, it is worth the attention and care of every one who has a piece of ground. The cabbage may be sown at all times, planted out at all seasons, and in all situations. It admits of being used with profit from the time the plants form one or two leaves, until it has grown so large that the heart is nearly as hard as a stone ; and forms a leading article of vegetable consumption. On this account it should be the foremost among the productions recommended for cottagers. Though not particularly nice as to soil or situation, cabbages do best when grown in well manured ground. At all events, in such soil they are generally earlier than when raised in cold and stiff ground. But dung need not be profusely applied, if the ground is naturally of a fertile and open kind ; for the flavour is generally better in such soil than where a great quantity of manure is used. Cabbages may be produced in succession with great facility, and the seed may be sown nearly all the year round.

Those greens which are bunched for market, and commonly termed bunches of greens, are called coleworts ; strictly speaking, the colewort is a distinct plant, a small kind of cabbage which, in a few weeks, grows large enough to eat ; and that kind, like the white-cabbage tribe, is eatable from the time it has four or six leaves until it has a hard heart. But the common cabbage is quite as nice in its young state, and therefore most of the growers for market, use plants of the common cabbage, in its young state, for coleworts, or bunched greens. In growing these for sale, in the young state, you simply allow them to grow till there is enough to be worth bunching and eating. The determination of the size is simply a question of economy. If the markets are well up, and vegetable scarce, the cultivator for sale may perhaps get a higher price for them

in the small state, than he would if he allowed them to grow three or four weeks longer ; because, although twelve would form a better bunch in three weeks than twenty-four would at the present moment, yet the twenty-four, sold while the market is up, will bring more than they would with three weeks growth on them when the market is down. Millions of bunches of cabbage-plants are sent to the metropolitan markets in the winter months, while the plants consist of merely a few leaves, and do not show the least disposition to turn into heart ; and there was at one time a distinct kind of small cabbage, that reached but a small size when matured ; now, however, it is found that plants of the best kind of cabbage answer all the purposes of bunching while in a young state, and they are grown accordingly.

It is now a very common practice to plant young cabbage-plants in rows, nine inches from row to row, and six inches from plant to plant. At the latter end of the year, as soon as they have a few weeks' growth on them, so that they will do for bunching, every other row is pulled up and tied in bunches for the market ; and, when this is done, and the rows are eighteen inches apart, the next thing is, to take out two out of three from the row, and leave the plants standing eighteen inches apart in the row, where they remain undisturbed till they have perfected themselves as cabbages. By these means the ground is rendered very productive, because, while young, they grow as fast six inches apart as they would at the proper distance ; and they are thinned out to the proper distance before they suffer anything from crowding. If a piece of coleworts, that is, plants of the small kind, that would not come to large cabbages, were planted out, they would have to be cleared all off, whereas proper cabbage-plants, treated as we have described, would bring a profitable crop, and leave the ground full of spring cabbages besides. Seeds for this purpose should be sown in August, thinly, in beds four feet wide, with alleys of one foot wide between them ; these should be kept clear of weeds until the plants are large enough to plant out, say October ; and by Christmas, when in seasonable frosts vegetables bring a good price, or, at any rate, greens are valuable, they will be large enough to begin upon, and may be in a few weeks thinned out to the distance the cabbages ought to stand. When this is done, and the plants are cleared off so as to leave the cabbages eighteen inches apart, the

ground should be hoed, and the earth drawn to their stems ; they are then clean, and will, in due time, make excellent spring cabbages.

The early and late kinds should be sown at the same time. Begin in March for the first spring sowing. Dig the ground moderately fine, and make beds according to the supply of plants wanted ; these beds should be about four feet wide, and have alleys, or little paths, between them. Rake the surface evenly, and sow the seed, broadcast, very thin and equal. Each sort, though sown at the same time, should be kept separately, and the name of the sort marked on a tally stuck into the end of the bed. Rake the surface of the ground again, so that the seed may be properly mixed with the soil, and, if the weather is dry, water the beds thoroughly, and repeat the watering as occasion may require. When the young plants spring up, draw out any that happen to be much too thick ; but generally let them alone until they have made two rough leaves, when they should be pricked out into other beds of good rich free soil, and planted in rows six inches apart, and about three inches apart in the rows. When they have advanced far enough to plant out finally, take the first opportunity that may occur for performing this operation ; and be sure to give the cabbage its full share of vacant ground as the other crops are removed. In the heat of the summer, young cabbages are excellent ; and, if you are at all overstocked with plants, you can plant them out, not more than six inches apart in the rows, which may be only a foot from each other. When so planted, they may be allowed to grow until they are large enough to bunch up as greens, or coleworts, which is frequently soon after they have had a month's growth.

When the plants are not placed so very closely together, it will be proper to draw a little earth on each side of their stems, and in hot dry weather the application of liquid manure will be very beneficial. In August, at the most propitious time, you should make another sowing of both late and early sorts in beds in the same manner as before. If the weather happens to be wet, you should take advantage of the first favourable day. As soon as the plants have grown strong enough, begin planting them out after any wet day.

By sowing early and late sorts, in spring, and in July or August, and taking advantage of fine weather to put out the

best plants from time to time, according as the opportunity occurs, you can have cabbages the greater part of the year. The August sown plants can be put out for the early spring crop, and by following up the planting out through the winter, as the ground becomes clear of crops, there will be a succession quite up to the period when the spring sown ones come in. But nothing like a general planting should be made in moderate sized gardens, for the effect of this would be to have a useless glut at one time.

During the general progress of the plants, from the time they have made one or two leaves until they are fit for cutting, the ground should be frequently hoed and loosened, and all weeds destroyed as soon as they appear. Any plants that may be observed running to seed should be removed, and fresh plants from the intermediate beds planted in their stead.

The autumn planted cabbages to come in early are always forwarded a little by tying them up like the lettuce. By thus tying them, the air and light are excluded from the heart of the cabbage, weeks before their own growth would do it, and there is a blanching of the centre that forms what may be called an artificial heart, because it is formed of leaves which, if not confined, would open out like other outside leaves. However, the cabbage is always tender while young, and these tied-up specimens, although not so close as the matured vegetable, eat well, and are in greater request from their earliness than they would be if left on the ground till they formed hearts without such assistance.

If the autumn sowing has not been made, and an early supply happens to be wanted, you may sow a little seed on a gentle hot-bed, either protected by glass or mats. The seed may be sown in a shallow box or pan of any convenient size, and in three or four inches of good, rich, light soil. Give them a good soaking of tepid water, and admit plenty of air through the day. Any time in February will be soon enough for such a sowing. After the young plants have come up and made one or two leaves, they may be carefully pricked out on a warm border of good rich soil, about two inches apart, and protected by hand-glasses partially raised at the back, so as to admit plenty of air to harden them off for transplanting in the open ground. In the absence of a frame or hot-bed, you may sow the seeds on a warm border and protect the young

plants by hand-glasses. These will be ready for transplanting in May and June.

In cutting cabbages for use, they should be separated from the stem immediately under the leaves, or the whole plant should be taken up, and the stems cut away and thrown on the rubbish heap to be burned, or on the manure heap to rot. In cutting the late summer and autumn plants, the stems and roots may be left in the ground, at least a portion of them, for they will make fine small cabbagey heads or sprouts in the winter and early spring, and these make a delicious and excellent dish in the absence of rarer dainties, at the dull season. But when the stems are so preserved, the ground should be stirred with a fork and kept neat and clean, for nothing is more unsightly in a garden than a cabbage quarter overrun with weeds, or covered with rotted leaves after the crop has been all cut. Besides, the keeping of the soil free and clean is conducive to the improvement of the flavour of the sprouts.

Cabbage seed is hardly worth saving for private people, but if you are anxious to save some, you may mark any plant that is really out of the common way in point of quality or size, and use all precautions against its being spoiled by being mixed with others of the cabbage tribe.

The varieties of Cabbage are numerous, and continually changing, the favourite varieties of one season soon giving place to others, at least in name. The smaller early kinds are those most generally preferred, as they are without doubt the most profitable for cultivation, on account of their coming much sooner into use than the larger, coarser kinds. The Early York is the basis of many of these small early varieties, and both it and they, when true and genuine, are of first-rate quality. At present, the favourites are Nonpareil, Paragon, and Matchless; and whoever obtains these will not be disappointed. The Early Barnes, Wheeler's Imperial, and Preston's Victoria are other good early kinds. The Battersea is a larger kind, and a very profitable sort for the cottager, being hardy and moderately early. A still larger sort is the Vanack; and the Drumhead, a very large, flat, and hardy cabbage, is sometimes planted in gardens on that account, though it is more generally valued as a field crop.

BRUSSELS SPROUT.

THIS favourite vegetable has received its name from its habit of bearing small cabbage-like heads on its stem, and which, when properly cooked, form one of the best vegetable dishes. It requires to be raised from seed, and thrives well in moderately rich soil. The seed should be sown in March or the beginning of April, in a bed in any convenient situation, such as a south or an east border. Dig the ground finely, and trench in a quantity of well-decomposed dung, or old leaf mould. Then form a bed about four feet and a half wide, or less, according to the supply of plants wanted. Make the surface somewhat even, and sow the seed thinly broadcast, covering it over lightly and raking the bed neatly. If the weather is dry, the ground should be thoroughly watered, and all weeds must be taken out by hand as soon as they come up. The plants will soon appear above the surface, and they may be partially thinned out where they are growing too thick. They may, however, be allowed to attain an inch or two in height before they are thinned, when those taken out can be planted in an intermediate bed, to become strong enough for finally planting out. When the plants have attained a good size, say three or four inches, they should be planted in any open compartment, in rows about thirty inches apart, and twenty from plant to plant in the row. The ground in which they are to grow should be well dug, and enriched by having a portion of old dung laid in the trenches. If it has been properly ridged and manured in the winter, it will only be necessary to fork it over, making the surface as free and level as possible. Having stretched a line for the purpose of guiding you in planting, take up as many plants as are required for one row only, and dibble them in, preserving all their roots and the earth about them. If the weather at the time of planting is not so moist

as may be desirable, it will be necessary to water the ground about the plants, in order to refresh them, after having been disturbed. Those left in the bed should also be watered on every occasion of weeding or lifting plants. After being planted out in the open ground, the plants will only require to be earthed up once or twice, as they become large, and the ground must be frequently stirred, and kept clear of weeds. Fresh plantations may be made for a successional crop, and the later plants raised in the bed will be available for this purpose. By the winter there will be plenty of small sprouts produced on the stems, and these may be used as wanted. If you find any plants which are remarkably prolific in sprouts, and wish to save the seed, plant them out in some part of the garden where they may not be mixed with any of the cabbage tribe. The following season the seed will ripen, and the plants may be cut before the seed is perfectly ripe. Lay them down on a sheet in some place where they may have full exposure to the sun, and when quite dry the seed may be beaten out and laid up in paper bags.

B R O C C O L I.

THIS is raised from seed, which is generally sown in the open ground, or on borders where there is full exposure to the light and air. The seed should not be sown on a narrow border backed by a high wall, or where there is much shade, from the presence of trees or other objects, as the plants in such places would grow up weak and lanky. We are very partial to the plan of sowing all the early and late crops at one time, as a beginning, and to repeat the sowings at a later period. It is far more satisfactory generally, and the two sowings, though a little puzzling sometimes, usually come in well, and make a diversified supply. We, therefore, recommend that whatever sorts you select for the early and late supplies, you sow half in April of all the sorts, and the other half at a later period, according to your wants. All the sorts of brocoli require a good, light, rich, loamy soil, and an open warm situation. The ground should be well dug, and if it is

not rich enough, you should dig in a portion of old decomposed dung, such as has been used for a hot-bed the preceding year ; and deep digging is indispensable for this crop. As the plants in the seed bed should have plenty of room, you should make the beds rather wide ; and if the ground has been properly dug and ridged up in the autumn and winter, it will have become finely pulverised, and therefore the more suitable by being exposed to the action of the frost ; but if it has not been prepared in this way, you must dig it well, and use plenty of rotten dung. Having formed the beds to the proper size, rake the surface of the soil neatly, and sow the seed broad-cast very thinly, or, if preferred, in shallow drills drawn across the bed, but the drills must be wide enough apart to allow of the plants forming their rough leaves without being too much "drawn," which they would be if the drills were close. After the seed is sown, sprinkle a little fine soil over the bed, and rake the surface evenly. If the weather is dry at the time of sowing, it will be necessary to moisten the soil by an application of good rain-water passed through a fine rose. In some localities, or when the season is late, it may be necessary to protect the seed from frost, which, especially at night, not unfrequently harasses the cultivator, even at so late a period. The bed may, therefore, be covered with mats, supported on hooped sticks. Dried fern or light litter may also be used for this purpose, and these may be merely strewn over the bed. When the plants have become large enough to admit of being handled well, let them be pricked into other beds made up on purpose, and to which a tolerably good dressing of well-rotted dung has been given. The largest plants must first be taken up, and the others allowed to remain, in order to acquire strength. In planting them in the second bed, keep them from four to six inches apart, and it may be most convenient to keep them in rows about the same width, for the purpose of enabling you more easily to stir the ground and remove the weeds ; operations which must be repeatedly performed. They should be planted with a small, bluntly-pointed stick, about six or eight inches in length, and thick enough to make a hole, when thrust into the ground, large enough to take in the roots of the plants. Here they should be allowed to grow, until they have attained considerable size and vigour, when they may be finally planted out in the open quarter where they are to grow to

maturity. Here the ground should also be light, rich, and deeply dug. The planting out will be entirely dependent on the convenience of the garden. The larger sorts of broccoli ought to be two feet apart in the row, and three feet from row to row. The smaller sorts may be eighteen inches from plant to plant, and the rows two feet apart. If possible, the planting should be performed when the weather is somewhat dull and moist, for then the plants become the sooner established; but if it is not convenient to wait till you have such weather, you must plant towards the evening, and moisten the soil thoroughly around the plants as soon as they are placed in it. If the weather continue dry and warm, the plants must be watered every evening till they are properly established in the soil. In removing the plants from the intermediate beds, do not expose the roots to the sun and air, but keep them covered up with a piece of wet matting, and keep only a few in the hand at once at the time of planting. In some cases the practice of what is called "puddling" in the roots may be adopted with much benefit. Make a hole in the ground, a few inches deep, and having filled it with water, stir the soil with a stick until the whole has become a soft mass of puddle, in which you should place the roots of the plants, and immerse them sufficiently to ensure their being well coated with the wet soil. In this state, when planted in the ground, they will the more readily become established, and withstand the warmth of the sun. This practice, however, is not necessary when the weather is somewhat moist or showery. After the planting has been completed, their further culture will consist chiefly in hoeing the ground from time to time, in order to prevent the plants from being injured by the accumulation of weeds, which soon spring up in light rich soil. When the plants have attained some considerable size, draw a portion of soil to their stems on each side; this will be very beneficial to them in keeping their roots cool during hot weather, and otherwise assisting their development.

As the various early crops are cleared off the ground, the vacancies will be very naturally filled up with winter greens of some kind, and accordingly, as the broccoli plants in the nursery beds get large enough to plant out, or rather as they get too large for the bed, you should avail yourself of empty pieces of ground to plant the broccoli out on. When allotted an exposed situation, broccoli should not be planted in rich

ground ; for although the plants and flavour may be the better for the increased supply of rich nutriment, if they escape being injured by frost during the winter, they are much more likely to escape injury when planted on poorer ground than on that which has been well dressed or highly manured. As the plants in the quarters progress, they must be again earthed up, so that the stems may have plenty of soil round them, and the intervening spaces should be properly and repeatedly stirred with a hoe. There is no set time for planting out : the operation should always be proceeded with as the plants become large enough and when the weather is favourable or the ground ready. Sprouting brocoli should have the tops taken off the instant they show the young flower head ; for not only do the tops form an excellent dish, but when they are thus taken off the sprouting is considerably hastened.

It is scarcely worth while saving seed, and very difficult to save it true ; as a small packet will generally be sufficient for an ordinary supply, you had much better purchase it from the seedsman. If, however, you happen to have a plant which is remarkable for its hardiness or anything out of the usual way, you should mark it out, and let it ripen its seed.

Brocoli is in the best state for use when the heads are moderately large, close, and firm, and if they are not cut at this stage, they soon divide and branch out, when their flavour deteriorates. They should be cut clean off, with a few inches of the stem kept to them. In very cold winters, brocoli is liable to be destroyed by frost ; and it is, therefore, a matter of considerable importance to protect them so that they may be preserved in the best possible condition. In general, it is most convenient to lift the most forward plants, and place them in a cool dry shed, or light cellar, where no danger is to be apprehended from the frost. They should be taken up entire, and with as much soil to the roots as possible. In placing them in the shed or cellar, keep them in an upright position, and they will keep fresh and mature their heads in a short time. Various other methods are adopted to protect brocoli during intense frost, but this is the safest and easiest for general use.

The varieties of brocoli are very numerous, but, as might be expected, the differences are not very great ; and being a very sportive plant, the varieties soon give place, at least in name, to others which are continually coming into notice.

THE CAPSICUM.

THIS is raised from seed sown in the spring, in pots, and placed in a gentle hot-bed. Towards the end of January, collect a quantity of good stable dung, and lay it up in a heap to ferment; at the end of four or five days it should be turned over, and again laid in a heap for a few days longer. After having been properly turned over twice or thrice, at intervals of two or three days, the dung will most likely be ready to form the bed. Lay down the frame which you intend using, and drive a stout stake in the ground at each corner, or rather at about twelve inches from the corners of the frame, which may then be removed, and the stakes will form a guide in making the bed. The dung must be spread regularly all over the space within the stakes, shaking it up and mixing it well together, so that the heat of the bed when formed may be as uniform as possible. Continue to lay up the dung in this way, occasionally patting it down with the prongs of the fork, till it has reached a height of three feet, but it must not be trodden down or otherwise pressed. When the bed is raised to the height required, trim the sides neatly, and place the frame with the lights on, leaving the latter a little open at the back, to let the steam of the dung escape. In a few days the bed will have acquired a regular and moderate heat, and about six inches of light soil, well decomposed leaf-mould, or tan, may be laid in, for the purpose of plunging the pots in which the seeds are to be sown.

The soil most suitable for the capsicum is light rich loam, with leaf-mould, and the seeds should be sown in pots about six inches wide. When the young plants have come up, they must be watered with tepid water by means of a fine rose, and kept clear of weeds. It is also necessary to admit a little air to them when the weather is mild and warm, and this may be effected by merely tilting up the light an inch or two

at the back. If the nights are cold, it is advisable to protect the plants from any chance of injury by covering the frame with mats or oil-cloths. As soon as the plants have made four leaves, they should be potted off in three-inch pots, placing one plant in the centre of each pot, and using fine rich soil. Make the surface of the bed even, and place these pots close together all over it, previously giving the plants a good supply of water, which should be made slightly tepid. Keep the bed close for a few hours after the plants have been potted, and then admit a little air, by tilting the lights up an inch or so at the back. The plants will soon establish themselves in their new position, and as they begin to grow, air may be admitted more freely, especially in bright warm weather; but if the sun comes out very strong, it will be proper to shade the plants for an hour or two during the middle of the day. In eight or ten days after the plants have been potted, examine the bottom of the pots, and if the roots appear to protrude, another shift into larger pots will be necessary; you may also ascertain the advance they make by knocking one or two out of their pots, and examining their roots. The process of knocking a plant out of its pot, is performed in the following manner:—Invert the pot with the plant, placing or resting the soil in the left hand, and allowing the plant to pass between the fingers, at the same time holding the pot (now turned up) with the right hand; give it a gentle tap, striking the rim downwards against the edge of the frame, when the pot may be raised, and the ball of earth will be fully exposed. When the necessary examination of the roots has been made, the pot may be replaced, and the plant shifted, or returned to the bed, according to its requirements.

In shifting the plants into larger pots, they should have a mixture of loam and well-decomposed dung, or old leaf-mould, in equal parts. The pots should be well-drained, by having plenty of crocks at the bottom, and when the plants are shifted at any time, the old crocks, as well as a portion of the old soil, should be shaken off, but in this operation it is necessary to be careful not to bruise the fibres. Place a little rough earth over the crocks in the pot, spread the roots regularly all round, and fill up with the soil, taking care that the plants are not placed deeper in the soil than they were before.

When the plants are potted, they should be supplied with plenty of water, which will refresh them, and settle the earth about their roots. The most handsome of the plants, or those which are dwarf and bushy, should be replaced in the frame, and if there is room in it for all that have been re-potted, so much the better; but if there is not, then the smallest can be placed on a shelf in the greenhouse and kept near the glass. When the plants have begun to grow again, they should be placed in a small greenhouse, the temperature of which should be about seventy degrees during the day, and sixty at night, varying a little according to the weather. Here they will require to be watered frequently, and have air on all favourable occasions. If the foliage be infested with green fly, lose no time in fumigating the house with tobacco. The best way of fumigating, is to procure what is called a pair of fumigating bellows, or, what is a more modern, and perhaps better invention, one of the numerous fumigators. Whatever plan is chosen, the main point to attend to is to fill the house entirely with the smoke of the tobacco, so that the plants may be completely enveloped in it. If there is any broken glass in the sashes, the aperture must be carefully stopped up, and the doors, or other means of egress for the smoke, carefully closed. If the house is properly filled with smoke, and left closed up all night, the insects will be found lying dead about the plants, on making an examination in the morning. But if any are found alive, or the smoke has not been strong enough, the fumigation must be repeated. It is of course the nature of the smoke to ascend, and it continues to mount to the glass, so that it has to be applied until it becomes dense enough to fill the under parts of the house. With a good fumigator there is no difficulty or inconvenience attendant on the smoking of a house, as the pipe of the bellows is merely introduced through a hole in the door, or any other aperture which may be made for the purpose, and at the different places in the wall, by means of an instrument similar to what is used by bell-hangers for boring. In the absence of a proper fumigator, take a good-sized pot, having a hole in the side, at the base. Stop up the central hole at the bottom, with a piece of slate or tile, and place in the pot a few inches of hot cinders or charcoal, and over them place as much tobacco as will be sufficient to fumigate the house properly. Placing the

pot in a suitable position in the house, on the floor, introduce the pipe of a pair of common bellows, and blow gently until the house is filled with the smoke. To prevent the tobacco being too rapidly consumed, it is a good plan to lay a little damp moss over it. This, though a very disagreeable mode of fumigating, is very often practised, and it may be managed so that the operator need not be exposed very much to the clouds of smoke that rise from the pot. The fumigation should be commenced at the further end of the house, and the pot removed now and then until the door is reached, and, if the house be well filled, the operation may be discontinued, and you can make your retreat. More tobacco must be put in the pot, if sufficient was not placed over the hot charcoal at first, or until the house is properly filled with the smoke. The contents of the pot should also be occasionally stirred up with a stick, which will greatly increase the volume of the smoke. The following morning, examine the plants, and syringe them with a fine rose, applying the water somewhat forcibly on the under side of the foliage. This will wash off the dead insects, and also any that may have escaped destruction. The floor and shelves should then be washed out, and the house shut up, with the exception of a little space being left at the top for the egress of the steam.

As soon as the plants are in flower, and have begun to set their fruit, they should be topped, as about a dozen fruit to a plant will be quite enough for ordinary purposes, and it is better that the plants bear moderate crops, if you want the capsicums to be fine and large. Keep up the temperature, and admit air freely in the middle of the day, especially when the sun-heat is intense. Attend also to the watering and syringe occasionally, to maintain sufficient humidity in the atmosphere.

The fruit may be gathered for use from time to time while green, and also when ripe; but those which are only half-grown should be first taken, leaving the most advanced to ripen. The fruit is ripe when it is a fine scarlet or blood colour, and at this stage it should be gathered and spread out on a sheet to dry in the sun; if it can be placed under cover at the same time, such as an open shed facing the south, so much the better, as it will, in such a situation, be protected from rain, and be well dried. When perfectly dried, the cap-

sicums should be collected and laid on a shelf in a dry cool room, or hung up in small paper bags. There are many sorts of capsicums, differing in the size, form, and colour of the ripe fruit.

BORECOLE.

THIS is an excellent vegetable, of which there are many varieties ; but they are all raised from seed, which should be sown in the spring. It thrives in any common vegetable soil, and should be raised on a sheltered border facing the south. In March or April, according as the weather is favourable for the operation of sowing and working the ground, make up a small bed, digging it fine, and laying in a quantity of well-decomposed dung or leaf-mould in the trenches. Rake the surface of the bed evenly, and sow the seed thinly broadcast, covering very lightly with a little soil from the alleys at the sides of the bed. Then rake the surface lightly over, and trim off the edges neatly. Such seed should always be sown in mild and rather dry weather, and the ground should be freely soaked with water afterwards. Water should also be applied from time to time as occasion may require ; and all weeds must be taken out of the bed by the hand as soon as they are large enough to handle. When the plants come up they should be partially thinned out in places where they are too thick, and when they have grown one or two inches they may be planted out in any open compartment. In planting them choose a day when the sky is somewhat overcast, or when there is a gentle shower ; for when the plants are taken out of the seed-bed and transferred to the ground where they are to grow, in moist or cloudy weather, they do not suffer so great a check as they would do if planted in dry sunny weather. If, however, it may be convenient to wait for the most favourable weather, the plants should be laid with their roots in a puddle of earth and water, well mixed together till thin mud has been formed. This is effected by making a sort of basin in the ground, near the place where the plants are to grow. Then, with a small spud,

take out from the seed-bed as many plants as you can hold conveniently in the hand, and lay them round the side of the basin formed in the soil, with their roots in the puddle. Then stretch the garden line along the ground chosen to plant them in, and dibble them in rows about thirty inches apart, and eighteen inches from plant to plant in the row, preserving as much of the wet soil to their roots as possible. Whatever the weather may be, or in whatever manner they are planted, it is a good rule to water the earth thoroughly about their roots as soon as they are planted. The plants will now require no further attention, except weeding and stirring the ground from time to time. If the weather continues dry and warm, they will also be much benefited by an application of water mixed with a small portion of liquid manure.

After they have attained some strength, it will be necessary to draw a portion of soil to their stems, which will promote their growth and keep them firmly in the ground. They will become large and well-formed about the end of the summer, and the heads may be cut as low down as they are tender, as wanted for use, leaving the stems to grow on and produce sprouts. When the plants come up thickly in the seed-bed, a number of them may be pricked out into what is called an intermediate bed, to attain their proper strength, before they are finally planted out in the open ground. Here they should be planted in rows across the bed, about nine inches apart, and five or six inches from plant to plant. As soon as pricked out, give the seed-bed, and also the intermediate beds, a good soaking of water. For a late crop make another sowing in May, in a bed prepared in the same way as directed for the first sowing; but the soil should be richer, in order to encourage the growth of the plants; as, if raised in poor soil, the plants will not, after being transferred to the open ground, attain so great a size as is desirable. There are several excellent borecoles, of which the Green Curled, the Siberian, the Buda, and the New Hearting, are the best.

All the varieties of this profitable vegetable are more or less hardy, and therefore very serviceable for winter use. It is the practice with some to take up the plants on the approach of winter, and lay them with their roots in trenches, and in a sloping manner, in a sheltered corner of the kitchen garden. This practice is, however, seldom necessary, unless the winter is likely to be unusually severe. In trenching

the plants in this manner, they should be kept somewhat close, but not crowded, and with their heads towards the north.

C A R D O O N.

THIS is a plant which resembles the artichoke in growth and bloom, but the plant is larger, and the bloom smaller. It is generally raised by sowing seed in the spring. The soil most suitable for the cardoon is a deep sandy loam, not too rich. Any time in April, make up a bed of good light rich soil, on a warm border. The soil must be made moderately fine, and raked evenly on the surface; sow the seed thinly broadcast, or in drills, and cover it lightly over with soil. If the weather is dry, the bed must be well watered, and kept at all times clear of weeds. After the plants have come up large enough to handle, thin them out to four or five inches apart, so that they may have plenty of room to become vigorous for being planted out; and for this purpose, stir the soil between them from time to time, and water as occasion may require. About the early part of June, and when the weather is moist or showery, you may prepare the ground in which they are to be planted, as by this time they will have attained a considerable size in the bed. It is advisable to defer the planting for a little, if the weather is hot or dry, so that you may have the chance of rain; for much of the success of planting will depend on the readiness with which the plants are established in the ground. Another way is to dig out a trench about twelve or fourteen inches wide, and any length, according to the supply wanted. If you have some well-decomposed dung at hand, you may very beneficially dig in a portion of it in the bottom of the trench, which should be formed somewhat like a celery trench, and in an open quarter of the garden. If more than one trench is wanted, keep them five or six feet apart, which will be found little enough, as the plants usually attain the height of six feet. Sow the seed in a shallow drill made in the trench, keeping them about two inches apart in the drill. It will only be necessary to

rake over the bottom of the trench to cover in the seeds, but if the weather is dry, water will be indispensable. After the plants have grown large enough, they should be thinned out to twelve or fifteen inches apart at first, but the thinning must be repeated in about a fortnight later, when a much greater distance may be allowed. They require little further care until they are ready for blanching; but they must be kept clear of weeds, and thoroughly watered during hot and dry weather. In October they will have grown to their full size, when the leaves are to be blanched. Select a dry day for this operation, and tie up the leaves of each plant firmly with strong thick matting strings, or hay-bands; then tie the plant all round with the same material, commencing at the base, and gradually working upwards. The object of this tying is to prevent the earth from coming in contact with the leaves, which would otherwise be injured. The earth is then to be laid up all round them as far as may be necessary, in the same way as with celery. If there is no frost, the tying, if properly performed, will be all that is needful in order to blanch the leaves when wanted early; but at the usual season, when the frost begins to set in, they must be earthed up also, and always, if possible, when the soil is dry. Some persons earth the plants up without tying anything round them, merely binding the leaves lightly together. You may take up the plants for use when they are properly blanched as far up as you want them. In intense frost, or drenching rains, a covering of dry litter, or common fern fronds, will be beneficial to the plants.

CAULIFLOWER.

THIS very delicious vegetable is to be grown with as little difficulty as a cabbage, but as it is far more tender, we cannot so readily keep up a succession; and it is considered sufficiently valuable to warrant us in using frames and hand-glasses in winter and early spring, for the sake of obtaining it sooner than we can obtain it without such auxiliaries. To raise the first crop, the seeds should be sown in August, in

rich ground, and in an open situation. The soil should be previously prepared by digging a good spit deep, and thoroughly breaking all the lumps, and making the surface as fine as possible. It is preferable to sow the seed in a bed on a border having a south aspect. Rake the surface evenly, and scatter the seed thinly over it. A very slight covering will suffice, for the seeds should not generally be deeper in the ground than half an inch, and therefore it will merely be necessary to throw a little soil from the alleys over the bed, which must then be raked neatly over, and, if dry weather, thoroughly watered. As soon as the plants appear, the bed must be again watered, if requisite, and all the weeds carefully removed. When the plants have made their rough leaves, and admit of being handled well, prick them out into another bed of good ground, similarly formed, and in a sheltered situation, planting them in rows about four inches apart. Be careful to water the bed in which the others, if any, are left, and also that into which the plantation has been made, as the tender fibres of the roots, however carefully they may be lifted out of the ground, will be sure to suffer more or less if the weather is dry. In pricking out cauliflower plants, it is advisable to use a small spud, which may be easily formed of a short stick, and as a general rule, only a few should be lifted at a time. For the same reason, as much soil should be kept to the plants as possible, and they should be placed carefully in the holes, which must be made easy enough to admit them without too much pressure. These plants, then, are required to stand over the winter, to be planted out the following spring; and in ordinary winters they may be protected with hoops placed across the bed, and covered with common garden-mats, as occasion requires. But those who depend on an early crop generally plant their cauliflowers in a common frame with a light; or rather, they place a frame round the plants, which may thus be covered, as occasion requires, all through the winter. In the absence of a frame of the usual form, it is not difficult to construct a substitute, which, though perhaps less convenient or elegant, will answer the purpose of protecting the plants equally well. None know better than gardeners how to make shifts of this kind, and almost every garden has its own particular kind of contrivances for such purposes. It will merely be necessary to drive into the ground, at certain intervals, one or two stout

stakes, and then nail to these deal boards all round the bed. The boards need not be more than eight or nine inches wide ; but they should be placed so near the ground, or rather slightly inserted into it, that there may be no openings at the bottom for the ingress of cold or frost. A few stout rods may then be fastened across the bed, and resting on the upper edges of the boards ; these will form a framework on which a covering of canvas or mats may be laid, as occasion requires.

The seed-bed yields three or four batches for pricking out, because the first should be made as soon as the plants which take the lead in coming up are large enough. A fortnight afterwards, there will be many more sufficiently advanced ; and the last pricking out may be the clearing of the bed. Some of the earliest may be planted in the open ground, four or five in a patch, and covered with a hand-glass at night and during severe cold or heavy rains ; while the late ones may be kept in the frames for planting out later, under hand-glasses, and others to plant out for a full crop, as soon in the following year as the weather will permit them to stand without protection.

Those under hand-glasses require a good deal of care. They have to be partially or wholly covered, according to circumstances. Thus in mild warm weather they must be fully uncovered, for they want all the air they can obtain ; but they must be particularly guarded from cold, blighting easterly winds and frosts, as the consequences of their exposure to these influences would be very injurious to the delicate foliage. When the wind is high and cold, they must be carefully covered over, if merely protected by mats supported on hoops ; and if by frames, these must be kept close down on the windy side, and merely tilted up a little on the opposite side. The frames must be closed down in the evening all round ; and in very mild weather they should be altogether taken off. The same precautions are applicable to those under hand-glasses, which should be taken off and kept at one side during fine mild weather. On this account they should be planted in rows, with as much distance between the patches as will allow of the glasses to be set down between them. As the plants advance in size, they will be found too many for the glasses, which will perhaps, at the most, do for three. Take out the weaker ones all through the piece ; and if it be

still early, plant them out in patches of three, to be covered with glasses again. But many persons use all the glasses for the first lot, and plant the newly-drawn plants in a warm quarter, eighteen inches apart in the rows, and the rows two feet from each other. As those under the hand-glasses begin to show their flower-heads, the leaves should be broken down carefully to shade them, because the sun would discolour the white close top; and this rule should be observed with all the crops of cauliflowers, because an hour's sun on one of the heads would turn it yellow.

The small plants in frames must be attended to as carefully as those under the hand-glasses. They must not be exposed in frosty weather, and in cold winds the lights must be put on, and tilted up a little on the warm side. In mild weather they should be taken off altogether. The plants under the hand-glasses, as well as those in frames, must all be refreshed with water when they require it; because, being covered with glasses, they do not get the benefit of rain, except that which falls in the spring. And when there is a warm, genial rain, all the hand-glasses should be removed, that the plants may have the benefit of the shower. Not so those in frames; their supply must be regulated with the understanding that they are not wanted to grow in the frames. In April, or, in some warm situations, in March, the plants in the frames may be planted out, or some may be planted out in each month. They should be planted in rows two feet apart, and about eighteen inches apart in the row. As soon as they begin to grow, stir the earth between the rows, and draw the soil to their stems, as high as the bottom leaf.

In March you may sow seed for other crops that will require no protection whatever, and in May you may sow some more. These sowings are to be treated in the same way, except in being covered with the glasses. As soon as the plants are large enough, they must be pricked out into other beds, similarly formed, four inches apart, or six if you have plenty of ground. The beds should be about one foot wide, and as long as the ground will admit. The largest plants should be taken out from the seed-bed first, and the smaller ones be allowed to increase in size for another pricking out, in these beds. The plants remain till they are strong enough to plant out and you have ground ready to receive

them. They need not be planted all at one season, nor does it signify much when, except that when they are large enough you should take the first opportunity of beginning to plant out; and, always keeping plenty of plants, take all opportunities of planting out more. Do the same by the second spring sowing; and bear in mind that as soon as they start growing after planting out, to stir the soil and earth them up is of great benefit to them.

In very hot weather, and after a long succession of dry weather, it will be found of great service to water the cauliflowers: but for the most part large crops ought to take their chance, because the watering once begun, can hardly be left off. But bear in mind that if you do water, you must do it effectually, that is to say, soak the whole ground, or the part left dry will absorb a good deal more of the water than the plants do.

There are many varieties of cauliflower, but one that will continue to be in repute as long as cauliflowers are wanted, is the Walcheren variety. It is small, compact, and handsome, of a fine flavour, and has become such a favourite that in too many instances others are substituted for it to meet the demand. And this is the way in which some of our very best varieties of fruit, flowers, and vegetables have been brought into disrepute. It is sometimes called the Early Leydon. The Large Asiatic and Early London are two good additional varieties.

If you find any specimen finer than ordinary, and you are desirous of saving the seed, mark it, that it may not be cut. Draw the earth well up around it, and give it an abundant supply of water while the flowers are being developed, and take especial care that none of the cabbage, brocoli, kale, or other sorts bordering on them, be allowed to bloom in the same ground. As the seed ripens in the autumn, protect the plants from the attacks of birds by placing near them some object which will tend to form a scare. For this purpose a stuffed cat will be found very useful, but in order to keep up the semblance of life and motion, it should be altered from time to time in position; for birds soon learn to disregard a scare that does not by change of position seem to have any life in it. When the seed is nearly, but not quite ripe, cut down the plants carefully near the base, and lay them on a sheet to ripen the seed completely. If convenient, they

should be laid near a dwelling, or where the birds may be scared away readily. And on the appearance of rain, the sheet with the seed should be removed under cover. When the seed is quite mature and dry, it may be beaten out and laid in a bag till wanted. But seed of this kind should not be kept in any damp place, otherwise it soon spoils.

The general management of cauliflowers in the ground requires no particular skill, and not much labour. The soil must, however, be kept clear of weeds, and stirred with the hoe from time to time. As the plants increase in size, earth must be drawn to their roots from the middle of the row, and in very dry or continued dry weather, an application of clear liquid manure will be very beneficial. Cauliflowers are ready for cutting when the heads have attained a good size, and while they are close, firm, and white. They may be cut even before they have attained their full size, but it is always advisable to cut them before the heads begin to open, as the flavour is at this stage much more delicate and agreeable. In taking the crop, the stalks should be cut immediately under the lowest leaves, and the upper parts of these should be cut away near the flower-head.

COUVE TRONCHUDA.

THIS is a large plant of the cabbage tribe, possessing a very agreeable flavour. It is raised from seed, but, being rather tender, will not stand our winter in the open ground. It thrives best in a soil which has been well manured with old decomposed dung, such as that of a spent hot-bed. The seed should be sown in the spring, on any warm and sheltered border, or it may be sown in pots or boxes, and placed in a frame where there is a gentle heat. If you sow at once in the open ground, prepare a bed under a south wall, or scatter a few seeds along the ground at the bottom of the wall, previously digging the ground fine, and mixing a portion of old dung with it. The sowing may be made as early as the middle of February, but any time in March will be soon enough. The seed should be sown broadcast, and whether in

a regular bed, or in a patch along the bottom of the wall, it is advisable to provide a little protection, in case of sharp frost during the night, or cold, drenching rains. Be careful to remove all weeds that come up; and when the plants appear above ground, give them a good supply of water should the weather be dry and warm. As soon as they can be handled, thin them out where they are growing too thickly, and when they have attained two inches or so thin them again, planting those removed in another bed about four inches apart, in rows across the bed six inches apart. If possible, the thinning and weeding should always be performed when the weather is open or moist, but not actually wet; and if this rule cannot be followed, it will be necessary to supply the plants with water, poured through a pot having a fine rose attached to the spout.

When the plants in the second or intermediate bed have grown three or four inches, and have formed as many strong leaves, they may be planted out in an open quarter of the garden, previously well dug and manured. They should be planted in rows, thirty inches apart, and about two feet from plant to plant in the row. If the weather is not so moist or cloudy as is desirable for planting, it will be necessary to form a small basin or puddle in the ground where the plants are to grow. This puddle is made by mixing a quantity of water with the soil, so as to form a thin paste-like mass, stirred well together with a stick. As the plants are taken out of the bed, place them round the side of this basin, with their roots in the wet soil, and after the line has been stretched to mark the row, take up a few of the plants at a time, with as much of the puddle attached to their roots as possible, and dibble them in the ground in the quincunx manner.

The plants in the seed-bed should be thinned until those left stand at the same distance as those in the intermediate beds; and as they do not always come up at the same time, it will be necessary to look over them now and then for the purpose of thinning or watering; and those plants which come up last will serve for a successional planting. If only a small quantity of seed has been sown at first, and more plants are required, a second sowing should be made about a fortnight or three weeks later, and the plants thus obtained will be available for planting out as a succession crop.

If there is the convenience of a frame, a little seed may be

sown in a shallow box filled with good rich soil, and placed in the frame. By this means you may obtain plants sooner than by sowing them in the open ground ; but it is questionable whether, when thus raised, the plants will ultimately be so good as those grown on the border. If, however, you prefer adopting this mode, let the heat of the frame be rather moderate, and admit air to the seedlings whenever there is a favourable opportunity. After they have grown two or three inches high, they may be transferred to the border, and planted in a bed about four feet wide, and five or six inches apart. When they are properly hardened and large enough, they should be planted in the open quarter. As the plants in the open ground advance, keep them perfectly clear of weeds, and draw a little earth to their stems. This earthing will be of great benefit to them, and it should be repeated in about ten days or a fortnight after the first operation.

Most of the cabbage tribe are much improved by the application of liquid manure to their roots ; and the couve troncchuda will be found to be no exception. Accordingly, when the weather is dry, the soil about their roots should be soaked with this liquid in a clear state. They will soon grow to a good size, and may be cut for use when wanted.

If seed is sown in autumn, it should be in boxes or pans which can be placed in a frame during the winter, as this plant is not sufficiently hardy to bear exposure through the cold season. The seed may also be sown early in September, on a warm border, and when the plants are large enough, they can be pricked into a cool frame, having about six inches of soil. Here they may be best exposed as long as the weather continues mild, and kept close when the frost begins to set in. They should be planted at about eight inches apart, and the soil kept rather dry. Air should be admitted on all favourable occasions, and the decaying leaves carefully removed. In severe frost the frames should be covered with straw or common garden mats. In spring when the weather becomes mild, they should have abundance of air ; and they may be planted out in the open quarters in April or May.

S A V O Y.

THIS cabbage, for such it is, must be placed among the most useful of winter greens ; scarcely any degree of frost hurts it, and indeed a certain degree of frost is necessary in order to render it sufficiently delicate and well-flavoured. As with the rest of the cabbage tribe, the savoy must have a good rich soil, such as is composed of plenty of well-rotted dung, leaf-mould, and strong friable loam. If the soil has not been made rich enough previously, a quantity of material from a spent bed should be worked in, either at the time of sowing or planting, or subsequently. Seeds may be sown in beds of any convenient dimensions in April or May ; or if the savoys are wanted early, a sowing may be made at the end of March, and another for the principal crop about the middle of April. The sowing must be made during dry weather, and a portion of fine soil should be sprinkled over the seeds, and the surface of the bed raked neatly and watered. After the plants have sprung up and acquired a certain degree of strength, the largest may be pricked out in the same way as other greens into intermediate beds, to be invigorated before being planted out in the quarters where they are to remain. When thus pricked, they must be kept three or four inches apart, and well watered. All weeds must be carefully removed as soon as they appear. The plants should be planted eighteen or twenty inches apart, and the surface of the ground between the rows must be frequently stirred with a hoe. A little clear liquid manure may be very beneficially applied to savoys. If space is limited, ground may be saved by planting the summer crop of savoys between the rows of such peas, beans, and cauliflowers as are somewhat advanced, and likely soon to be cleared off the ground or used up ; but this practice is only to be recommended as

a useful expedient, and should not be adopted where there is plenty of room, as the plants grow to greater perfection when allotted a separate compartment.

The roots of the savoy are frequently attacked by a small white maggot, which is found to commit considerable injury to the plants, producing what is familiarly known by the name of "club," a disease more or less fatal in its effects. When the plants are attacked with this maggot, the leaves begin to droop, and vegetation appears to have been sadly checked. In such case one or more small tubercle-like swellings will appear near the root, and which when examined will be found to contain the cause of the malady in the plants. There are no effectual means of curing this disease when it is once established. It is therefore necessary to examine the roots of the young plants in taking them from the intermediate beds, and any swelling that may be visible on the roots should be picked off with the nails of the thumb and finger, or such as appear perfectly sound should be selected. This disease occurs most frequently in close or confined situations, or where the soil has been excessively manured, or long under cultivation, or seldom turned up thoroughly to the action of frost during winter.

The savoy differs from all other kinds of cabbage in having rough or reticulated, that is wrinkled leaves. It is never eaten young or in the loose open form of greens, as the common cabbage is, but is allowed to form a close white head, which is improved and mellowed by being moderately frozen before being cut for use. It is not always easy to procure seeds of a true variety, as those are called which have uniformly a certain character of growth; for all the cabbage tribe, and the savoy among the number, is excessively liable to sport, and to produce coarse, worthless, hybrid forms, owing to the artificial crossing of the seed-bearing plants by insects or other causes. Nevertheless, true seeds should always, if possible, be procured. There are a few sub-varieties, of which either the Dwarf Green, Globe, or Yellow is most suitable for private gardens.

SPINACH.

THIS excellent vegetable is raised from seeds. It requires a moderately good loamy soil, enriched and lightened by plenty of old well-decomposed dung and leaf mould. The best situation for growing it is an open warm border, which is most suitable for early crops ; for summer crops it may be allotted a place in any quarter of the ground where it may have full exposure to the sun and air, which are both indispensable to the healthy and vigorous development of the leaves, as these only are cut and used for the table. Having dug the ground properly, and put plenty of good old manure in the trenches, about the beginning of February proceed to form beds about four or five feet broad, and the entire length of the border, and for an early crop the border is preferable to any other situation. Draw shallow drills lengthwise in the beds, about eight or ten inches apart, and sow the seed thinly in the drills, and cover it over with about an inch and a half of soil, when the beds should be raked neatly and smoothly, or beaten gently with the back of the spade. If the weather is dry, water the soil freely. The proper implement for making drills is what is called a "drill-hoe," which has a triangular blade. The beds should be divided by small alleys or footpaths, twelve inches wide, for the purpose of conveniently gathering the leaves of the spinach and removing the weeds, which latter operation must be very frequently performed. If the season is forward, the plants will come up in about two weeks, and they must be thinned as soon as they have grown an inch above the surface of the ground. They will not require any shelter, but when they are thinned out, the ground should be watered, if the weather is dry and warm. They may either be thinned by a small sharp Dutch hoe, or by the hand. If the hoe be used, it should be passed

between the plants selected, so as to leave two or three plants together, and these may afterwards be thinned to one plant by the hand. No two plants should be left nearer than six inches, and if they are eight inches apart they will be near enough. It is desirable, in the case of summer crops, not to sow more at one time than will be sufficient for a dish or two ; for the annual plants, such as spinach is, are apt to run early to seed. It will therefore be better to limit the extent of the sowings, and in about eight or ten days to make another sowing, continuing to sow for successional crops afterwards, every fortnight. Although for early crops sowing in drills is the more convenient and suitable method, spinach may also be sown broadcast, but this mode should never be adopted except for the principal and more extensive crops in the open quarters ; and, indeed, even in this case drills are much preferable, not only because less seed is required, but the plants are more easily thinned, and kept clear from weeds.

Spinach, moreover, should always be sown in beds, divided by little paths, which admit of weeding or gathering the crop without treading the soil in which the plants are growing, and one of the most essential conditions for securing this vegetable with an agreeable flavour, and in the shortest time, is keeping the soil free and open. A very common way of growing spinach is to sow the seed in drills, between rows of other vegetables, but in this case there should be plenty of room between the different crops.

The leaves of spinach being the parts used, you may commence gathering them for the table as soon as they are an inch broad, but they are in the best condition when between two and three inches broad. The outer leaves generally being largest, you should pluck these either entirely to the base of the stalk, or at the top of the stalk. The latter mode is preferable, as it saves considerable after-trouble in picking. It is always best to pluck them in this way, and the small ones at the centre being left will shoot up and make another gathering. The summer crops may be pulled up when large enough, and all except the principal stalks may be used.

For the purpose of ensuring a moderate supply during winter, you may sow a few beds on any warm and sheltered border about the early part of August, and at the end of the month a successional crop should be sown in a similar situ-

ation. Let the soil be moderately rich, and rather dry and sandy than strong or loamy. Dig the ground very fine, and make the required number of beds, keeping them from four to four and a-half feet wide, and a small path or alley between every two. Sow the seeds in shallow drills, and cover them in slightly. Make the beds and alleys neat and tidy, by raking them level ; and should the weather be dry, give a good supply of water to the ground. During frost it will be necessary to afford the plants some shelter by covering them with common garden mats, supported on hooped sticks across the beds. Remove all weeds as soon as they appear, and thin the plants to about four or six inches apart in the rows. By this means a tolerable supply may be ensured throughout the winter, and even until the first spring crop is ready for use.

The variety called Prickly Spinach is the best for the winter crops ; the Round Spinach is that generally employed for summer use.

NEW ZEALAND SPINACH.

THIS is a very prolific and easily grown vegetable, and forms a passable substitute for the common spinach in dry weather. It is propagated by seed, and will thrive in any rich light garden soil on a warm border or in the open ground. About the end of April or beginning of May, prepare one or two beds according to the supply wanted ; dig the soil rather fine, and trench in a quantity of decomposed dung or leaf-mould which has lain in a heap during the winter. Make the beds about four feet and a half wide, having alleys between about a foot wide. Draw shallow drills across the bed about eighteen inches apart, and sow the seed thinly, covering it lightly with a little soil from the alleys. Rake the surface of the bed evenly, and trim off the edges. If the weather is dry and warm, give the ground a good soaking of water, which will hasten the germination of the seed. The bed must of course be kept clear of weeds, and as soon as the plants appear above ground, pass the hoe through them, leaving small clumps of three or four about a foot apart in the row, and give the bed a good watering with a pot having a fine rose attached to the spout. In a few days afterwards look over the plants,

and selecting the strongest of each clump to grow on, remove all the others. You will then have rows of plants growing singly at one foot from one another, and this will be quite near enough, for as this spinach is of strong and vigorous habit, the plants so distributed will soon cover the ground. They will now require only to be kept clear of weeds, and supplied with water when the weather continues dry and warm.

In order to obtain a crop as early as possible, at least a week or two before the crop raised in the open ground is ready for use, it is advisable to have recourse to a slight hot-bed, for the purpose of raising plants to be transferred to a warm border as soon as the weather becomes mild enough. About the middle of March collect materials for the bed, which may be made of light stable litter or leaves, and only large enough to contain a few pots or shallow boxes in which the seed should be sown. If you have a cucumber frame already in operation, you may place the pots in a corner of it; but in the absence of such convenience it will be necessary to form a bed for the purpose. It should be raised about thirty inches high, and when it is properly completed, place on the frame or box, and lay in a quantity of old leaf-mould or light earth—say to the depth of six inches. Suppose you intend using pots, fill them to within about two inches of the rim with rich soil which has been made fine by being passed through a sieve. Sow the seed thinly on the top, covering it over very lightly, and supplying it with water, using a fine rose, or what is better, a hand syringe, in order that the soil may not be much disturbed about the seed. The pots should now be placed in the frame close together, and kept close until the young plants appear, when they should have air, and water if the soil is rather dry. When the plants have grown a few inches prick them out into pots about three inches wide, placing only one in a pot. The soil used should be similar to that in which the seed was sown; and when the plants are potted, water them with a fine syringe, and place them again in the frame, which should be kept close for a day or two, or until the plants begin to grow, when air should be admitted to them. Continue to give them a little water as occasion may require, and as much air as possible when the weather is mild or warm, in order to inure them to the temperature of the open ground. When they have grown an

inch or two, and when the weather is sufficiently mild, they should be transferred to warm border having a south aspect. Here they should be planted in beds four feet and a half wide, and in rows either across the bed or lengthwise, keeping them about six or eight inches apart in the rows. In planting them, turn them out of the pots, preserving the balls of earth about their roots entire, and make the holes just so deep that the top of the balls may be level with the rest of the ground in the bed. Cover the roots or balls carefully, and give the ground a good soaking of water. The plants will now only require to be kept clear of weeds and watered from time to time during dry weather. Successional sowings may be made in the open ground every fortnight or three weeks, according to the demand. The seeds of this plant are sometimes used as a substitute for capers, when pickled in a green state. They ripen in the autumn, and may be gathered for use when wanted.

ASPARAGUS.

THIS very excellent and wholesome vegetable may be grown in several different ways. The ordinary mode of cultivation is to make up a very rich bed of loam and dung, not less than thirty inches in depth ; the soil cannot be too rich, but no rank new manure must be allowed to mix with it ; and though a sandy and even poor soil will grow asparagus to a certain degree, it never becomes sweet and delicate unless grown rapidly by a rich vegetable soil.

About August, prepare the ground by trenching it two spits deep, adding six inches of dung among the upper spit, and six inches of soil upon it. Now put a coating of well-decomposed dung—say, one inch thick—upon the six inches of soil, and let it lie with the rest of the soil by the side, until the haulm of the asparagus (standing in other beds) has turned yellow ; this work should be completed while the weather is mild and dry, when the soil is most easily worked. All stones and other matters of a like kind should be kept out of the soil, as their presence is unfavourable to the regular growth of asparagus shoots.

The ground should be divided into beds about four feet wide, and any convenient length, leaving a space of two feet between the beds, as a path or alley, which will be found very convenient in weeding the soil or cutting the shoots of asparagus for use. When the haulm has assumed the colour indicated, dig up all the year-old roots for the purpose of planting in the beds.

Though we state four feet for the breadth of the beds, they are sometimes made much narrower ; but whatever their size may be, whether prepared for one row, two rows, or three rows, we will suppose that they now lie with the dung on the top, and are ready to receive the roots. These may be spread out upon the dung in straight rows, one foot apart in the row,

and the rows (whatever number) one foot apart. There must also be one foot of clear margin on each side of the bed ; thus, if two rows are in a bed, the latter will be three feet wide ; and if there are three rows, it will be four feet wide. When the plants are laid out on the dung in their rows, put on three inches of the soil, and leave the other soil, which would make three inches more, for the present lying by the side of the bed. The spaces or alleys between the beds should be occupied in the meantime with the overplus of soil ; and if the weather is dry at the time of planting, the beds must be properly watered. The next year the asparagus will come up, and must be allowed to grow its full size, and nothing will be necessary but the ordinary attention to keeping the beds clear of weeds. Hoes, however, must not be used on any account ; all the weeds must be carefully pulled out with the hand. In the autumn, the plants must be cut down, and the other three inches of soil, before alluded to, placed on the surface. A stake should be driven into the ground at the four corners of the bed, to form a guide in the "earthing up" of the beds, which is performed in the following manner :—Beginning at one end of the bed, and having a good clean spade, shovel up the soil in the vacant part of the ground. As the soil in the interval will no doubt have become somewhat hard and stiff, it will be necessary, at the time of lifting it, to break it fine, in which condition it should be scattered over the bed as regularly as possible ; but you must be careful to scatter it so that the soil of one part of the alley is placed over the proximate and corresponding part of the bed ; otherwise you will be short of soil in one place, and have too much in another. When the three inches of soil has been properly laid on the beds, the whole should be neatly raked over, raking from one end of the bed to the other, and making the surface fine and even. This done, stretch a garden line the whole distance of the bed, passing it round the four stakes ; this will enable you to form the edges of the beds with accuracy, by cutting the soil in a sloping direction, close to, and at the outside of the line. The intervening spaces must then be neatly raked over, and these will form the paths or alleys.

The following year, the plants will come up much stronger, and will require to be kept thoroughly clean, until the autumn again, when they will turn yellow, and they must then be

cut down. Although the asparagus has had six inches of earth laid upon the crowns, the plants will not now be found six inches deep; the washing of the soil by rain lessens the thickness of the covering. The bed must be kept clear of weeds, and the earth may be forked up, and a quantity of decomposed dung laid all over it, an inch thick. As you have two feet of ground between the beds in the alleys, dig out earth enough to make the beds six inches higher, and let all lumps be bruised and all stones cast aside, in order that the soil may be pretty free for the plants to come through. When engaged in this operation, it will be necessary to use the line, which should be carried round the stakes at the corners. It is not to be supposed that because an additional quantity of earth is laid on the beds every spring, they are therefore raised to any considerable or undue height, for what with the forking and raking, as well as the weeding and washing of the rain, there will always be found enough of earth drawn off to keep the beds from becoming too high.

In the spring, the plants may be strong enough to cut, at all events the largest of them may be used, but it is well not to cut too close. In the process of cutting, remove a little soil from the shoots that are selected for use, and having a sharp-pointed, narrow-bladed knife, about six inches long, make a slanting cut a little below the surface of the soil. As other shoots will be coming on near those you cut, you must be careful to do no injury to the former in using the knife. Asparagus is generally ready for cutting about the end of April or beginning of May; and when it has attained three or four inches above the ground, with the summit of the shoots close and compact. The plants now will require only to be kept clean; and the surface of the ground must be forked occasionally. In the spring, and just before the buds begin to form, loosen the soil with a fork, a few inches below the surface, taking care not to go near the crowns of the roots to cut them. The effect of thus loosening the soil, is to encourage the growth of the shoots by admitting the air, rain, and sun to penetrate the more readily into the ground. When this operation has been completed, rake the beds level, drawing off all the rough soil and stones into the little paths or alleys, and trim the edges of the beds, making the alleys also neat and even. When the haulm of the plants is cut down in the autumn, the beds will require a thorough top-

dressing of good old dung, taken from a spent hot-bed. This dung must be laid on before you throw up and adjust the soil which has worked down during the summer into the alleys.

The preceding practice is very common, and has been found to answer well, but a more simple way, and to us a much more agreeable plan, is to dig and manure a piece of ground well, so that when it is forked together there shall be one-third manure in the top spit. Place the plants on the surface in rows, four feet from row to row, and one foot from plant to plant in the row. Drive your stakes down a foot on each side of the row, so that two feet may be marked for the beds, and two feet for the alleys. From these alleys take enough of soil to cover the crowns of the plants three inches; and always remember that for one's own eating asparagus need have no underground stem, and should grow four inches above the soil before it is cut. This plan requires no earthing, except that when the rain may have washed the soil off the crown the alleys may be cleaned out, and the soil thrown up; but as the asparagus need not be cut below the surface, there will be no occasion for any depth of soil to occasion white stems. But even when planted this way, the plants can be earthed up and treated in the same manner as practised for ordinary beds. A top-dressing is always good, but the doctrine laid down now by some persons is, that a dressing of salt is better than a dressing of dung. We have not, however, found it so, though it may now and then save a dressing of dung. When salt is used, it should not be laid on thick: just enough to make the surface white, is the right quantity.

To raise asparagus from seed, prepare a bed about four feet wide and any length; the soil must be made very fine and rich. Choose a mild warm day, when the ground is somewhat dry, about the second week in March, and draw drills lengthwise in the bed about two inches deep and a foot and a half apart. In these drills sow your seed thinly and cover it in, slightly treading the soil, after which the bed should be raked smooth and even. Remove with the hand all weeds as soon as they appear, for in rich soil they are always very plentiful, and unless taken out, soon will do serious injury to the young plants by abstracting their nourishment and secluding them from the influence of the light and air. It will also be beneficial to stir the surface of the soil between

the rows occasionally. About the beginning of November, or just before the weather sets in cold and wet, strew some light stable litter over the beds, to protect the young roots from frost.

The seeds thus sown will produce plants fit to transplant into other beds the following spring. The roots must be carefully lifted with a fork from the seed bed, and during mild weather, but they must not be exposed to the air longer than can be avoided, and while they are being removed they should be placed in a basket carefully covered up, and mixed with a little light fine soil. The operation of planting has been already detailed. Instead, however, of adopting the practice which we have described, some people cut shallow trenches with a spade, along the bed, and set the plants in the trenches about nine inches apart, with the crowns of the roots an inch or two under the surface. It matters but little which practice is adopted. For the first two seasons, plants raised from seed should be allowed to grow without being cropped; and too much care cannot be bestowed upon them in respect to weeding and watering them at those seasons when they require this attention.

Asparagus may be grown very large and vigorous by being planted at greater distances apart, and increasing the richness of the soil. But when raised from seed, the plants do not attain sufficient strength to be used until the third or fourth year. A few may be obtained of moderate vigour the third year, but they are in excellent condition the following season. When properly attended to, asparagus beds will continue good a dozen years or longer, and require only to be kept clean, and have a good top-dressing every autumn and spring. A bed sixty feet in length, with four rows twelve inches apart, may contain two hundred and fifty plants, from which at the end of four years an ample supply can always be obtained throughout the season. Where there is a scarcity of ground, the alleys of asparagus may be advantageously planted with cauliflowers at two feet and a half apart, and only one row in each alley. This expedient, however, though it may not do much injury to the beds, ought not to be adopted except in extreme cases.

When asparagus is required in winter, or before the usual time in spring, it will be necessary to resort to the practice of forcing by placing a number of roots in a covered hot-bed.

It is common to keep a supply of plants raised from seed for this purpose only, and entirely distinct from those grown in the natural way. Such plants are generally ready for forcing at the end of two years, but the shoots come up much finer if not forced before the third or fourth year. If it is intended to force asparagus annually, a quantity of seeds should be sown every season, so as to produce fresh plants to follow the preceding crop, and ultimately take the place of those which have been forced, and which are no longer of any use. By this method a succession of plants may be obtained every year for forcing. If, however, only a limited quantity of shoots is required, and if you have no plants of your own raising in this way, then you must obtain a number of good roots from a nursery. The best way of setting about forcing asparagus is to prepare a dung bed, or if you have good pits with flues they will answer the purpose equally as well, and much more expeditiously. In forming a dung bed, procure a quantity of long fresh stable dung, and throw it up in a heap, in which state let it lie for a week to ferment, and then turn it over several times until it has been all properly mixed together. This done, let it lie another day or two. It should be placed close to where you intend the bed to stand, so as to be conveniently used. Proceed now to make your bed. Having decided on the size, which must of course be in proportion to the size of your frame, drive in four stakes, one at each corner of the space on which the bed is to stand. In this area lay down the dung with a fork, evenly and equally all over, beating it occasionally very slightly with the prongs of the fork. If the dung has been well mixed together in the formation of the bed, the temperature of the latter will be evenly distributed. The bed should be raised about three feet and a half in height, and large enough that when the frame is placed upon it, it may extend a foot on each side beyond. This is the proper way to make a dung bed; but some people dig out a portion of soil, to the depth of ten or twelve inches, so as to form a square hole, in which the bed is built up. There is nothing objectionable in this, and if preferred, the plan may be adopted. Whether in a square hole or on the surface of the ground, the dung bed being completed, the frame must be put on with the lights, leaving the latter a little open at the top for the escape of rank steam. When the bed has been well "sweated," and

the smell become somewhat mild, a quantity of good rich loamy soil should be laid on the surface to the depth of six or eight inches. It will now be ready to receive the roots, which, if not procured from a nursery, may be taken from the beds in the open ground, and planted in the frame with the crowns upwards, and in straight close rows, placing a little soil between each row. Keep the crowns as near the same height as possible, and when the bed is completely filled, cover the whole over with some fine, light vegetable soil, leaving the surface even. In a day or so after this operation has been completed, give the roots a good supply of tepid water, which must be repeated from time to time as occasion requires. No further earthing will be requisite; and if the heat has become somewhat moderate, you may keep the lights close until the shoots appear. Cover the frame up every night with canvas or garden mats, and also during the day when the weather is unusually severe. In covering, be careful to place the protecting material so that no rank steam from the outside may get underneath it and enter the interior of the frame, for this would be injurious to the young shoots of the plants. When there is no danger to be apprehended from frost during the day, the covering must be kept off, so that the shoots may have as much light as possible, in order to give them a green colour at their summits; and on fine days the lights may be opened at top a little, which will have the effect of making the plants more vigorous and finer flavoured. By thrusting sticks into the bed at several places, and drawing them out occasionally to feel them, you can ascertain if the temperature of the bed is sufficiently high; if at the end of two or three weeks the heat is found to decline, procure some fresh hot dung and place it round the sides of the bed in sufficient quantity to maintain the heat at about 70°. If the bed has been prepared according to the preceding directions, the asparagus will have grown four or five inches, and be ready for cutting in five or six weeks after being planted. In gathering the young shoots raised in this way, you should nip them off with the fingers in preference to using the knife, which would be likely to injure the younger shoots underneath.

Such is the common method of forcing asparagus; but if you have the convenience of a flued pit with a command of heat, you may more easily raise a constant succession from

the end of October till the crops in the open ground are ready in the summer. Such a construction is much more convenient for raising early crops of asparagus than the ordinary dung bed. The pit may be of any size from fifteen to thirty feet long, and six or seven feet wide. If the pit is somewhat large, only one half of it may be planted at once, and the other half may be kept vacant till the end of a fortnight, when it may be filled with succession plants. There is no material difference in the manner of treating the plants raised in pits from what is practised with those grown in dung beds; but tanners' bark is the material often used to fill the pits. By this method there is always a greater command of heat, as it can be regulated with more nicety, so that the plants are gradually and uniformly forced into growth; and after they have been removed, the pit can be used for other purposes.

In saving the seed of asparagus, the berries have only to be gathered from the plants before they are cut down, and being bruised with the hand, the seeds to be washed out clean, and dried, and stored till the sowing time.

In large gardens it is found to be a good practice to force plants taken from the old beds. A bed, or portion of an old bed, is broken up annually, the plants being used for forcing, for which if not exhausted they answer admirably. A fresh bed being sown annually, there is always a succession of beds in the prime of their existence for the general cutting; and not only so, but by a proper regulation of this system, a supply of the very best of plants is constantly provided for forcing purposes. Space is indeed required for the beds of young plants, which are scarcely fit for cutting under four years, certainly not under three; but an equal space would be needed if seedlings had to be raised for forcing. When this space cannot be afforded, the plants must be purchased of a proper age for forcing.

The names of some half-dozen varieties of asparagus occur in gardening books and catalogues; but there does not appear to be any characteristic or permanent difference in the plants; such slight variations as appear from time to time being caused by the nature of the soil or situation in which the plants are grown. What are called the red-topped and the green-topped may perhaps be slightly different as varieties, but even this variation is probably owing more to situation than to any permanent difference in the plants.

SEA - K A L E.

THIS popular vegetable, esteemed for its early appearance among forced productions, and the ease with which it is cultivated, may be reckoned among the best of culinary subjects the first few months of the year. It is a delicacy when well grown, and a few plants, each of which may be calculated to produce a dish, should be cultivated in all gardens of any pretensions. It may be grown in the natural ground, when it would come about the same time as asparagus. It may be hastened by a few barrows of hot dung without disturbing the soil ; and if grown in a proper manure for regular forcing, may be had almost at any time.

In the preparation of the beds, which may be attended to in August or September, select an open spot of ground, and trench it two spits deep ; if the ground be good at the bottom, bring it to the top, but if bad, loosen it at the bottom a spit deep, and then fork in a good dressing of dung, full three inches in thickness, and cover it with the top spit, which must also be mixed with a good three-inch thickness of dung. Whatever the dung used in the bottom spit may be, the top must be thoroughly decomposed. When all complete, the bed will be stirred two spits deep, and well mixed with as much dung as would form a six-inch layer all over the space had it all been put at the top. If the bottom spit is as good land as the top, it may be brought to the surface, mixing in the dung as in the other case. The space thus prepared will be ready for the plants, which should be two years old, and may be had at any nursery. Let the rows of plants be three feet apart, and the plants in the rows eighteen inches from each other. Stretch the line tight, and put the plants in carefully, just burying the collar of the root, and no more. After the piece is planted, let them be kept very clean ; the earth should be occasionally stirred when the rains have run

the surface together ; and when the plants come up, let them grow their own way the first season. As the plants will bloom if let alone, and the bearing of seed has a tendency to weaken everything, take off the flower-buds as soon as they appear, and never let the plants go to seed. When the leaves begin to decay, clear them all off, and dig a complete trench between the rows, and earth up the ridges ; that is, all the soil you take out must be laid on the plants, so as to pile or bank up eight inches above the crown of the root, thus forming a flat-topped bank a foot across, widening a little downwards, so that the edges shall not break away. In doing this, of course the dung gets put pretty near the top of the bank, the whole piece therefore forming a bank and furrow, or trench, alternately, the plants being in the centre of the bank. It is a good plan to drive stakes down at each end of the rows to regulate where you shall bank, and it is necessary to do this earthing in a workman-like manner, or it would be falling about through the winter. As the weather gets warm, in the spring, you must watch these banks, and when you see the surface broken by the rising plant, remove the earth, and cut off the white shoots close to their base, for they form the eatable portion, and, being blanched under ground, they are tender and white, and about six to eight inches long. You must never neglect cutting the instant the shoots reach the top, because if the shoot comes through, the tops get purple, and the plants get strong-flavoured. A whole piece of sea-kale will not come at once ; you must go over it frequently, and cut it whenever it has broken the surface, for if you do not cut it, you soon have it totally useless. As you level the ground into the alleys and completely fill them up, the plants from which you have cut the shoots, and which are brought, as it were, to the surface again, put forth other shoots, which you allow to grow the rest of the summer, only taking off the bloom as before ; and when, at the fall of the year, the leaves turn yellow and decay, you earth up again, after clearing the plants of their bad leaves, and removing every weed ; for cleanliness in this respect is essential to all plants. Before earthing up, you may fork the surface a little, just to break it up, that the earth may better take hold and form a regular mass.

Of the various modes of bringing forward sea-kale before the usual season, the most simple is that of laying a few

barrowsful of hot stable-dung in the furrows and over the bank ; and besides its being the most simple, the production is the best after this mode of forcing. First, take as much hot stable-dung as you want for the quantity of kale to be forced, and fill both the trenches quite full and tread it down ; then heap up as much over the bank as high as eighteen inches, or even two feet. The heat from this body of dung will force the plant into growth rapidly, and by removing the dung from the upper part, you see if the earth is moved at all, or broken with the growth of the plant, which must in such case be immediately cut. It is generally considered that the kale which has to force its way through the soil, and grows, as it were, in solid earth, is both more tender and better flavoured than that which is forced under cover and with air surrounding it ; and large quantities are therefore grown in the simple way we have described, acres upon acres being thus cultivated for the London markets without any forcing.

It must, however, be confessed that large quantities are brought into the market before asparagus comes in for the season, and the greater portion of the forced kale is brought forward without earthing up. The rows of plants are managed in all cases in precisely the same manner. The ground once planted is as good for pot forcing as for anything, except that for pot forcing it is usual to plant three plants in a triangle, about nine inches apart. The plants are cleared when the leaves decay, and the ground is kept level instead of being earthed up. Pots and covers, manufactured on purpose, called sea-kale pots, are placed over the plants, or patches of plants, and the cover, which goes on and off at pleasure, put on. These pots being adjusted to the plants as they are wanted—generally a few at a time, so as to keep up a succession—dung is placed all over them, or, if no dung can be had, leaves are used, and they ferment, and give out heat as genial but not so violent, nor do they command so much influence as the dung. Some may be placed on in December, a few more in January, February, and March, so as to make a succession of crops. The dung is moved from the top, to enable us to take off the cover and see if the plant has started ; and by timely examination it is easily seen when the plant is ready to cut. The shoots are as white this way as the other, because of the total darkness that prevails while they are

covered ; but there is more air in the empty pot than there possibly could be in the solid earth, and it is considered that the vegetable is not so tender in consequence ; however, the great bulk of forced kale is so produced.

Some persons force the plant one year, and let it come naturally by earthing up the second ; a sort of practice founded on the notion that the natural growth strengthens the plant, and that the forcing weakens it ; but this is a wrong notion. The plants that were forced were at rest much sooner than those which were not forced ; and reason admits that they must be ready to grow again sooner than those which have had less rest. A piece therefore that is forced ought to force better every year instead of worse. The principal objection to the forced plants for forcing the season following, is the practice of cutting them too much, and that will always destroy plants. In cutting the kale, people are not satisfied with a good cut once, but they cover up again and cut a second time, and so keep on till they half destroy the plants. The proper way is, to cut the large fine shoots, and leave the little ones that come afterwards to grow stronger all the summer. The temptation is great ; the prices which they bring at market if grown for sale, or the scarcity if grown for home consumption, induces people to cut too close ; and they pay for this in the premature decay of the plant. There are many who do not use the proper sea-kale pots, but merely turn a large garden-pot over the crowns ; and for those who have the pots, this answers every purpose. The only difference is, that if you cannot see through the hole in the bottom whether the plant is ready to cut, you must lift the pot altogether ; therefore, though in any other respect equal to the proper sea-kale pots, they are not quite so handy.

By making up a hot-bed, and placing on it a common frame, and planting a dozen plants or so to each light, the season of cutting can be regulated well, but there is more trouble, and the plants are destroyed. The bed is to be made up as if for cucumbers and melons, and six inches of soil is put on the dung—at first only three inches is put on, as the whole would cool the dung, instead of being heated by it. The plants are put in when the six inches are made up ; the lights are put on and kept close, except the middle of the day, when they may have a little air. The plants are kept rather

high—that is, the crown well out of the ground ; cover the plants with twelve-inch pots with the holes stopped up to keep out any vestige of light, and the lights must be kept pretty close unless the heat gets too powerful, when of course you must give air to moderate it. This mode of forcing is more troublesome than pots in the open ground, but you can better depend on it, as it takes a much shorter period ; the heat being under as well as over, it cannot fail to have a greater influence on the growth. The advantage of this mode is, that you have no more litter than you have for a cucumber or melon bed, and you have it in the same place, the melon ground or forcing ground. It is true that you lose your plants, because in this you cut as long as there is a bit of growth to cut. You may lift a pot occasionally to see how the thing progresses and when it will be ready. It is not right to cut the shoots till they are a good six or eight inches long, and when you have cut the best, cover up again and let the others grow until you let the plant completely exhaust itself. The kale thus rapidly forced will be more tender and better flavoured than that which is forced under the pots outside.

The saving of seed from the general stock being out of the question, if you want your plantation to keep strong, the proper way when you want seed is to let one of the most handsome of the plants you come to among those grown in the open ground, without forcing, go to seed, and save it all. You may prepare your ground for seedlings by common digging, and mixing up a good dressing of dung with it ; level the surface, and break all the lumps ; draw drills eighteen inches apart, and in these drills let the seeds be dropped six inches apart, and be covered over with half an inch of soil. When these come up, cut out enough to let the young plants be nine or twelve inches apart. Keep the ground well hoed, and the plants clear of weeds, and let them grow until they begin to turn yellow and decay. They may remain in the ground all the winter, and be allowed to grow another season without transplanting, continuing to keep them clear of weeds, and occasionally to stir the surface of the ground. In this way they will continue to grow until the fall of the year, when they will again turn yellow and decay. When they have died down is the time to remove them, if you want to make new plantations ; but if they are to be kept for forcing,

you may let them have one more season of growth in the open air. They may then be taken up and used for forcing to any extent ; and will be found all the better for forcing—the shoots stouter and stronger than two-year-old plants. The seed may be sown in the autumn or in spring ; we prefer the spring, there is less danger of rotting, which is sometimes the case in very hard frosts, and there is not much advantage in being earlier than March for the sowing ; the plant has time to mature its summer growth, and die down at the proper season. The two-year-old plants are used for making the plantations, which last for years when made on good rich ground : but there are many who even make their plantations with seed, and who consider that the plant takes more hold of the ground, and consequently throws up stronger shoots ; this may be the case, but when you make it from two-year-old plants you have always a choice, and may take the strongest ; whereas if you sow the seed, all you can do is to put two or three seeds in a hole, and pull out the weakest. You need not draw a drill for this, but when you stretch the line, dibble in two or three seeds close together with your finger or a small piece of wood. When these come up, keep them clear of weeds, and as soon as they make growth enough to show which plant on each patch takes the lead, draw out the other two ; and attend to stirring up the earth, weeding, and if necessary, watering also. The preparation of the ground, and the distances from plant to plant and from row to row, to be the same as for the plantation recommended at first. It may be that the plants being undisturbed by removal will come stronger and better. Many prefer it for permanent plantations ; and the way to compensate for the ground lying so idle for two years is to plant crops between the rows and make the most of the space. When the ground is prepared according to our directions in the first instance, the crop will luxuriate for some years ; and when there is the least sign of wanting it, give a good top-dressing of dung, and fork it a little way in all round the head and as low as you can do it without touching the root. This top-dressing should be in the autumn, directly after the leaves have perished. By these means sea-kale may be grown without difficulty, and produced early without much expense.

THE TRUFFLE.

THE artificial cultivation of this much prized and delicious esculent has hitherto been almost entirely neglected, and, in consequence, comparatively little is known as to the most expeditious and certain method of raising a supply. Of late years, however, several eminent horticulturists have succeeded in obtaining good crops, and there is reason to believe, that in a short time the truffle will be as generally grown as the mushroom, to which it has some affinity in habit and form.

Truffles, at the present time, are commonly found growing in woods and young plantations, and invariably a few inches underground, and much practice and numerous expedients are necessary to detect the precise spots in which they grow. The soil in which the truffle thrives best, is any light, substantial, and moderately dry loam, such as is generally found under beech-trees, in woods, or under large shrubs.

Much depends, in the artificial culture of this fungus, on having the soil kept in a condition favourable to the development of the spawn. It should never be too moist, nor very dry, for in neither of these extremes will the truffle thrive. It is much safer, however, to err on the side of moisture than that of drought; that is to say, the truffle may be grown in situation or soil which is somewhat moist, as they absorb their nutriment by means of small vessels which cover their whole surface; but if the earth about them is apt to get dry or cracked, they will wither and die. At the same time, excessive moisture must be carefully guarded against, in order to prevent the generation of bodies, such as moulds, upon the surface of their tubers, as these and other parasites, if prevalent, very soon obstruct the absorbing vessels, and the truffles begin to putrefy.

The situation chosen should be pretty freely exposed to the light and air, but a place where a strong easterly or north

wind prevails, is objectionable, and the calm and equal atmosphere of a moderately dense wood or young plantation should be imitated as closely as possible.

Having fixed on a good situation, and collected the materials to form the soil in autumn, proceed to mark off the ground for the bed, which may be of any size and form, but it should be kept somewhat regular and even. Drive a stake in the ground, at such points as will determine its limits, and dig out the original soil to about two feet all over within the space. The hole thus formed should then be filled with soil suitable for growing the truffle; it should be somewhat calcareous, and freely mixed with pebbles, or small stones. If good woodland can be obtained, it is preferable to that which has to be prepared. Such a soil is generally found full of those particles which are favourable to the growth of the spawn, and may be met with under trees, such as beech, oak, and birch.

Having formed the bed to the size and depth required, the next point to attend to is, to procure the truffles from some place where they grow in a wild state. In gathering the truffles, be very careful to preserve as much soil about them as possible, for it is difficult to get them established in their new position. For this purpose provide yourself with a thin board, two feet or more square, and having sides three or four inches deep in the manner of a tray, for the purpose of placing the truffles in when gathered. In lifting them out of the ground, the best implement is a thin, short-handled shovel, so that the soil with the truffles in it may be easily and safely transferred to the tray. When you have filled the tray, or obtained as many as you want, remove them carefully to the bed, into which they should be placed by means of the thin shovel. Form shallow basins here and there over the bed, so that the truffles may be about two inches below the surface; slip them gently off the shovel into these basins, and cover them lightly, so as to be beyond the influence of the light and air, as they do not thrive when left exposed. The depth at which they are placed in the bed may vary from two to six inches. The best time to put the truffles in the bed is early in the morning, before the sun has acquired much vigour, or towards the evening, after it has declined; and as soon as they are gathered they should be kept dark by means of a cover over the tray. This cover should not, however, be

made of flexible material, but should consist of a board to fit on to the other like a lid. It is also advisable, at the time of gathering, to collect a quantity of the soil in which truffles are found growing, and a portion of this should be laid in the holes or basins made for the truffles in the bed. If the truffles are put in the bed singly, each should be lifted out of the tray with as much care as possible, and a good portion of the soil in which it has been growing preserved to it. If the soil of the bed near the surface is very dry, it may have a sprinkling of water, such as has been collected from rain, and well exposed to the air for some time. When the planting has been completed, strew a number of small sprigs of oak or hornbeam trees over it. The bed may now be left undisturbed, and if any grass grows over it, it should be allowed to remain, but weeds of a different kind should be removed before they acquire a great size. For the first year very little increase of the truffles planted will take place; and those which may be observed when the bed is examined at the end of the following season after its formation, will be about the size of a nut, having a yellowish colour; these young truffles are of course not fit for use, but they may be considered as an indication that the plantation has succeeded, and you may expect a good supply in due time.

The planting of the truffle in the bed may be done either in spring or autumn, but the latter is the more suitable season, as then the truffles are to be found in greater number, and they are generally much larger than when obtained in spring.

Such is the routine to be followed in growing truffles artificially; and, as an appendix to these directions, we shall make one or two observations, which are not unworthy of consideration by those who wish to guard against the chances of failure. In respect to the choice of the ground or situation where the bed is to be formed, the most suitable is that where there is an open grass plot, surrounded, or protected from the north and east, by trees. These trees should not, however, be too close, but so distributed that the light may have free access to the bed, without at the same time allowing the rays of the sun to have full play upon it. One or two trees should at least be on the south side, for the purpose of forming a screen. The object in the first plantation should not be so much to obtain truffles for use, as to ensure a good stock for

propagating from. The first bed, therefore, should not be made very large, and, when you have succeeded in raising a good supply, other beds should be formed. In making the bed, select the lowest situation in the ground, provided you can command the other requisites already noticed.

The culture of truffles is sometimes rendered a matter of considerable difficulty from the depredations of vermin and insects. Squirrels in particular are very likely to scrape up the truffles and eat them; and the only means of guarding against this evil is to watch the squirrels and shoot them, or set traps by which they may be caught. Mice in many places are very apt to commit great havoc in the truffle bed, and it will be necessary to adopt similar means of destroying them, or some poisoned substance may be laid in the vicinity of the bed, where they may eat it. The trap, however, is perhaps the best plan of preventing their ravages. These traps should be placed near the bed and examined every morning and evening. In wet weather there is likewise considerable injury to be apprehended from snails and slugs, especially if the truffles come near the surface; and it is advisable to seek for these pests at night with a lamp, as the snails are seldom to be seen during the day. New plantations are especially subject to the ravages of insects or their larvæ. Many of the coleopterous insects and certain flies in nearly all stages frequently infest the truffles and destroy them. It is very difficult to prevent insects or their larvæ from lodging in the bed, and the best thing to do is to turn the soil of which it is composed frequently before being used, and all worms, maggots, or perfect insects which are detected, should be taken out and destroyed. In the process of turning the soil, it is advisable to mix a portion of unslacked lime with it, which will have the effect of destroying the insects or their larvæ as well as the common worms, which are also very destructive to the truffles. It will also be beneficial to lay the earth over some moderately hot place, turning it several times before it is put in the bed.

THE PARSNIP.

THE soil for parsnips should be of a rich vegetable texture, such as has been previously well manured with good rotten dung taken from a spent hot-bed. In preparing the ground, be careful to make it fine both above and below. All large stones should be cast aside, and no lumps be left unbroken, otherwise the roots will grow forked or crooked. If the ground is not rich enough, you may trench in a portion of old dung at the time of digging. Make the bottom as free and open as the parts above, for the roots of parsnips will grow down for a considerable distance, and if the ground has been well trenched and ridged up during the winter, it will be all the better.

The seeds of parsnips may be sown in March or April, according to convenience or the state of the weather. It should be sown in drills and carefully covered with soil, and no more than covered. The drills should be nine inches apart. Mark out the space you intend to occupy with the crop, and draw your drills to a line with a proper drill-hoe; sow the seed thinly, and rake the ground all over, to cover it in. There is no use in sowing thick, for when the plants are well up and growing, they will require to be thinned out to ten or twelve inches. Unless the weather should be very hot, it will not be necessary to water the ground; but it must be frequently hoed and stirred to keep down weeds.

When the plants come up, chop six-inch vacancies in the drills with the hoe, leaving patches as broad one way as the drill was. This gives room for the outside ones to grow, and when they are growing well after this thinning, you may soak the ground with water, and draw the surplus ones from each patch, so that only one strong plant shall remain. Select the strongest of those you take out, and plant them in rows six inches apart from one another in the row, and nine or ten

inches from row to row. All that has now to be done, is to weed them carefully and frequently ; but after each thinning the soil should be well watered, to refresh the plants. In planting out parsnips take care that the dibble is large enough, and insert it deep enough in the soil, that the point of the root of the plant may be placed in the hole quite straight ; unless this is attended to, the roots will grow crooked and ill formed. In the autumn, when the plants have attained their proper size, the leaves will turn yellow, which is an indication that the roots are fit for being taken up either for immediate use or to be stored away.

Those sown in the drills, and left there, after thinning, are very likely to be finer than those planted out, but this does not always happen, as, if the soil in which parsnips are planted out from the seed-bed or open quarter is fine and very rich, they will generally attain a greater size, and be much finer in flavour.

The ground for parsnips must be trenched eighteen inches at the least, and be well dunged for that crop, or it must be ground that was well dunged for the preceding crop ; which, moreover, should not have been a deep-rooted crop, such as carrots or beetroot. Parsnips would do well on a piece of ground that had been prepared for onions before, and laid up in ridges during the winter ; or it would be little the worse had there been a crop of winter spinach raised on it. But for parsnips it must be rich to yield good crops. When the seed is sown broadcast, and thinned out to eight or nine inches apart, an excellent crop is frequently obtained ; and cottagers, to whom seed is an object, frequently dibble in the seed eight or nine inches apart, dropping the seeds in a hole not more than half an inch deep, and when the plants come up, as soon as it can be ascertained which plant takes the lead, the weaker ones are pulled up. This is a very excellent way under the circumstances.

To obtain good seed of parsnips, plant out one or two of the most handsome plants you take up, and which must not be damaged in any way at the root. Plant them out before they begin to grow again in the spring. If there be nothing to interfere with them, the seed, when sown, will be sure to produce other good ones. Gather the seed in the autumn as soon as ripe, and before it begins to disperse. In doing this, cut off the branch with the seed and lay it on a sheet to dry

in some warm airy place ; but as soon as rain begins to come on, it must be removed in-doors.

In taking up the crop in the autumn, be careful to dig deep enough in the ground, so as not to injure the roots. In general, it is advisable to remove a portion of soil in the way of a trench, made somewhat near the roots, which may then be taken up with facility. Many people in lifting parsnips simply thrust the spade in the ground, and break off the roots at the depth to which the spade will go, and which is frequently not more than nine or ten inches. Now, well-grown parsnips will grow fifteen and eighteen inches deep, and it is therefore difficult to dig them up by the ordinary process without breaking the root or the handle of the spade, which sometimes indeed happens. It is, therefore, most convenient and proper to make a trench, when the roots can be taken up their whole length ; and they keep far better when laid in store entire, than they do when broken or mutilated. They should be dug up when the weather is dry and laid on the ground to dry for a few hours ; and when all the earth is rubbed off them, and their leaves cut off to within an inch of their crowns, you may store them away in dry earth, sand, or any other light material most convenient. The best place for them is a box placed in any cool dry shed or out-house, where they will keep good till the following summer ; but they must never be allowed to get wet or injured, otherwise they will spoil. They may also be laid in small pits in any open part of the ground. These pits are best when made round, and they need not be larger than five feet across at the bottom. They may be sunk about ten or twelve inches, and the bottom well lined with straw or fern. If there is a heavy crop, it will be better to divide them, so that they may fill two or more pits of moderate size. Pile up the roots, and when a sufficient number are put up, cover the whole with straw or fern ; then throw up the soil, making a trench all round the pile, and about fifteen inches from it. In lifting the earth, keep it as entire as possible, and lay the first spit all round at the bottom, close on the roots, and in such a position that the next spit will lie on it. Continue to pile up the soil in this way till the whole is covered, and beat it firmly and smoothly with the back of the spade. The roots will thus keep in good condition throughout the winter, and may be used as wanted. In taking them out of the pit, it will only be neces-

sary to open a small hole at one side, which should, however, be covered carefully up again. Parsnips are, however, hardy enough to stand the effects of a mild winter in the open ground, provided they are in good light soil, and in a sheltered situation, and they are of better quality when left in the ground till wanted. The ground should be covered with litter or fern during frost. But it is more convenient to take up the roots of all crops before the winter sets in, as they can be used more readily; besides, if they are out of the ground, this may be dug or ridged to be improved by the action of the frost.

Many persons only take up a certain quantity of roots to meet a limited supply in the winter months, allowing the rest to remain in the ground, which is merely covered with litter. The roots are considered to have a finer flavour when thus treated,—that is to say, when used recently taken out of the ground. The objection to this practice is that it occupies the ground, which, by lying untilled, is deprived of the beneficial influence of the weather at the time it is most capable of being acted on. We think, therefore, unless there is no lack of space, the roots should be taken up any time before Christmas, or previous to the setting in of the frost, and stored away as already directed. Parsnips are always in good condition for use from September or October till May or June of the following year. The sort called the Hollow Crown Parsnip is that which should be grown.

THE TURNIP.

THE turnip, besides being one of the most wholesome and nutritious of roots, affords excellent spring greens when the tops begin to grow ; but its principal value is in its roots. The seed is sown at many different times, but the germinating seed is very liable to be destroyed by the attacks of a diminutive fly, which will often destroy whole crops. There have been many methods recommended for the destruction of this fly ; but there is no certainty in them. One mode of mitigating the evil is to soak half of the seed for about twenty-four hours, and mix it together with dry sand, so that the grains shall not cling together. The fact is, that if the fly attacks it at all, it attacks the early crop ; and, as may be supposed, the soaked seed is up first. But the fly generally disappears with the first crop, and the plants from the dry seed, which come up considerably later, are thus free. We are not at all convinced that this plan is quite effectual, but it is easily tried.

The turnip is not very particular as to soil, but of course there is no reason for omitting to make it moderately rich. Work it rather deep and fine, so as to ensure the roots forming well. For early crops, you should choose a warm border of light dry soil. Make one or two beds, according to the extent of the first crop wanted, about four feet and a half wide, and having small alleys or paths between them about a foot wide. Make the surface fine, and mark off the beds neatly. The best time to sow is in moist dripping weather, if you can get a dry day between the wet ones ; but the spring and fall are the best seasons. The seed may be sown broadcast, or in drills, and there is no use in being sparing of the seed, for the chances are, that if you sow it pretty thick a considerable portion of it will be destroyed by the fly, and when sown thinly it is often entirely eaten up. The first

sowing of the White Dutch may be made about the beginning of March, or later, according as the weather is fine. When the seed is sown, rake the surface of the bed regularly, and beat it down lightly and smoothly all over. Unless the soil is very dry, it will not be necessary to water it. When the young plants have come up and made their rough leaves, thin them out with the hoe to five or six inches apart, and you need not scruple to cut down or remove the weeds at the same time ; but where weeds are growing close to plants, do not attempt to hoe them out, but remove them carefully with the hand. After you have stirred the ground considerably, which you are sure to do in thinning with the hoe, you may very beneficially soak the bed with good rain-water, in order to strengthen the young plants remaining in the bed. In a fortnight or three weeks afterwards, go over them again with the hoe to clean them, and remove any stray plants that are out of place. They may require another hoeing, but they will most likely be strong enough after the second hoeing to keep down weeds by the expansion of their rough leaves.

They will now require little or no further attention, and in a short time many of them will be fit for use, and may be drawn as wanted. They will continue to afford a supply until they begin to run to seed, when they are no longer worth room. For private families, it is worth while to sow several times, and a pinch of seed is a little object, while a small crop of young turnips is always acceptable and often very valuable. Besides, a small crop can always be commanded in a garden, because of the facilities for watering in dry weather.

As the first sown crop of turnips is always apt to run to seed soon, it is advisable to make a second sowing early in May, and a more extensive sowing for a principal crop should be made in the first or second week of June. Sowing turnips in shallow drills is a nice and neat way of growing them in private gardens, because in this way they are so much more easily hoed ; the rows being a right distance from each other, all we have to do is to cut out the plants not wanted, and this is far less difficult than to have to clear both ways. In the one case, you can have them in a straight line to an inch, the other is not so easy even to a practised eye.

In saving seed, plant out half a dozen of the handsomest

roots, and let nothing in the cabbage family flower near them at the same time. Turnips will bear planting out, and sometimes they do well after. When the fly has been making free with the original crop, the best way is to sow some in pots or boxes in a gentle hot-bed, and when the plants come up, remove them to a colder place, say a greenhouse or cold pit, for the purpose of invigorating them. As soon as they have formed their rough leaves, prepare a piece of ground for them ; make it moderately rich and fine, raking it level ; water until it is thoroughly soaked, when you may plant out the young plants raised in heat. But do this very carefully, so as not to injure the tender roots and fibres. You may keep them in rows about eight or ten inches apart, and six or seven inches from plant to plant. It is a hundred to one but you obtain a good crop, although perhaps not quite so heavy as if they had been originally sown where they are planted. For the second and third sowings, the variety called Early Stone is perhaps the most suitable. For the latest or winter crop, the Border Yellow should be chosen, and this may be sown any time up to the middle or end of August, or even later, and if they stand the winter well, a good supply may be insured early in spring, while the tops will come in also for use.

To keep turnips sound and good in the winter, you may begin about the end of November, or earlier if the cold weather sets in, to take them out of the ground and store them away. Cut off their tops, but not quite close to the crown : it will be better to leave nearly an inch of the green stalks, for when cut quite close, the turnips are apt to rot and spoil. This operation should be performed when the weather is somewhat dry and mild, and before the turnips have been injured by frost. You may place them in small heaps together in any cool or dry shed or cellar, properly covered with dry straw or fern. They are also placed in pits in the open ground in the same way as is done with potatoes ; but if they are preserved in this manner, the pits should not be too large, and the turnips should be well covered with straw and have a good thick layer of soil thrown over them. When stored in pits, there is a saving of space effected where it is inconvenient to have them in a shed or cellar ; but in being taken from the pits as wanted, it is better to wait for a dry or mild day, and uncover the pit at one end.

B E A N S.

THE soil most suitable for these is a strong rich garden loam, in which plenty of well-rotted dung has been mixed. The usual method of insuring an early crop, is to make a sowing about the end of November, or later, if the weather should not be sufficiently mild. If they are not wanted very early, they may be sown in February, or March, which will generally be soon enough for ordinary purposes. The ground having been properly dug and prepared, they should be sown in drills, six inches apart in the drill, and the drills two feet from each other. A successional sowing may be made every month till June. As soon as they are well grown up, and have made their rough leaves, earth them up to the bottom leaf; and when they bloom, pinch off the top of the shoots above the flowers, which will throw all the strength into the beans, and the latter will soon swell off, and be fit to gather.

Beans, like all other crops, are the better for having the earth stirred between the rows, and a portion of the soil brought up close to their stems. Those who are partial to the broad bean, may sow them in November, December, January, February, March, April, and May, or even June; several of these crops would, however, come together now and then, and make a glut. Beans may be left for seed, but they cumber the ground quite long enough without saving seed. If, however, you wish to save seed of any sort, leave a number of plants standing over, and be careful to select the best for this purpose. You must also guard against the ravages of birds, by which the beans are liable to be picked, or have their pods prematurely opened, while they are just beginning to lose their softness. It may be known when the beans are nearly ripe, by the pods beginning to turn black. When they assume this colour, and previous to the under-

most pods opening and shedding their seeds, the plants should be pulled up and placed on mats to dry ; and after the process of drying has been perfectly completed, the beans may be removed from the pods, either by thrashing or hand-shelling, and placed in the store-room. It is not advisable to leave this matter till an after-time ; it should be done at once ; for if the beans are allowed to hang or lie about, they are very liable to be injured.

In sowing beans, the distance between the rows should be regulated according to the growth of the particular sorts used. For the tall-growing kinds more space will be necessary than for those of dwarfer habit ; and the more light and air there are admitted to them, the better. If it is desired to crop the ground with other low-growing vegetables, such as spinach, to which a little shade is beneficial, the stronger-growing sorts may be sown in drills, from three to six feet apart, and drawn north and south, as then the beans have the greatest amount of light on each side of the row, while the other crops growing between them are equally benefited. The operation of hoeing should be repeated from time to time, both for the purpose of keeping down the weeds that spring up, and encouraging the growth of the beans, by loosening the soil about their roots.

The depth at which the beans should be placed in the drills will also depend a little on their size, the larger kinds being, of course, planted deeper than such as are comparatively small ; but, as a general rule, the depth may be stated at about three inches ; and they should be placed at from three to six inches apart, according to the size and habit of the plants. When covered up, tread them slightly, if the ground is, as it ought to be, rather dry ; but all unnecessary treading should be avoided. After having raked the surface of the soil evenly, they will require little more attention than is necessary to keep the ground clear of weeds. When beans are planted late in the season, say in June or July, their germination may be considerably hastened by soaking the seeds in a little soft water for a few hours previous to sowing or planting them.

For the purpose of obtaining a late crop, it may be expedient to mark out a few of the rows of those planted in the spring, and cut them down to within a few inches of the ground as soon as their flowers appear. The plants so cut

down will produce new stems, and a late supply may be thus obtained. Beans are in the best condition for being gathered for use when they have acquired just about half the size they generally attain when perfectly ripe ; and they are not so finely flavoured and succulent if not pulled at this stage of their growth.

Beans are frequently attacked about their blooming-time by a species of aphis or black fly ; and the best way of preventing its ravages is to pinch off the upper portion of the stalk, where the insect is commonly found. This treatment is not always effectual, but when it fails, no other can be recommended with more satisfactory results.

THE ARTICHOKE.

THESE are by no means popular, as they occupy a good deal of room, and are somewhat troublesome. They are, besides, nearly superseded by sea-kale, asparagus, and other vegetables, that are boiled and eaten with butter, and are rapidly giving up their places in the best gardens. They nevertheless form a handsome crop to look at ; and it may be necessary to say a few words about their culture. The ground in which artichokes thrive best, is a light rich vegetable compost, which should be well trenched and dunged with old decomposed manure. The propagation of the artichoke is effected by planting rooted suckers, or young shoots, which are produced at the roots of the old plants. In March or April, when these have made twelve or eighteen inches in growth, they should be laid bare to the crown, and cut off close to the old root, having two or three plants, or shoots, to each "stool." The shoots thus taken off should be planted in rows four feet apart, and three feet from plant to plant in the row. The situation chosen may be in an open quarter, and the planting should be performed with a dibble. If the weather is dry, they must be well watered immediately they are planted, repeating the operation from time to time until

they are fairly established in the soil. Keep them clear of weeds, and occasionally stir the surface of the soil between the plants, as this practice will help to retain the moisture, while it permits the beneficial action of the sun and air to the roots more effectually.

When the plants flower, which will be about August, you may take off the smaller lateral buds, and only allow the central or principal one to remain and grow. When the scales of the bloom begin to open out, the buds should be cut off; these are boiled until the scales admit of being separated easily; and the way in which these scales are used, is to eat them, like asparagus, sucking the tender portion away. When all the scales are removed in this way, and the incipient flower consumed, the bottom part is eaten with butter, in the same way; only this part, being quite tender, is eaten entirely. When the heads are taken off the stem, the plants may be cut down towards the winter, and the earth thrown up on each side of them, so as to cover them over a few inches, the large leaves being first cut off. In the spring, the earth is removed again, and the crowns of the roots laid bare. With the exception of three of the best, all the shoots should be taken off and planted in the same way as already detailed, to form a new plantation. Then dig the ground well all over and around the old plants, but do not dig so close as to injure their roots; and a fresh application of well-rotted dung will be beneficial. Sea-wrack, if it can be obtained, is a very good manure for this vegetable.

The culture is repeated from year to year much in the same way, except that after the first year the plants will bloom stronger, and, therefore, more heads may be allowed to grow. When the plants begin to exhibit symptoms of weakness, they should be removed; but there are many artichoke growers who tie up the shoots, and earth them up like celery, in order to blanch the leaves, which are thus cooked and eaten like sea-kale. The new plantations that are made must be carefully attended, and supplied in dry weather with plenty of water, until they have established themselves. After the second or third year, fresh plantations should be made every season, in order that there may always be a succession of healthy young plants; for artichokes are seldom worth growing after they are five or six years old. To produce very large and fine heads, only one or two should be allowed to grow on a stalk; all the others that appear should

be taken off while young. And in every case of removing the whole of the heads on a stalk, the latter should be cut down close to the ground.

JERUSALEM ARTICHOKE.

THIS is propagated by planting the small tubers or offsets ; the large tubers may also be cut into several pieces, each having at least one eye, as practised with the potato. When the tubers are cut, they should be laid in a corner for a few days, so that the cut parts may have time to heal and become quite dry before they are placed in the soil. If, however, there is plenty of moderate-sized tubers, there is no necessity for cutting them, and they produce as good, if not better crops, when planted whole.

The Jerusalem Artichoke thrives best in a light mellow soil, made rather rich by being manured with a portion of old decomposed dung ; but the roots will grow very well if planted in any corner of the garden, which is less suitable for other things. The proper time to plant is in February or March, according as the weather is favourable. The soil in which they are to grow should be previously trenched fifteen or eighteen inches deep. And when it is well prepared, the tubers should be planted in rows about three feet apart, and one foot apart in the row. They should then be covered with about three inches of soil, and the ground must be kept perfectly clear of weeds. As the plants come up, hoe the ground between the rows from time to time, and draw a little earth around their stems to support them, and afford the roots a thicker covering. The plants generally grow to the height of six or eight feet, but they are strong enough to support themselves, if not exposed to violent winds.

The new tubers will be fit for use in the autumn of the same year in which the old ones are planted, and you may begin to take them out of the ground about November, and lay them in store for use during winter. The best way of taking them up is to pull the long stems out of the ground, and take off the tubers by hand ; as, however, many of the tubers will become detached from the stem or root, and remain in the ground after the stems are pulled up, it will be necessary to lift them by means of a fork, in the same way as potatoes. Spread them out on the ground to dry for a day or two, and then store them away in sand in any shed or cellar where they can be preserved for use as wanted.

O X A L I S.

THE leaves of *Oxalis crenata* are used in salads, and the roots or tubers, when properly dressed, have a very agreeable flavour; they are commonly cooked like potatoes, for which they form a very middling substitute. It is propagated by planting the tubers, which may be cut in the same way as potatoes, or deposited in the ground whole if plenty of them can be obtained. If the tubers are cut, one or two—not more—eyes should be preserved to each part, or “set,” as it is generally called. After being properly cut, the sets should be laid out on a dry floor for a day or two, for the purpose of healing or drying up the parts which have been cut. The time at which the sets may be planted will much depend on the weather and on the locality or district; about the end of April will generally be soon enough. The ground in which they are to be planted should be well exposed to the sun and air, but not deprived of a certain amount of shelter. The plant requires a soil which is rather rich and light, and it should be dug fully a foot deep, and well broken up with the spade in the process of digging. When the ground is properly prepared, draw drills two or three inches deep and about thirty inches apart. For the purpose of drawing the drills quite straight, it is proper to use a garden line.

The sets should be placed in the drills about eighteen inches apart, and covered over lightly. When the plants come up, a little more earth should be laid over them, and the weeds must be removed as soon as possible. In a few days afterwards, the shoots will again appear above the ground, and when they have grown a few inches high, draw a little earth to their stems on each side. They will now only require to be kept clear of weeds during the season. At the end of the summer, cut down the stalks partially, which will tend to swell the tubers. The tubers are fit for being taken

out of the ground when the stalks begin to decay, but it is advisable to leave them as long as the weather will admit. The roots may be preserved for use during the winter by being stored in dry sand in any shed or outhouse, or they may be placed in pits in the open ground, in the same way as practised with the potato.

Oxalis Deppei produces fleshy roots, for the sake of which it is sometimes cultivated. The roots, which are thick, fleshy, tapering bodies, are of very delicate flavour, and are exceedingly wholesome, forming a good substitute for sea-kale or asparagus, from November to January. This oxalis requires a warm, selected situation, and a rich, deep, loamy soil. The bulbs, which are produced in clusters around the thick ends of the fleshy roots, may be planted some time in March, in rows about a foot apart, and about the same distance apart in the rows; they should be put in three inches deep. During summer they only require occasional hoeing, and watering when the weather is very dry. The fleshy portion, which is eaten, is not formed until late in autumn, consequently by the month of October the surface of the ground should be covered over with litter, as a protection from early frosts, and so that the roots may grow on without disturbance. By the end of November, some of the roots would be ready for use, and may be taken up; but the majority should be left in the ground as long as possible, so that frosts and rain are kept from them, which may be done by means of any spare lights or shutters. Before the weather gets very severe, they must be taken up and stored amongst dry sand, in a cool, dry place, beyond the reach of frost. A supply of the bulbs must be retained for the next year's planting—the scaly bodies clustered about the base of the stems, at the top of the fleshy roots. The young leaves and flowers are sometimes used in soups and salads, as are those of the *Oxalis crenata*, but for these purposes they are not of much importance.

HERBS.

ANISE.

THIS is a delicate annual, and must be allotted a warm situation. It requires a light, rich, and dry soil. About the end of April, make up a bed on a south border, four feet and a half wide, and having raked the surface finely and evenly, sow the seed thinly in drills, about an inch and a half deep, and six inches apart. Rake the whole neatly over, and if the weather is dry, the ground must be properly watered. As soon as the plants come up, thin them out to four or five inches apart, and water the soil to sustain and strengthen those remaining. As the plants progress, they must be carefully kept clear from weeds, which should be removed by the hand as soon as they appear. The occasional stirring of the ground between the rows with a small hoe will also be beneficial; and should the weather continue hot and dry, you must water the bed thoroughly every other day, performing the operation towards the evening. The seed will be ready for gathering in the autumn, when the plants should be pulled up, and laid on a sheet in some sunny place to become quite dry.

In cold districts anise will scarcely ripen its seed in the open ground, if sown on a bed; it will therefore be necessary to adopt an expedient by which the plant may be hastened on. Prepare a moderately warm dung-bed about the end of March or early in April. The dung should be previously turned twice or thrice to ferment, after which it should be laid evenly down in the form of a bed large enough to support a frame and light. Raise it about two feet or two feet and a half, and let it be so wide that there is at least twelve inches at every side of the frame. As soon as the bed is properly formed, place on the frame, and lay in about six

inches of good light loamy soil. Then fill a number of six-inch pots with rich sandy loam about an inch from the rims, press down the soil gently, and make the surface smooth, then sow the anise seed, and sprinkle a little fine soil over it. The pots should now be removed to the frame, and "plunged" in the soil about three inches. The number of pots will depend upon the supply you want, and when they are all properly placed, sprinkle the whole with a little rain-water, using a pot which has a fine rose. Then put on the lights, and only leave them raised an inch at the top to allow any rank steam to escape; but if the bed has been sufficiently "sweated," they may be kept quite close, except for an hour during bright sunshine. Should the weather be cold and threaten frost at night, protect the bed by covering it with common garden-mats or canvas. As soon as the plants come up, a little air may be given for an hour or two in the day-time, by raising the lights behind about an inch, or even more, according to the state of the weather. As soon as the plants are large enough to handle, they must be thinned, leaving only four or five plants in each pot, and these at the sides of the pots.

When they have progressed sufficiently, and the weather is mild enough, make up one or more beds on a warm border, and make a number of holes six inches apart in rows, either lengthways or across the bed. Then remove the pots in the hot-bed which have the strongest plants to the border, turn out the balls of earth with the plants one after the other, and carefully separate each plant with as much of the ball of earth to its root as may properly be its share. Place the plants in the holes as soon as possible after they are turned out of the pots, and fill in the holes immediately, so that the roots may not suffer from exposure. When the planting of the bed is finished, rake the soil neatly and evenly, and give it a good soaking of water with a rose-pot. The plants must then be kept clear of weeds, and the ground occasionally stirred. If the weather at any time continue warm and dry, the plants must be thoroughly watered as often as occasion may require.

ANGELICA.

THIS is propagated by seed, and will grow freely in a light and dry soil. The seed may be obtained of any seedsman,

and a small packet will be quite sufficient for an ordinary family. In March or April make up a bed on any shady border, according to the supply wanted ; one bed, four feet and a half wide, will generally be large enough. Make the soil fine, and rake the surface evenly. Then sow the seed thinly broad-cast, or in shallow drills across the bed, about six inches apart ; cover it lightly, and rake the bed neatly over again. If the weather is dry at the time of sowing, water the bed thoroughly, and remove all weeds as soon as they are large enough to handle. When the young plants have attained one or two inches height, thin them out to five or six inches apart, watering them as soon as thinned. When they have attained the height of four or six inches, they may be planted out in an open quarter, about three feet apart, in rows four feet apart ; the ground must be occasionally hoed and stirred, to keep down weeds and improve its texture. The plants must not be allowed to run to seed, and the stems which begin to shoot up into flower should be cut down ; when thus treated, angelica will keep good for several years. To raise a fresh crop, allow one or two plants to flower and seed. When the seed is perfectly ripe, it should be gathered and sown at once in a bed, as already directed. If the seed is sown early in August, the plants will be fit to transplant the same year.

FEVERFEW.

THIS is a hardy biennial plant, and may be propagated by seed sown in the spring, in a bed of light rich soil, on any moderately warm border. In February or March prepare a bed about four feet and a half wide, having an alley on each side for the convenience of weeding and watering. Sow the seeds thinly in shallow drills across the bed, about nine inches apart, covering it by raking the surface of the bed neatly over. Trim the edges of the bed, and if the weather is dry, give the ground a good soaking of water. The soil between the rows must be frequently stirred by the hoe for the purpose of keeping down weeds ; those which grow immediately over the seed lines must be removed by the hand, as the hoe would most likely injure the roots of the young plants, which must be partially thinned as soon as they come up. In about ten days more they should be again thinned to five or

six inches apart, watering the ground freely after the operation is completed. They will soon grow strong, and will only require to be kept clear of weeds, and watered now and then, especially in continued dry weather. When the plants have ripened their seed, which will be the following season, cut them down, and lay them on a sheet to dry in the sun, and when quite dry the seed may be beaten out, and laid in bags to be used as wanted.

DILL.

THIS herb has a strong aromatic smell, and the seeds are often used to increase the flavour of pickles, such as cucumbers. It is propagated by seed, which should be sown in the spring. In February or March, prepare a bed of moderately rich soil on any warm border. Make the bed about four feet and a half wide, and having an alley on each side for the convenience of weeding. Draw shallow drills, about nine inches apart, across the bed, and sow the seed thinly, covering it lightly by raking the surface neatly over. Trim the edges of the bed, and if the weather is dry and warm, give the soil a good soaking of water. The watering should be repeated from time to time, as occasion may require. Remove all weeds as soon as they grow large enough to be handled, and when the young plants come up, thin them out where they are growing too thick. In about ten days or a fortnight they will have attained an inch or two in size, and they should be thinned finally out, leaving them about six inches apart in the row. They may now be left to grow strong, and it will only be necessary to remove the weeds as they spring up, and give the plants abundance of water in dry weather, observing always to water in the morning or evening, so that the moisture may not soon be dried up. By the end of the summer the plants will begin to ripen their seed, and they may be cut a little before it is quite ripe, and laid on a sheet in the sun to dry, after which the seed may be beaten out, and put in paper bags to be used as wanted.

FINOCHIA (SWEET FENNEL)

THIS is propagated by seed only, which should be sown in deep drills, in light rich soil, in an open, somewhat moist

situation. For a limited supply, a row of a few yards will be enough. In the month of April or May, having prepared the ground, form the drills, and scatter the seed thinly and lightly at the bottom ; but cover them only very lightly, leaving the rest of the soil taken out of the drill for the purpose of subsequently earthing the plants up. Good seed should spring up in a few days ; and when the plants have grown an inch or two, thin them out to about a foot each way. As they become stronger, draw a little soil round their stems ; which operation must be repeated more effectually at the end of a month, for the purpose of blanching the stems, in the same way as is practised for celery. When thus treated, they will be ready for use in about three weeks. They require little further attention than keeping them clear of weeds from their earliest stage.

FENUGREEK.

THIS is a hardy annual, and requires to be raised from seed, which may be obtained of any seedsman or market gardener. About the month of March, prepare a bed on any open border. The soil should be made moderately rich and fine. It thrives better in ground which is light and free than in such as is retentive of moisture. One bed will generally be sufficient. Having dug the ground well, form the bed the breadth of the border, and from four to five feet wide. Rake the surface evenly, and draw a number of shallow drills about eight inches apart and across the bed. When drills are drawn, whether in a bed or anywhere else, they should always be straight, for nothing indicates slovenly work so much as a crooked row of plants ; unless indeed it be a profusion of rank weeds. The best way to insure straightness in the rows is to use a garden line ; but in marking them in beds, it is merely necessary to be provided with a rod about five feet long, and by laying this on the surface at the place intended for the drill, and gently pressing it down, you make a mark, which in many cases will be sufficient to serve as the drill itself ; but generally it is better to draw drills with a hoe, which should be made angular for such a purpose, for then the soil is better loosened, and more suitable for the reception of seeds. Having drawn the drills about an inch deep, sow the seed thinly and rake the surface of the bed

over, which will cover them in. If the weather is dry and warm, give the bed a good sprinkling of water. Nothing further will be requisite until the plants come up, except indeed an occasional weeding ; and it is preferable to keep the bed clear of weeds before the plants appear above the surface. At all events, the weeds should be taken out before they have grown to any great size, in order that the tender roots of the seedlings may not be disturbed by their extraction. Occasional stirring of the soil between the rows will also be very beneficial, by admitting the light and air to the plants, which, as soon as they are large enough to handle, must be partially thinned out. In ten or fifteen days more, they should be thinned again to about seven or eight inches apart. At every time of weeding or thinning, the bed must be thoroughly watered if the weather is dry ; but both of these operations are best performed during dull and open weather. The plants will soon attain a considerable size, and may be used as wanted. If the seed of fenugreek is sown early, and cold drenching rains or severe frost should intervene, it will be necessary to protect the bed by a covering of matting or any little litter. Fern, or the branches of fir trees, may be thrown over it, but whatever covering is used, should be taken off as soon as mild weather returns. It is an old medicinal herb not now used.

CUMMIN.

THIS is a hardy annual, which is chiefly used for seasoning dishes. It is raised from seed, and requires a good rich soil. In February or March make up a bed on a warm border, about four feet and a half wide, with an alley, or little path, on each side. Let the ground be made rather fine, and sow the seed thinly in shallow drills across the bed, and about eight inches apart. If convenient, choose a moist or cloudy day for sowing ; but if you sow when the weather is dry and warm, give the bed a good watering, which will hasten the germination of the seed. Cover the seed in by raking the surface of the bed neatly over, and trim off the edges and paths. Be careful to remove all weeds as soon as they grow up, and water the bed from time to time in dry weather, especially after weeding or turning the surface of the soil. As soon as the young plants come up, they should be looked

over, and thinned out where they are growing too thick ; and when they have attained one or two inches in height, they must be finally thinned to six or eight inches apart in the row, always observing to water the ground freely after the thinning. Unless the demand is greater than usual, one bed will be quite enough for a private establishment ; and nothing is required in obtaining this herb in good condition, but to weed the ground now and then, and water it well in continued dry weather.

CORIANDER.

THIS is a hardy annual, and is raised from seed, which should be sown in the spring on a warm, sheltered border. In February or March, according as the weather is favourable for the operation, prepare a bed of convenient size. The soil should be made rather rich, and when the bed is properly formed, draw drills about nine inches apart and sow the seed thinly. As the seed is small, the drills should not be deeper than an inch, and they may be covered in by raking the surface of the bed evenly. Trim the edges neatly, and if the weather is dry, give the bed a thorough soaking of water. Remove all weeds as soon as they are large enough to handle, and when the young plants come up, thin them out where they are growing too thick. They must be again thinned when they are an inch or two high. Keeping them about five or six inches apart, they will require little further attention than weeding occasionally, and watering during dry and warm weather. In the autumn they will ripen their seeds, and the plants must be taken up and laid out to dry perfectly, when the seed may be beaten out on a sheet and stored away in paper bags, to be used as wanted.

CLARY.

THIS is a hardy biennial, and is raised from seed sown in the spring. It thrives in a light, rich, loamy soil, and may be allotted a place on a border along with other herbs. In February or March, prepare a bed about the usual width, shake the surface rather fine, and sow the seed thinly in shallow drills about eight inches apart, covering it over with a little soil from the alleys ; or it will be sufficient to rake the

bed lightly over after sowing. Trim the edges neatly, and if the weather is dry, water the bed thoroughly. All weeds must be removed as soon as they grow large enough to handle; and when the plants come up, thin them partially where they are growing too thickly. In about ten days later they will require to be again thinned to four or six inches apart, and the soil watered about their roots to refresh them and hasten their growth. As the plants get strong, the soil between the rows must be frequently stirred by means of a hoe, for the purpose of keeping down weeds and allowing the sun and air to act on their roots. But those weeds which grow near the plants should be removed by hand, as the plants are apt to be cut or injured if the hoe is used for this purpose. The plants will now require little further attention, except occasional weeding and watering when the weather is dry.

CHICORY.

THIS is a useful vegetable for mixing in salads, for which it is much esteemed in continental countries.

It is raised from seed, which should be sown in rich ground which has been dug or trenched, and laid in ridges during the winter. The best time to sow is in June or July, according to the state of the weather. Having prepared the ground and made it sufficiently rich, form one or more beds about four feet and a half wide, and having small paths or alleys at the side. In these beds sow the seed thinly in drills about half an inch deep, using a small stick, or a hoe, in drawing the drills. The seeds being small, they must not be covered too much, and the drills may be about twelve inches apart. Before sowing the seed, give the ground a thorough watering if the weather is dry, which it is most likely to be at such a season. Rake the beds over evenly, and trim the edges; but the raking should be performed with a small rake, so as not to disturb the seed. The beds will require to be watered again from time to time, and always in the morning and evening; as the weeds grow, they must be removed by the hand, and the ground between the rows frequently stirred. When the young plants come up, thin them out where growing too thick, so that they may not crowd one another. When the plants are thinned, the bed

must always be watered, if the weather is not sufficiently moist to render this operation unnecessary; and after they have attained a few inches in height, they should be again thinned to four or six inches from one another in the row. The earth should be frequently stirred, in order to let the sun and air act on their roots. By November the roots will have attained a good size, and will be fit to take up; choose a mild dry day for lifting them, and be very careful not to injure the crowns in removing the tops or leaves. After the roots have been well dried in the sun for a day or two, they should be carefully packed in sand in any dry and cool out-house or cellar.

When wanted for forcing, the roots should be taken out of the sand and placed in boxes, pots, or similar vessels, and gradually excited in a house having a warm temperature. The soil should be light and rich, and passed through a coarse sieve. If required to be ready for use early in the beginning of the year, they should be allotted a place in an early vinery, and kept dark by covering the pots and boxes with any material that will exclude the light, or with similar vessels to those the roots are grown in. In order to keep up a regular succession, according to the supply wanted, more roots should be potted every ten days or fortnight, and placed in the forcing house. As the season becomes warmer, they may be forced in a mushroom-house or cellar, in which the temperature is from forty to forty-five degrees, which is sufficient. In all cases the leaves should be blanched.

A temperature of sixty degrees is not too high for chicory if it is wanted in haste; but for ordinary forcing, a better crop is produced with a temperature which is considerably lower than that. If not forced too rapidly, each crop will bear several cuttings; but the produce ultimately becomes more limited, and the leaves are less agreeably tasted, if not quite bitter. When the forced roots have become exhausted, they may be thrown to the manure heap, as they are of no further use.

If you wish to save seed, keep a few of the best roots, which are laid in the sand, till the spring; they may also be selected in the autumn and left in the ground all the winter. If the soil is cold, they may be covered with dry leaf-mould or litter. Thus preserved, they will start into growth the following spring, and only require to be kept clear of weeds.

If desired, those retained for seed may be lifted in the spring, and planted in any part of the ground where they will be out of the way. As soon as the stems have grown a foot or so, they should be supported by means of stakes driven into the ground, to prevent the wind from blowing them down.

If you wish to grow the roots for the purpose of pounding them into powder as a substitute for coffee, they should be treated in the same way as already detailed; but the seeds may be sown thicker, and when the plants are up, they need not be thinned out so much. When the roots have attained a desirable strength, take them up and store them away in sand, as before, till you want to prepare the powder. They must then be properly cleaned, and cut into small pieces about an inch square. They may then be roasted in any way which is found most convenient; and when they are of a light brown colour, they should be ground into powder for use as wanted. The powder thus obtained is mixed with coffee, and forms a good beverage. If preferred, it may be used alone, and it will be found a very agreeable drink when mixed with a little sugar and milk.

CHAMOMILE.

THIS is a hardy perennial plant, and may be easily propagated by seed, or parting the roots of old plants. If raised from seed, prepare a bed of good, light, rich soil in a warm and sheltered situation. The bed may be about four feet and a half wide, having an alley at each side. Make the surface moderately fine and even, and then mark, with the handle of the rake, lines across the bed at about eight inches apart; in these lines draw shallow drills, using a small drill-hoe, and sow the seed thinly, covering it up with a little soil from the alleys. The seed may be sown any time in February or March; and if the weather is dry, give the bed a good soaking of water. As the plants come up, thin them partially, and remove all weeds as soon as they can be handled. The plants should be again thinned out when they have grown an inch or two, and those taken out may be planted in other beds, in rows about ten inches apart, and six or eight inches from one another in the row. Water the plants which have been thinned out into the second bed, as well as those which are

retained in the seed bed, and which should be thinned until there is a clear space of eight or nine inches from plant to plant in the row.

The most expeditious way of propagating chamomile is, however, by parting the roots of old or established plants, which may be done any time in the spring or autumn. Having prepared a bed of good, rich, loamy soil, tear or divide a number of the old plants, forming smaller ones ; and a well-grown plant will furnish you with more than a dozen of small ones. These offsets should be planted by means of a dibble, in rows across the bed about a foot apart, and eight or nine inches from plant to plant. The ground should be raked neatly, and thoroughly soaked with water in dry weather, especially after planting. The watering should also be repeated from time to time, as occasion may require, and the ground between the plants frequently stirred with the hoe to keep down the weeds.

BASIL.

THIS very fragrant and favourite herb is raised from seed, and the best way of obtaining it early, and in sufficient quantity, is to sow seed on a hot-bed. About the end of February collect a sufficiency of good stable dung, and throw it together in a round heap to ferment ; turn it over twice or thrice during eight days, when it will be ready for forming the bed. Drive in four stakes at such distances that one will be at each of the four corners of the bed, according to the size required. They will guide your forming the bed so as to fit the frame which is to be laid on it ; and the bed should be large enough to exceed the sides of the frame about twelve inches. Lay the dung down evenly, and shake it well up. Raise the bed about two feet or thirty inches, and when properly completed, put on the frame and lights, leaving the latter down an inch or two at the top, to allow the rank steam to escape. In two or three days the bed will be in good condition, and six or eight inches of good, rich, light soil should be laid in and raked evenly. Sow the seed thinly broadcast, and sprinkle a little fine earth uniformly over it. Water the bed gently, using a fine rose, and put on the light. Keep the bed closely shut in except during fine warm weather, when the light should be raised an inch or two at

the back, but not longer than for two hours, and during the middle of the day. It will be proper to cover the frame at night, in order to guard against frost. When the plants have attained a height of two or three inches, prick them into an intermediate bed, or into a warm sheltered border, facing the south. Plant them in rows six or seven inches apart, in beds four feet wide. When planted, give them a good supply of water, and repeat this attention frequently until they are well established. Keep the beds very neat and clean, and stir the surface of the soil from time to time. In dry weather they require to be watered thoroughly, and this operation is best performed in the evening, when it is also most effectual and refreshing.

If sown in the open ground, the warmest situation should be selected, and the soil light and rich, for, in ordinary seasons, the plants so raised are generally late, and seldom acquire much vigour. When the plants are sufficiently advanced in the autumn, they should be cut off close to the ground, or taken up with their roots, and before the frost sets in; for being very delicate, they do not withstand much cold. When dry, tie them up in bunches of any convenient size, and put them carefully into paper bags, where the fine aromatic properties of the plant may be the better preserved. They will soon spoil if allowed to lie loosely about, or are otherwise neglected. Basil should never be gathered, except when the weather is warm and dry; or if taken up in a wet condition, the plants should be spread out on any shelf or floor in an airy room to dry gradually.

WORMWOOD.

THIS is a hardy perennial plant, and is readily propagated by seeds or slips. It thrives in any rich soil, and in any situation which is not too much exposed to sharp winds. A limited supply will be sufficient for an ordinary family, and a few plants may be grown on the border, or in a small bed. In March or April prepare the ground by digging it fine and trenching in a quantity of old decomposed dung. If you want a bed of it, make it about four feet wide, having an alley at each side. Sow the seed thinly, either broadcast, or in drills across the bed, nine or ten inches apart. Cover it lightly and trim off the bed, giving it a good soaking of

water, if the weather is dry. Remove the weeds as soon as they can be handled; and when the plants come up, thin them out to six or eight inches apart in the row. They must be again looked over about ten days later, when any further thinning required should be completed. The plants will only require to be kept clear of weeds, and watered now and then in dry weather. If wormwood is raised from slips, these should be made in the spring, or early in the autumn, and placed in a bed facing the south, about six inches apart, in rows a foot apart.

THYME.

ONE of the most commonly used of garden herbs, of aromatic and pungent quality; of which there are two sorts cultivated, the common thyme and the lemon thyme; the former more pungent, and used more generally in stuffings and broths, the latter more grateful, and used in the preparation of stuffings for the more delicate meats. They may both be cultivated in the same way, but the common thyme is a more woody plant, and hence is propagated more easily by cuttings or slips than the other, which, being of a spreading, rooting habit of growth, is propagated by dividing the masses of the plant, in the way of an herbaceous plant. Of the common thyme, the slips or cuttings should be planted in spring, on a shady border in a light soil, and they will become rooted and well established in the course of the summer. The masses of the lemon thyme should be taken up annually, or every second year, and replanted; for if left too long undisturbed, it is apt to dwindle away in some localities; and where it grows and spreads freely, the reducing of the patches by merely cutting away portions from their exterior, weakens the plant, the outside parts being always the most vigorous, and the central parts more or less exhausted. The plantation for use should be in an open spot of good ground, where the plants may have all the sun and air possible, in order to enhance their flavour, which is deteriorated if they are grown much in the shade; but both of them, the lemon thyme especially, likes a soil which does not rapidly dry up, and hence exposure is not to be considered the same as parching, in respect to their general treatment. When once planted, they only need the ordinary waterings required alike by the

generality of crops in times of excessive drought, and to be kept free from weeds. The tops of both these herbs are preserved for use during winter. For this purpose, they are cut and dried in the sun, and are then tied up in bunches, and hung up away from dust in a quite dry store-room, or they are more highly dried, pounded, and preserved in dry, close jars ; which latter plan is the best to preserve their aromatic qualities. The herb should be cut when at the height of its flowering.

TARRAGON.

THIS is propagated by parting the roots, and also by sowing the seeds in spring. The soil most suitable for Tarragon is a light and rich compost, but no rank or strong manure should be mixed with it. Sow the seeds in beds, either broadcast, or in shallow drills ; and after the plants are well up, and have begun to grow, thin them out to nine inches apart, which will leave them plenty of room to attain strength and vigour. The young leaves are used in salad, and in vinegar, as well as in pickles. When the plants are thinned, water them freely, and occasionally stir the surface of the soil between them : as weeds will be sure to spring up during the growing season, these must be removed before they become large, otherwise they will injure the plants by abstracting the nourishment of the soil, and obstructing the light, both which are very essential to the full development of the young branches. In the winter time they thrive best under a south wall. When it is wanted at an unusual season, or where a constant supply is required to be kept up, Tarragon may be forced by placing a quantity of the roots in shallow boxes or pans, in a frame or hot-bed, with a gentle bottom heat, and mild moist atmosphere. Young plants, either from roots or seeds, should be raised every year, as plants of the first and second years' growth are generally better than those which have been in use for a longer period.

SKIRRET.

SKIRRET is generally grown for its long fleshy roots. It is a perennial plant, and thrives in any light sandy loam, and in a low, open situation. It is propagated by slips or offsets,

and also by seeds. The latter mode of raising it is preferable to the other, as by it you can obtain more succulent roots. If the seed is sown very early, the plants run into long stalks, bearing seed before they acquire any strength ; it is better, therefore, not to sow before the second or third week in April. About that time, prepare a bed of the ordinary size, and sow the seed thinly in shallow drills, nine or twelve inches apart. It may also be sown broadcast, and covered in lightly by raking the surface of the bed. As the roots are of much consequence, the ground should be previously well dug, about a foot deep. Rake the bed neatly, and trim the edges and alleys. In a week or two, the plants will spring up ; but in the interim the bed must be kept clear of weeds, and watered when the weather continues dry. When the plants are fairly above the ground, thin them out with a small hoe, so that they may stand at seven or eight inches apart in the row. They will only require to be kept clear of weeds, and watered from time to time in dry weather. At the end of the summer, when the leaves begin to decay, the roots will be fit for use, and they may be taken up as wanted. While the weather is mild and open, the roots should be left in the open ground, but it is advisable to take them up before the frost sets in. If a good supply is wanted, the seed may be sown in an open quarter, in drills a foot apart, drawing the drills straight by means of a garden line.

In taking the roots out of the ground in the autumn, dig or fork them up carefully, and spread them out to dry for a day or two, when they should be cleaned and stowed away in dry sand, either in boxes or baskets, to be used as wanted.

SCURVY GRASS.

THIS is a biennial of not unfrequent occurrence in maritime districts, as well as elevated localities inland. It forms an excellent salad, and from its useful antiscorbutic properties deserves to be generally cultivated, especially by cottagers. It may be propagated either by sowing seed or parting the roots of old plants. It thrives in almost any soil, but it is much improved in flavour by being grown in good loamy ground, moderately rich, and in a situation which enjoys partial shade. If the soil in which the full-grown plants are placed is somewhat moist, it will be all the better. About

March or April, to raise plants from seed, make up a bed of rich, light soil on any warm border, and sow the seed thinly in rows six or nine inches apart, or thinly broadcast. Rake the surface of the bed evenly, and trim the edges neatly. If the weather is dry at the time of sowing, give the ground a good soaking of water, and keep it clear of weeds. As soon as the plants come, thin them moderately, and in a fortnight more they must be thinned again. Those taken out of the bed at the second thinning may be planted out in another bed, or along the bottom of a shady wall, where the soil is somewhat damp. If planted in a bed, the soil should be of similar kind, and the plants must be dibbled in rows across the bed, nine or ten inches apart, and four or five inches from plant to plant. Make as many beds as will be sufficient to grow a good supply, for in summer, and indeed at any season, scurvy grass should be mixed in every salad. When the beds are all planted, rake the ground neatly between the rows, and give it a good soaking of water. The plants will only require to be kept clear of weeds, which may be effected by frequently hoeing and weeding by hand. The leaves are the parts used in salad, and they may be cut for this purpose as soon as they are large enough. In dry weather it will be necessary to water the ground frequently, and this should be done towards the evening, in order that the plants may be the more refreshed by the moisture during the night. The plants obtained from this sowing will have attained sufficient strength by the end of the summer to admit of being divided; and in increasing your stock of plants, this process may be very conveniently resorted to. Having prepared the ground intended for the fresh plants, or offsets, select a number of the most vigorously rooted plants which were raised from seed, and part them at the roots, in small divisions or sets. These may be dibbled in beds similar to those pricked out: the soil for these should also be somewhat moist and loamy. If it is rather stiff also, it will secure a greater supply of moisture to the plants during dry and parching weather, and when time and labour are directed to more important matters. Having planted the offsets in regular rows across the bed, rake the soil neatly, and give the whole a good soaking of water. Nothing further will be requisite but to keep the plants rather moist in dry weather, and perfectly clear of weeds. But you must observe, that with a plant of this kind, which requires considerable

moisture during the dry days of summer, it is always best to allot it a shady situation and a soil which is somewhat retentive of moisture, for if grown in light, porous soil, the plants will not attain that degree of succulence which is desirable, without frequent supplies of water, which involve considerable labour.

SALSIFY.

THIS is raised from seed, and requires a light rich soil, which should be well dug, and manured with rotten dung, such as has been used in a hot-bed the previous year. If the weather is favourable, prepare a bed about the end of March, or early in April; make it rather fine, and of the ordinary width, having an alley at each side. Draw shallow drills across the bed, about nine inches apart, and sow the seed thinly, covering it lightly with soil from the alleys. If the soil is rather dry, beat the surface of the bed lightly with the back of the spade, after the seed is sown, and water it freely. Another sowing should be made in a fortnight, for a succession, as, like many more, the crop is apt to run to seed when sown early. Fresh sowings may be made from time to time, according to the supply wanted. As soon as the young plants are well up, thin them out to six or seven inches apart, and keep them clear of weeds as they grow. By the end of the summer, the roots will have attained perfection, and may be taken up and stored in sand for use as wanted.

SAGE.

THIS is one of the most requisite of the culinary herbs, and is propagated by slips in the following manner:—Tear down the branches of the plant, and put them in the ground half their length, in the autumn, and you have so many plants; for they root freely if kept a little moist at first; but generally the weather is moist enough in the fall of the year to ensure their well-doing. Slips taken from plants of the preceding and the same year's growth are equally available; but the strongest and most bushy plants are generally produced from young slips. We have resorted to a market-bunch of green sage for our plants, and have succeeded in striking as many as we required. It will answer to do this at any time

between October and February; but October is the safest time. The necessary after-culture consists in merely keeping the plants free from weeds, and cutting down the decayed flower-stalks in the autumn, when it will also be necessary to dig the soil between the rows. In gathering sage for drying, do not cut the plants so close as to make them naked or short, as, when so treated, they are apt to be injured by frost; rather cut them moderately, and when they are in full flower; spread the branches out on a dry sheet, so that they may be readily removed in case of rain. When they are sufficiently dried, make a number of small bunches, and hang them up in any dry room, or place them in brown-paper bags, in which they will be kept from dust, till required for use.

RUE.

THIS is a hardy shrubby plant, and is readily propagated by slips and cuttings, either in the autumn or spring. Unless in great request, it will be sufficient to have one or two plants growing in a bed along with any other herbs, or they may be distributed here and there singly on the border. This plant is propagated by dividing the old plants into as many smaller ones as you want, planting them in rows about a foot apart, if in a bed, and about the same distance from plant to plant. If the weather is dry, give the bed a good watering, and stir the soil between the plants from time to time, in order to keep them clear of weeds. They will soon grow strong and bushy, and if found at the end of summer to be too close, they may be thinned out to the distance necessary to let the air and sun have full power on them. If propagated by cuttings, prepare a bed about the beginning of September, and select those shoots which are strong and well ripened; cut them to lengths of six or eight inches, and plant them in rows across the bed, nine inches apart, and six inches from one another in the row. They must be freely watered during dry weather, and kept clear of weeds, which should be removed by hand. The soil between the rows may also be stirred with a small hoe from time to time.

RAMPION.

THE root, which is the part of the plant used as an esculent, is spindle-shaped, and is of a light colour; from its possessing

an agreeable flavour it is used as a salad, like the roots of the radish. and may be either dressed and eaten raw, or preserved and used as winter salad ; in which case the leaves as well as the roots are available. In point of ornament, it is also a very desirable plant ; the leaves grow close to the ground, and the pretty blue flowers are produced on branching pannicles, on a common stem nearly two feet in height. But rampion is most commonly grown for culinary purposes ; and therefore as an esculent vegetable only. We purpose stating a few particulars in order to grow it successfully. It is a biennial plant, and requires to be raised from seed. The soil most suitable for it is a rich compost of a light open texture. It is preferable to sow the seed in beds of convenient size, and having an open and warm aspect ; the seed, if not obtained good from a dealer, should be gathered as soon as ripe, which is generally about the end of July or beginning of August, according to the season and the locality. It should be sown immediately after it is gathered ; as it is then in the best condition for germinating readily. If it is kept till the following spring, and then sown, it frequently requires a much longer time to vegetate, and, consequently, a supply of plants is not so readily obtained from seeds sown in spring as from seeds sown in August. As the seeds which have fallen on the ground near the parent plant will frequently spring up, it may be desirable to transplant a few of the young plants ; but as the rampion does not well admit of being transplanted, it is necessary, in attempting this, to preserve plenty of soil around the roots. When the seed has been evenly scattered over the bed, the soil should be raked and made level ; if the weather should continue dry and warm, a plentiful supply of water must be given, so as to excite the seeds to germinate rapidly. After the plants have sprung up and made two or three leaves, they should be thinned, leaving a space of three or four inches between those retained for the crop. If the weather is dry, the beds should be watered after the plants have been thus thinned ; and, indeed, throughout the season it is preferable to keep the soil rather moist. If the season is mild, the plants will be ready for use about the month of November, and may be kept good till the spring, by being protected during frosty weather with a covering of dry light litter, straw, or mats supported on hooped sticks. They should not be taken up till wanted for use, as they are best when fresh pulled.

PURSLANE.

THIS is a succulent plant, and is commonly used as a salad. It is propagated from seed, which should be sown in any light garden soil. To obtain an early supply, make a sowing about the end of March on a warm, sheltered border, in a bed four feet and a half wide, with an alley at each side for the greater convenience of watering and weeding. The seed should be sown in shallow drills nine inches apart, and covered by raking the soil evenly over the bed. If possible, choose a mild day for sowing, and if necessary, water the bed freely. In order to guard against injury from frost at night, thrust a few stakes in the ground at each side of the bed, bending them across so as to meet one another in the middle, where they should be tied; they will thus form a series of arches, over which a covering of mats may be laid during cold or very wet weather. As the plants come up, thin them out to about six inches apart in the row, and remove all weeds as soon as they are large enough to handle.

If you can command the convenience of a frame or gentle hot-bed, sow a pinch of seed in six-inch pots, or shallow boxes: if these are preferred, give them a gentle watering with a syringe having a fine rose, and place them in a corner of the frame, keeping it close for a day or two till the seeds vegetate. When the young plants come up, thin them partially, if too thick, and when they have attained two inches in size, prick them into pots about three inches wide, keeping one plant to a pot. Water them as before, and place them in the frame, which must be kept close till they begin to grow, when they may have a supply of air during a few hours in the middle of the day. When the weather is sufficiently mild, the plants may be transferred to a warm border, planting them with the balls of earth about their roots, in beds as already directed. Make another sowing in a bed on the border for a succession every fortnight or three weeks, according to the demand. They will only require to be kept clear of weeds, and watered when the weather continues dry and warm.

PEPPERMINT.

THIS is very readily propagated by offsets and cuttings. It requires a soil which is somewhat strong and moist, and may

be grown very well in a damp or shady situation. The offsets may be obtained of any market-gardener, or from a nursery, and they may be put in the ground almost at any season when the weather is mild and open. When planted a year or so, the roots soon grow rapidly, and extend over the ground for a considerable distance; it is therefore necessary to allot them some place where they may not interfere with other crops, and as they will grow in almost any soil or situation, they may be planted in any out-of-the-way corner of the garden. But if grown in a bed along with other herbs, they will require to be kept within certain limits. In March or April procure a number of offsets, and having cut them into lengths of six or eight inches, place them in the ground about a foot apart, supplying them well with water if the weather is dry. They will soon grow strong, and yield a supply, and the only care they require is to keep them free from weeds, and prevent the roots extending too far. If a very early supply is wanted, put a few offsets in a pot or shallow box, and keep it in a frame where there is a gentle bottom heat. The plants as they grow must have plenty of water and air during fine days.

PENNY ROYAL.

THIS is an herb which grows well in a damp or moist situation, and in a strong retentive soil. It thrives very well when planted here and there along the edges of streams and ponds; and if such situations are accessible, a few plants should be put in the ground, at such distance from the water as may ensure their being well supplied with moisture, without the chance of having too much during the flowing of the water in wet seasons. If you cannot command such facilities in respect to situation, select the lowest-lying ground you have access to, and place in a few offsets at about a foot or a foot and a half apart. They will soon grow up, but they should have frequent supplies of water, until they have made some advance. If you prefer planting the offsets in a bed along with the other herbs, the plants will require to be kept clear of weeds, and watered often.

PARSLEY.

A HERB in very general use in sauces and soups, and in universal request for garnishes and ornament; it is considered, on account of the latter, the more valuable in proportion to the doubleness and curl or confusion of the leaf. It is not to be doubted that the most poor-looking parsley that can be grown, is as good in flavour as the most curly, but for garnishing it would be worse than useless; it would appear mean and ugly. Hence the necessity of sowing more parsley than we can possibly require, that we may what is called "rogue it," that is, pull up all the plain and ugly ones, or "rogues," and leave only such as are richly curled and confused. Parsley may be sown in spring or autumn, but it matters little which; those who require much, sow both spring and fall. Sometimes parsley seed will lie in the ground a long time, but when it comes up and begins to show itself, that is, its leaf, it must be thinned—which is best done by hand—to give room to the plants to grow; but the final thinning must be left until the foliage is fairly developed, and the style of its leaf well shown. The best way to sow it is in drills, eighteen inches apart, that you may go among it to weed and thin it; or along the edges of the kitchen garden beds, to enable us to get at it still better. The only objection to it on the edges is, that we sometimes have to pull up so many as to leave gaps, and planting others in their places makes it little, if any, better. If you mean to edge your beds and borders with parsley, sow it in drills somewhere by itself, and when the plants are strong enough, plant out the whole of the good ones round the edges, that they may be uniform in distance as well as growth. You may be able to do this, perhaps, and leave enough good ones where they were sown to cover the ground, by carefully selecting the plants for the edges in a manner so as to leave good ones at equal distances, as there are frequently four or five capital doubled or curled-leaved plants together. Again, by carefully saving seed from only such plants as are perfect specimens, your plants will come up with very few "rogues" among them. The same treatment is required for both spring and autumn sowing, but we think it safest to sow in March or April. The way to get good curly parsley is, to purchase seeds of the best variety that is advertised; select from the plants some of the

very best curled ones; transplant to a separate spot, and save a few seeds from them for home use. The transplantation of selected plants, and preservation of a pinch of seed, should be repeated annually.

MINT.

MINT is a complete weed, useful as it may be; and when once propagated to a certain extent, there is much more difficulty in getting rid of it than in obtaining it when wanted. A few small pieces of the roots or creeping underground stems will make scores of plants in an incredibly short time, and only require to be dibbled into the ground and have plenty of water thrown over them. This is, perhaps, the most manageable plant of all; for a root put in a pot and placed in the hot-bed may be forced at any time of the year. And in the open ground you have it many months. At midsummer, and before it blooms, while it is full of juices, the stem should be cut for drying, instead of being kept till it has lost them, and become almost dry on the plant. This is to be stored away in a dry place for winter use. If wanted fresh for winter use, it must be forced, or if only to be slightly accelerated, a few of the roots may be placed in soil on a warm border, and covered with a hand-light. In making fresh plantations, part the roots of old plants, and scatter them thinly in shallow drills, in beds of any dimensions and light soil; the drills should be about twelve inches apart and three inches deep. For an ordinary supply, in a private family, a bed six or nine feet long will be quite sufficient for two or three years.

MARJORAM.

THE sweet or knotted marjoram is a fragrant herb, which is in great and general esteem. It is raised from seed, which may be sown any time in the spring or summer. It requires a warm, sheltered situation, and fine rich soil. A bed of it will be sufficient for an ordinary family, but as it is easily grown, a greater supply can be ensured if desired. In March or April prepare a bed about four feet and a half wide on a south border, make the soil moderately rich and fine, and sow the seed thinly in shallow drills about nine inches apart, either lengthwise or across the bed. If the weather is dry,

water the ground freely, and remove all weeds as soon as they come up. When the plants have grown a little above the ground, thin them out partially, and in a few days later they must be again thinned out to five or six inches apart in the rows. Those taken out of the seed-bed may be planted in another bed, in rows nine inches apart, and six inches from plant to plant in the row. For ordinary purposes, it will be sufficient to scatter a pinch of seed in any warm corner, and covering it lightly over, place a stick in the ground to indicate that seed is sown there, and when the plants have grown two or three inches, they may be planted in a bed previously prepared for them. In all weeding and transplanting, give the ground a good supply of water, particularly when the weather continues dry and warm.

To raise an early supply, sow a pinch of seed in a box or pot at the beginning of February, and place it in a frame where there is a slight heat, giving air and water as occasion may require. Or you may sow at the end of February on a warm border, and cover the seed with a hand-glass, which will protect it from cold, and hasten its vegetating. When the plants have grown a few inches, they may be pricked out on a bed and watered after being planted.

What is called "pot marjoram" is a perennial species, and is readily propagated by division of the old plants. These should be planted in the autumn, in a bed of the usual size, in rows, about nine inches apart in the row. The plants will only require to be kept clear of weeds, and they will soon grow strong and vigorous.

MARIGOLD.

THIS is readily raised from seed, which should be sown in the spring, and in any light or moderately rich soil. In March, April, or May, according as the weather may be favourable, prepare a bed four and a half feet wide, on any warm, sheltered border. Dig the earth fine, and draw shallow drills nine or ten inches apart across the bed. It is not very material whether the seed is sown in drills or broadcast, except that, being apt to be disturbed by the rake if the latter mode is adopted, it is better to sow it in drills, which admit of the seeds being more completely covered. As soon as the seeds are sown, cover them with a little fine earth taken from

the alleys, and if the weather is dry, give the ground a good soaking of water. Remove by hand all weeds as soon as they are large enough to handle, and stir the soil between the rows now and then. When the plants come up, thin them out by degrees to six or eight inches apart, transplanting those you take out to another bed, if a good supply is wanted.

It is not indeed quite necessary to sow a full bed of seed, as, if about a handful is scattered over a little good soil, and covered carefully up and watered, you may obtain as many plants as will be sufficient for an ordinary supply. The seeds of the marigold readily sow themselves in the autumn, and the following spring and summer there are always plenty of young plants to be obtained from such sowings, so that you have only to prick them out carefully into the beds or borders where you want them to grow. They will require to be watered occasionally and kept clear of weeds. In the autumn, when the seeds are ripe, they should be gathered and laid in paper bags to be used as wanted.

LAVENDER.

THIS is a hardy, herbaceous, perennial plant, the flowers of which are very fragrant. It is propagated by seeds, or parting the old plants, and it may also be raised from cuttings; but seeds and slips furnish the more common methods of increasing it. In the spring, as soon as the weather is mild and open, procure a number of offsets or slips from a nursery, and prepare a bed for them on a border; the soil should be moderately rich and fine. Then plant the offsets in rows, about nine inches apart, either lengthwise, or across the bed, and about six inches from plant to plant. If the offsets are planted in the autumn, they will attain a good size before the winter sets in, and the following year they will be more vigorous than if planted in the spring. We recommend offsets to be planted, as by this means you have a supply more readily than by sowing seed; but in the absence of the offsets you may scatter a pinch of seed along the bottom of the wall in a little good, light, and moderately rich soil, covering it lightly, and watering it if the weather is dry. The seed should be sown in March or April, and when the plants come up, they should be partially thinned where grow-

ing too thickly. When they have attained an inch or two in size, they may be planted out into a bed previously prepared for them, on the border along with the other herbs. Whether you raise the plants from seed, or procure offsets at once, when planted they must be kept clear of all weeds, and freely supplied with water when the weather continues dry and warm. They will require little further attention, and will soon grow large enough to be fit for use.

Lavender is also propagated by cuttings; but when you have plants that will admit of being divided, it is only a waste of time to raise or increase it by this method.

HYSSOP.

THIS favourite aromatic herb is a perennial, and may be readily propagated by seeds, slips, cuttings, or offsets of the roots. Where old plants can be procured, the last method is the most convenient, as it is the quickest. In March, April, or May, prepare a bed of the usual size, and make the soil rather light and rich. Tear down a number of old and well-established plants till you have as many offsets as you want; dibble them in the bed in rows about nine inches or a foot apart, and at nearly the same distance in the rows; give them a good supply of water if the weather is warm, and rake the bed evenly, trimming the edges and alleys. The plants will only require to be kept clear of weeds, and watered from time to time as occasion may require. They will soon grow strong and bear their flowers. In raising plants from seed, sow a pinch on any spare piece of ground, or on the border, covering it lightly, and watering the soil over it. When the plants come up and grow an inch or two, they may be pricked out where they are to grow, either in a bed or in small patches on the border. In the autumn the young leafy shoots and flower spikes, which are generally used, should be cut and hung up in small parcels in a dry room, to be used as wanted.

BORAGE.

THIS is a hardy annual, and is raised from seed sown in the spring. It thrives in any common garden soil. In April or May make up a bed, four or five feet wide, on any sheltered border in the kitchen garden, or on a spare slip of ground in

some other place. Dig the ground somewhat fine, and if there is plenty of well-decomposed dung at command, trench in a small portion in the process of digging. The best place for the bed is beside others which are set apart for growing other sorts of herbs. Make the surface of the soil rather fine, and draw drills across the bed, about eight inches apart. The drills should not be deeper than an inch or an inch and a half; and in order to keep the depths as uniform as possible, they should be formed with a small drill-hoe. Sow the seed thinly in the drills, and rake the bed neatly over, to cover it in. In dry weather the bed should be well soaked with water, and all weeds removed as soon as they come up. The seed will soon germinate; and when the young plants are large enough to handle, thin them out, by passing the hoe through the rows so as to leave only small patches, about eight inches apart. In doing this, remove the plants that are cut down, and water the bed freely, to strengthen those remaining. In ten days more the plants must be finally thinned, by the hand, taking out all but one of the strongest. Nothing further will be requisite but to water the ground occasionally, and remove all weeds as soon as they can be handled; stirring the soil between the rows will also be beneficial. The plants will soon become strong, and they may be used for any of the purposes for which they may be required.

CARAWAY.

THE seed of caraway is much used by cooks and confectioners on account of its aromatic properties. The plants are raised from seed sown in March, April, or May. It will thrive in any good soil of light character, and may be sown in a south or west border, along with other herbs. Prepare a bed about the usual width and length, making the soil fine and even on the surface. Draw shallow drills across the bed at about nine inches apart, and sow the seed thinly, covering it by raking the bed all over evenly. Water the ground thoroughly in the absence of rain, and keep the bed perfectly free from weeds. It is advisable to stir the surface from time to time between the rows. In about a fortnight, if the weather is mild, the young plants will come up, and they should be thinned out partially till they are about two or three inches high, when they must be again thinned, so that there may be

six or eight inches between them in the row. If a large quantity is required, those plants taken out in the process of thinning may be transplanted into other beds similarly prepared, and in rows across the beds. The plants should have plenty of water in dry weather, and the ground must be frequently stirred, and weeded as occasion requires.

FENNEL.

THIS herb is propagated by sowing seed in the spring, in shallow drills, from six to eight or ten inches apart, in a bed of any convenient size. If wanted early, a warm situation should be selected. The soil should be moderately rich and light. When the plants have attained a little size, thin them out to the distance of one foot each way. It is preferable to sow where the plants are to remain, as, when pricked out and transplanted, they do not grow so rapidly; but they may, however, be transplanted, if most convenient, when they have attained a height of three or four inches. As the plants shoot up for bloom, cut off the stem at once, because you do not want seed, you want branches of the plant in their young state. Propagation may also be effected by dividing the roots of the old plants, either in spring, summer, or autumn; the offsets thus obtained will be sufficient for a small quantity, where the demand is limited. Plant them a foot apart, and you have a supply of leaves in a short time. Fennel raised from seed will last for several years.

SAVORY.

THE annual savory must be raised from seed sown every year. It requires a moderately rich light soil, and a warm sheltered situation. In the beginning or middle of April, prepare one or two beds by digging and making the ground fine. Sow the seed thinly in shallow drills about a foot apart, and cover it in lightly, raking the ground neat and even. When the plants come up an inch or two, they must be thinned out to four or six inches apart; and if the weather is dry, the beds should be freely watered; and the frequent weeding is indispensable. As soon as the plants are sufficiently advanced, which is when they are commencing to blossom, they may be either cut with a knife or pulled up by

the roots ; for after the crop is taken, the roots and stems are of no further use.

The Winter or Shrubby Savory is best raised from slips. About the middle of April, make as many slips or cuttings from old plants as you require, and plant them in beds previously made rich and fine. The rows may be about six inches apart and the slips three inches apart in the row. They will strike root in a short time, only requiring to be kept free from weeds, and watered as occasion may require. Take the plants carefully up in the autumn, preserving as much soil to their roots as possible, and transplant them into other beds in rows about a foot apart and six inches from plant to plant. Rake the soil neatly about their stems, and give them a liberal supply of water. Their after culture consists merely in keeping them clear of weeds, and when this point is attended to they will grow up strong and vigorous. In gathering the stalks, which is done when they are in flower and in full vigour, do not cut them too close, for if the plants are made naked and stubby they will be liable to suffer from frost during the winter. It is therefore necessary to keep the head somewhat full and bushy.

For drying and storing, the entire plant, if the annual sort, or the cut tops of the winter kind, should be trimmed neatly, tied in small bundles, and kept in paper bags in a dry place for use during winter. Never hang them up on the bare walls, or allow them to lie loosely about uncovered, for when treated in this manner the stalks and leaves lose much of their aromatic quality. If covered up carefully in paper bags, as already directed, and laid in some moderately dry place, they will keep good for a considerable period.

TANSY.

THIS is an agreeable aromatic plant, sometimes used by confectioners in seasoning soups and other dishes. It is a hardy perennial plant, which may be grown with very little difficulty in any good sandy loam, and in a narrow border of the kitchen garden, having a good aspect. It may be propagated by seeds, cuttings, and offsets, and may be grown either in beds or patches on the borders. In raising it from seed, which need never be done if plants can be got to divide, prepare a bed about five feet wide, and the ground rather

fine. Draw shallow drills, about nine inches apart, across the bed, and sow the seed thinly; covering it in by raking the bed all over evenly. This sowing should be made any time in the spring, say the end of March or beginning of April. If the weather is dry at the time of sowing, give the bed a good soaking of water. Remove all weeds as soon as they are large enough to handle. And when the plants are about an inch above the surface of the soil, they may be partially thinned out where very thick, leaving them about six or eight inches apart in the row. Water the bed thoroughly, after thinning to invigorate the plants; and nothing more will be necessary but occasional weeding and stirring the ground between the rows. As the plants progress they will, perhaps, make for flowering, in which case the stalks must be cut close out as soon as they are observed, as the leaves only are useful, and these should be encouraged to grow free and strong. In propagating the tansy from offsets it is only necessary to take up a number of old thick-rooted plants and part their roots in small tufts. These may be planted in a bed of good, rich, loamy soil, about six inches apart, in rows nine inches apart, across the bed. Water the soil thoroughly, if the weather is dry, and remove all weeds before they are large.

CHERVIL.

THIS is an excellent herb for seasoning soups or mixing in salads. Being of annual duration, it requires to be raised from seed sown in the spring, and subsequently in the course of the summer, for successional crops. In the month of March, prepare a bed, on any border where the aspect is favourable for early vegetation. The soil should be somewhat light and rich, and the bed may be about four and a half feet wide, with an alley or path on each side. Having dug the soil finely, form the bed, and make the surface even, either with the spade or a rake. Sow the seed thinly, broadcast or in shallow drills across the bed, about nine inches apart. Rake the surface over, in order to cover in the seed; and if the weather is dry and warm, give the bed a good sprinkling of water, which will hasten the germination of the seed. Remove all weeds as soon as they grow; and when the young plants spring up, thin them where they are too thick.

As soon as they are an inch or two high, they should be thinned again ; but those taken out are not transplanted, as they do not grow well by such treatment. It is therefore preferable to sow in drills, and thin out the plants to six or eight inches apart. In every case of weeding or thinning, give the ground a good soaking of water, using a can with a fine rose attached to the spout. When the leaves have grown an inch or two, they may be cut off for use, as wanted.

The chervil, when sown early, is very apt to run to seed, and therefore a sowing should be made every fortnight or three weeks, according to the supply required. Stir the soil frequently between the rows, and keep the plants clear of all weeds. In continued dry weather, water should be supplied to them frequently and copiously in the evening and morning. A crop of chervil may be obtained for winter use, by sowing on a warm, sheltered border, about the commencement of August ; and when the cold weather sets in, the beds may be protected by a covering of mats, supported on hooped sticks.

ROSEMARY.

THIS useful and fragrant herb is readily propagated by cuttings, taken off either in the spring or autumn. The latter method is perhaps the more preferable of the two. In September, after the plants have made their growth, on a bed of good rich friable soil on a warm border, plant a few cuttings three or four inches long, and from the best ripened shoots ; plant them in rows about eight inches apart, and at the same distance from plant to plant. They must be inserted in the ground nearly half their length, and somewhat firmly, so that they may strike root the sooner. The best implement for planting such cuttings, is a small round sharp-pointed stick. If the weather is dry, water the soil thoroughly. They will strike root before the cold frosty nights set in ; but should the winter prove unusually early, it will be advisable to shelter the young plants by laying a quantity of straw or dry light litter between the rows, so as to come up to the tops of the shoots. You may also make cuttings in the spring, just before the plants begin to grow. Plant them in a bed of good soil as already directed, and protect them by hand-glasses or mats, supported on hooped sticks across the bed, during severe frost. A little water will be necessary occa-

sionally, as the temperature begins to increase, and the soil between the plants must be frequently stirred, in order to keep the weeds from growing and the surface loosened, by which means it may be the better acted on by the sun and air. If you have no plants from which to make cuttings, you can always obtain them from any market gardener or nurseryman.

BURNET.

THIS herb is sometimes used in salads, and is raised from seeds and slips, but it is most easily propagated from seed. Sow a quantity of seed in the spring or autumn, in shallow drills, on a shady border, and when the plants are up, thin them out a little. As soon as they are sufficiently well established, plant them out where they are to stand, in rows, or beds, keeping them about six inches apart. The soil may be any light friable loam. If not wanted for seed, the flower-stalks should be cut off, the leaves only being used for culinary purposes. The plants must be freely watered during the dry season, and carefully freed from weeds as soon as the latter spring up. The plants will continue green during the greater part of the year, and may be used in winter, when other salad plants are not to be had.

S A L A D S, &c.

BEET.

THE ground for beet-root should be well trenched and liberally dunged or dressed, the dressing being forked well in with the top spit. The seed should be sown thinly in drills, so as to let them grow where they are sown, as they neither attain so large a size, nor are so well formed when transplanted. In March or April choose an open situation for sowing, and dig the earth deep and fine. Draw your drills all over it at about a foot apart, using a garden line for the purpose of enabling you to keep the drills straight; then drop two or three seeds every six or eight inches in the row all over the quarter that is designed for the crop. You must be guided as to the extent of ground by the supply you are likely to require. The drills need not be deep, but such as may be formed with a small drill hoe, and they will only need to be covered an inch or thereabouts. If the weather is very dry at the time, you may water the drills with good rain water, but in general this will not be necessary. The seeds may be covered up simply by raking the soil lightly over them, so as to make the ground even. In about a month, or sooner in warm districts, the young plants will come up: they must be thinned out. Leave the strongest plant of the two or three that grow at every spot, and all weeds must be removed at the same time. Occasionally stirring the ground between the rows must not be omitted, as this practice is of the greatest benefit to the roots of the plants. With proper attention of this kind they will grow rapidly, and attain a great size by the setting in of the winter. They may be dug up as soon as the leaves indicate that they have come to their full size. In taking them up, clean the roots from any soil that may be attached to them, but in doing this be careful not to break

the skin. Twist off the leaves also to within an inch of the crowns, and let the roots lie in any airy shed for a day or two, to dry. They may then be packed in boxes among sand, dry peat, or dry light earth, and stored away in any cool dry shed or loft, completely out of the weather; and if properly taken up and packed, they will keep good even till the following summer. Some persons cut the tops off quite close to the crown before they pull them up for the winter, but this method is not to be recommended. If it be desirable to save seed of beet-root, put out the best plants of the whole crop for that purpose, in an open situation, and far removed from any of a coarser kind. The seed will be ripe in the autumn, when it should be gathered. For this purpose, take up the entire plants, or cut off the stems near the bottom, and spread them out in an airy situation, where they may dry, after which the seed can be shaken out, or beaten, and put up in bags.

For garden culture, none but very dwarf, compact growing, and highly-coloured varieties should be selected. The best sorts are those which produce moderate-sized bulbs, deep red all through, and very small leaves of a deep red colour. The best varieties at present known, are Barrett's Crimson, Cattell's Dwarf, and Whyte's Black; but one of these is enough in any garden.

There is another race of beets sometimes cultivated, but which are grown for an entirely different purpose from the ordinary beet-root. In these the midrib is thickened and fleshy, and very white in colour. This kind of beet is used thus:—the midrib, stripped of the leafy part, is boiled tender and eaten as sea-kale; the leafy parts are cooked and used as spinach. Some people fancy them, but they are not generally grown. These are grown like the others, but they require more room than the compact red beets, which only ought to find a place in gardens; eighteen inches between the rows will not be too much. The outer leaves are stripped off when they have attained sufficient size for use.

CELERY.

THIS has become so much a fancy vegetable, that the merit of cultivation has almost superseded the superior merit of quality and usefulness. The growers of celery for exhibition

grow for weight, and lose sight of flavour, tenderness, and colour. Celery is, however, one of the most useful vegetables for all classes; so necessary is it in soups, on which a very large portion of the population depends, that, were it for nothing else, every garden should have a supply. It may, however, be grown for soups and for ordinary uses without much trouble, and without too much waste of ground. Prepare a piece of ground in a warm or sheltered situation, about the end of March or the beginning of April. Dig out the soil a foot deep, and make a slight hot-bed with fermenting stable-dung or litter; and then sow the seed thinly, but evenly over it, for the purpose of raising plants. As a small quantity of seed will produce as many plants as may be sufficient to supply an ordinary family, it may be as well to sow it in a little patch by itself. Care must be observed to make the soil rich enough—it cannot be too rich for celery—and very finely pulverized. When the seed is sown, it will be sufficient to rake the surface of the bed over, in order to cover it in. Give the bed a good watering, if the weather is dry, and remove carefully, by hand, all weeds as soon as they come up. If you have the convenience of a hot-bed, you may sow a few seeds in a pot, or shallow pan, at the same time. As soon as the plants are large enough to handle conveniently, prick them out three inches apart, where they may be covered with a hand-glass, or, which is very much better, where you can put on a garden frame and light. When the seeds of celery are sown in a pot or pan, these should be well drained, and the soil should be rich and very fine; keep them near the glass, and when the young plants come up, water them well with tepid water, using a pot to which a fine rose is attached.

A great variety of expedients may be adopted in raising plants, according to the readiness with which they are wanted. A spot of ground on a warm border, which one hand-light of the ordinary size will cover, may be quite large enough to raise all the plants you want; but they are always raised sooner in a frame where there is gentle bottom heat. If this method is adopted, plenty of air must be admitted to the plants, especially during bright sunshine, when they should be entirely exposed. When the plants are large enough to handle, any that are growing too thickly should be thinned, and all weeds carefully removed. The ground for receiving

the plants, when pricked out into intermediate beds, whether in the open ground or in a frame under a light, must be very well dunged. In these beds they may be kept about four inches apart, and remain until they are as thick as a small quill at the collar of the roots, or they may even be larger than this.

They must be planted out in single rows in trenches four feet apart. In commencing to plant them out, draw a line on the surface for a guide, and along one side of it dig out a trench about a foot wide ; in the bottom lay six inches of good rotten dung, and fork it into the soil. This operation completed, take up your plants, selecting those which are the most advanced. Remove from the roots all offsets and side shoots, and dibble them in at six inches apart along the row which was previously prepared, that is to say, along the centre of the trench, and soak the ground well with water. The depth of the trenches may be from ten to twelve inches ; they should be formed somewhat flat on the bottom, but the soil to be kept open, and, when the plants are being dibbled in, take care to tread the ground as little as possible.

The soil which is taken out in forming the trenches should be laid neatly on each side and in equal proportions, as it will be subsequently required to place round the plants in blanching them. In order to keep the earth thus removed in its place, it may be beaten lightly with the spade in a sloping direction at the top. As the plants advance in height, draw a portion of the earth in at the side, around, and close to their stems to blanch them ; they will very soon be large enough to be useful in soups, and it will not be very long before they are sufficiently blanched to be available in salads.

This is our favourite way of growing celery, and you can grow so much more of it by this method that you can afford to cut it smaller, and the plants which are longest in the ground will be the largest. But there is no reason why there should not be a crop for winter, of a larger size than these will produce. In order to provide for these, dig a trench one foot wide and one foot deep, and fork in six inches of well-decomposed dung fully six inches deep. Lay the soil which you take out on each side neatly and regularly as before, and, when the trench is properly levelled at the bottom, dibble in the plants at the same distance as before ; and give the ground occasionally a good soaking with manure water. As the plants

advance in growth, they will require to have a portion of soil laid round them from the earth which was laid at each side, but to do this you must draw the soil down into the trench, which must be first filled up when the plants have attained a proper size ; and afterwards, as the plants advance, it will be necessary to draw the soil up to their stems with a hoe, or it may be laid up with a spade. Celery will bear to have a large bank of soil against their stems ; but the rows must be four or six feet apart. In earthing up the plants, which should always be done on fine dry days, the earth should be bruised with the spade very fine, and should not be allowed to crumble into the heart of the plants. It is perhaps safest, to avoid any injury in this way, to use two short deal boards about a foot broad ; these boards must be laid close to the plants, and, after the earth is filled in between the plants, they can be taken out, and so on, till the whole are properly earthed up.

The seed-bed will always contain plants in very different stages of growth for planting out, and by constantly removing the largest, a good supply may always be obtained from the same sowing ; but the few plants in the pots raised in the frame will afford a sufficient supply for the earlier crops, while the main sowing will provide the plants for the later crops. By always selecting the largest plants to prick out as soon as they become large enough, there will of course always be a greater or less difference in their several stages ; and then, after pricking out, there are many plants that start ahead of the rest, so that when you plant out, you take the largest and best established plants. Your best rule is to plant a row whenever you have enough of plants in a fit condition, and continue this until a full supply is planted out.

It is not with families as with market gardeners. The former want constant supplies in moderate quantities ; the latter want a good supply to be available at a season when there is a brisk demand in the market for this favourite vegetable. Market gardeners require to have their celery of a large size ; because it is better for their purpose in such a condition, and they do not aim to have it until the winter salads make a great demand for it. But we prefer having it as soon as it is to be got eatable and tender ; and when it once comes into season, every row that is cleared off makes room for another crop, and the spare places can be occupied with winter

greens. The spaces between the rows of celery, while it continues of a small size, can be filled with a row of spinach, or any other crop that is small while on the ground, and soon cleared off.

In all cases of pricking out celery into intermediate beds, or planting it finally in the trenches where it is to remain, do not omit giving the ground a good soaking with water if the weather is dry ; and weeds must be removed before they have attained a great size. The wider the plants are planted in the trenches, and the richer the ground is made, the larger they will grow ; and it is only necessary to attend to the earthing-up as the plants grow in order to have them properly blanched. The earth should be laid around them in a sloping manner, so that it may be close up to their stems as far as they reach, and the part between the plants may be left somewhat hollow.

In some situations, particularly those which are low and moist, celery is very apt to rot, especially in the cold season ; and to guard against injury to the stems, arising from excessive moisture, it may be proper to spread a quantity of dry, light litter over the plants ; or rather, in such a manner that the wet may be thrown off the plants, while the tops are allowed free exposure to the air and light. In frosty weather, however, it is advisable to cover the whole plants in this way. But it is a safe rule not to plant late celery where the ground is low or much subject to wetness during the autumn or winter. The fact that celery will generally begin to decay after it is fully grown and properly blanched, is a strong reason for planting a limited portion at a time, and making a succession of crops, even though only to the extent of a small row, so that when one crop attains a fit state for being taken up, another may be in a fair way of succeeding it very soon. As a further preventive against the plants rotting at the heart, never perform the operation of earthing-up, except when the ground is somewhat dry and the weather equally so ; and then only a limited quantity at a time.

The cultivated kinds of celery form two classes, called white and red, the latter of which have a red tinge in the leaf-stalks which the former do not possess. The varieties themselves are not very permanent, new forms taking the place of older favourites after a few years' growth. Seymour's Superb Red and White are favourite sorts ; Cole's Superb

Dwarf-red is an excellent variety ; the Lion's Paw is a small and good early kind ; and Ayres' Superb Late White is a small, hardy, excellent keeping sort, and admirably adapted for small gardens.

CORN SALAD.

THIS forms an excellent spring salad, and being an annual requires to be raised from seed sown in any good vegetable soil. In February or March, prepare one or more beds, according to the quantity required ; but it is better to sow only a small quantity at a time, as when raised early, the plants are apt to run to seed. The bed may be of any convenient size, and situated on a warm open border facing the south. Rake the surface of the bed evenly, and sow the seed thinly in shallow drills across the bed, and about eight inches apart. Cover it lightly with fine soil, and rake the whole evenly over. Give the bed a good supply of water if the weather is dry, repeating the operation as often as occasion may require. As the plants come up, attend to the thinning out where they are growing too thickly, and remove all weeds as soon as they are large enough to be handled. When they have grown a few inches, the plants should be thinned out to four or five inches apart, and watered from time to time during dry weather, but always applying the water in the morning or evening. They will require little further attention, and when the leaves have attained a good size, say, two or three inches broad, they may be cut for use. Another sowing should be made about ten days after the first, and so on every fortnight, according to the demand ; for the plants are always better when raised from successional sowings, as they are apt to run to seed after the first cuttings. This is more particularly the case with those sown early.

WATER-CRESS.

It is of no use to attempt the culture of this, without you have a proper command of water in such a way as to enable you to regulate the depth. A clear running stream, into which you can let a supply at any time, is the best place, provided you have the means of letting off the water again at pleasure. The slips of the plants may be laid on the bottom of the

stream, about six inches apart. The water should be from three to six inches in depth ; and when the slips are put in, a stone should be placed on them to keep them in their places, and they will soon begin to grow. We have seen a broad ditch made on purpose for the plants, and the water let in once a week. Indeed, the old water ought not to be let out until the fresh is ready to be let in. After the plants have flowered and shed their seed, a large mass of plants will be formed the following season, and these will afford an ample supply for many years. Where the descent of the stream is more rapid than is desirable, little pools or dams should be formed across it, in order to prevent the roots from being washed away by the force of the current.

The water-cress may be readily propagated at the sides of ponds or lakes, by simply casting a quantity of the plants on the edge of the water, and the seeds will ripen and produce an abundance of plants in a short time. Where the situation is low, and the ground moist and loamy, the plants may also be grown in beds. In the spring, you procure a number of strong slips, with plenty of rootlets to them ; plant them in rows in the beds, about four or five inches apart, and supply them constantly with water, more particularly during summer, when the weather is dry and warm. It must be observed, however, that when grown in this manner, they should have the most moist and shady situation that can be selected ; and even then, it is only by keeping them freely watered that they can be grown with anything like success. By this method, if properly followed out, a fair supply may be ensured ; but it should not be resorted to where there is a command of water suitable for growing the plants as already detailed.

AMERICAN, OR WINTER CRESS.

THIS is an excellent cress for winter and early spring use, when other vegetables of a pungent kind are less easily obtained. It is also very serviceable in summer, and by many is preferred to the common garden cress for mixing in salad. But both may be used for that purpose. The American cress may be grown all the year round, and frequent sowings should be made from March till September, according to the supply wanted. It thrives best in a light rich soil, which should be dug very fine. Prepare, in March or April, one or

two beds, on any warm, sheltered border ; and if the ground is not rich enough, dig in a quantity of old decomposed dung, mixing it well with the soil. The beds may be four or five feet wide, and the whole length which the border will admit, and divided by alleys or paths, twelve or fourteen inches wide. Having formed the beds, and made the surface somewhat even, draw shallow drills, with a small drill-hoe, about seven or eight inches apart, and sow the seed thinly, covering it lightly over by raking the surface of the bed evenly. Trim the edges neatly, and if the weather is dry, give the ground a good soaking of water. Should the weather be generally hot, the bed should be watered every other evening or morning. But in applying water, you must soak the ground thoroughly ; for it is of little use merely wetting the surface, as the sun soon dries it up again ; and when it is properly watered every other day, it will maintain the young plants better than if merely moistened on the top twice a day. You must bear in mind too that this cress requires a good deal of moisture, and for this reason, though the soil should be light, it should not be too free, but rather substantial, and such as may retain the moisture instead of letting it pass away. Remove all weeds as soon as they come up, and stir the soil between the rows from time to time, in order to promote the vigour of the plants, which, as soon as they are large enough to handle, should be thinned to six or eight inches apart in the row. Many people allow the plants to grow on without giving them any attention after the seed is sown, but there can be no doubt as to the advantage of keeping them well thinned ; for the leaves are not only better flavoured, but they are much larger, and therefore more easily gathered than when the plants are allowed to grow thickly together. They will now only require to be supplied with plenty of water in dry weather, and the soil should be frequently stirred and kept clear of weeds.

The cress may be cut for use as soon as the leaves have attained two or three inches in length. A second sowing may be made in May, or the beginning of June, in any shady situation, and in soil of a more retentive character, but sufficiently rich to ensure crispness and good flavour to the plants. The seed may be sown either in drills or broadcast, and plenty of water must be given from time to time. When the plants of this sowing have advanced sufficiently, thin

them out, by passing the hoe in a straight direction among them if the seed was sown broadcast, leaving rows about nine inches apart, and keeping nearly the same space from plant to plant. But it is always most convenient to sow such things in beds and in shallow drills, for the plants are more readily accessible for weeding and cutting, than when sown broadcast. When properly thinned out, they will require only to be kept clear from weeds, which should be removed by the hand or the hoe with as little delay as possible. In dry weather, also, give the beds a thorough soaking with water every other day, or rather evening, for watering is most beneficial when applied after the heat of the sun has decreased.

To ensure a crop of American cress in winter and early spring, make a sowing in September or early in October, but the soil and situation must be somewhat different from those provided for the summer sowing. As the plants of this sowing will not be much exposed to warm weather, the seed should be sown on a sheltered border having a south aspect, and the soil should be rather free than retentive of moisture. It is, however, indispensable that the soil should be rich; and if it is not in a proper condition in this respect, it will be necessary to mix with it a quantity of good old dung, forked fine and small; or some well-rotted leaf-mould of the preceding year may be used. If the bed in which the seed is sown can be raised a few inches above the general level of the ground, it will be the more suitable for winter. Having formed the bed, and made it even on the surface, proceed to draw drills across it about eight inches apart. Keep the drills very shallow, as little covering will be necessary. Sow the seed thinly, and rake the bed evenly and regularly over. Trim it off neatly at the edges, and give the soil a good soaking with water. More than one bed may be made, according to the quantity of cress likely to be wanted. The plants will spring up in a short time, and the ground must be carefully kept free from weeds. The drills should be roughly thinned at first, and when the plants have grown a little, they must be finally thinned to six or eight inches apart in the row. They will require little further attention, but occasional weeding and watering.

The better to ensure the health and freshness of the plants during winter, it will be proper to drive in a number of stout

sticks over the bed in the form of small arches, the ends of the sticks being inserted in the ground a few inches at the opposite sides of the bed. And when cold frosty weather sets in, lay over these arches one or two common mats, or a sheet of canvas or oil-cloth. In general, the beds need not be kept covered for a long time, nor unless the frost is very intense, or the wind cold and cutting. In most cases, if the mats are thrown over the hoops at night, and removed in the morning, it will be sufficient. This cress is quite hardy enough to stand any ordinary winter; but when occasionally covered, it may be preserved through the winter in greater perfection than if left exposed, while it may be cut with much greater convenience.

ENDIVE.

THIS crop is always raised from seed, and requires to be sown in soil of light rich character, in beds which should be situated on any warm or sheltered border. The sowing may be made at any season except winter, according to the time the plants are wanted. If you desire to have a very early crop, you may sow in a hot-bed as soon as the beginning of March. Collect a lot of good stable dung, and lay it up in a round heap to ferment; in five or six days, turn it properly over and mix it well, shaking it with the fork for this purpose. It must be laid again in a heap for a few days more, when it should have another turning as before. In two or three days it will have become fit to be used for the bed, which you should now proceed to form. As this is for a light crop, it will only be necessary to make the bed on the level ground. Lay the dung down evenly, but first drive in four stakes, which will serve to guide you as to the size of the bed, which should be made large enough to admit of a frame being placed on, and have ten or twelve inches of the dung all round. In laying the dung down, shake it up with the fork, so as to mix it properly, for if the hotter portion is placed in one part and the colder in another, the heat will not be uniform. Raise the bed to about twenty-four or thirty inches in height, and make it level and neat on the top. Dress the sides also, by drawing down the loose straw with the fork, and throw it on the top. When all is properly completed, and made neat and orderly, place on the frame, but not the lights yet. Throw

in a quantity of good soil to the depth of five or six inches, and having raked it evenly and neatly over, put on the lights, leaving them down about an inch at top to permit the escape of the hot steam. In general, it is better to let the bed stand with the frame and lights on for a few days before the soil is put on, especially if the seed is required to be sown in it, and not in pots, pans, or boxes.

As endive raised very early is apt, like many other vegetables, to run to seed, it will be better to sow the seed in the soil of the bed, so as to have plenty of plants at command for selection. A limited supply is all that would be depended on from this early sowing. Having sown the seed in shallow drills, rake them over neatly and sprinkle the soil with water. You may now shut the lights, and keep them close till the young plants appear above the ground. In case of severe weather, it will be proper, especially at nights, to cover the lights with common garden mats, in order to guard against frost. When the weather is bright and warm, as it is most likely to be in March, open the lights a few inches at top during the day for an hour or two, and if the soil in the bed seems dry, give it a good sprinkling of water, which should however be somewhat tepid, or as near the temperature of the bed as possible. When the plants are large enough for handling, thin them out to five or six inches apart, and those which are removed may be planted in another bed, or even in a cool frame, to be ultimately planted out on a south border. Give all the air possible to the plants in the hot-bed, and keep the soil about their roots frequently stirred. It will also be necessary to repeat the waterings from time to time. They will soon grow strong and be fit for blanching. Those which were removed into the intermediate bed will come into use as a successional crop, but if the supply in the first bed is sufficient to meet the demand for a considerable time, the others should be planted out on a warm sheltered border in beds, or along the bottom of the wall.

The soil should be rather light and dry, but not poor or exhausted. If they are planted in beds, they should be in lines across the bed, about eight inches apart, and six inches from plant to plant. The plants must be taken up out of the soil in the frame or bed very carefully with a small garden trowel, or a stick somewhat broad and bluntly sharpened at one end. In transferring them to the open ground, preserve

as much of the soil about the roots as possible, and make the holes in the bed so large that they may be easily placed. Cover the roots in carefully, so as not to disturb the ball of earth around them, or break the tender fibres. When properly planted, rake the beds neatly and give them a good soaking with water to refresh the plants and consolidate the earth about their roots. Should the season be backward, it may be necessary to afford the plants a little protection against the chances of frost, especially during night. For this purpose you should place a number of stakes in the ground, at each side of the bed, and bend them over to the opposite side, or tie them together in the middle. The sticks should be just so thick that they may be bent, and so strong that they may support a covering of common garden mats or canvas. This may be kept in readiness near the bed, to be used as occasion requires. It is advisable to water the beds from time to time, and all weeds must be taken out as soon as they can be handled. Except occasionally stirring the surface, nothing more will be wanted; and the plants will grow strong and vigorous as the weather becomes warm, when they will be fit to be blanched.

In the absence of a frame or pit, for forcing endive, it will be necessary to adopt the next best expedient when an early supply is wanted. Accordingly, the warmest border should be chosen, on which to make a sowing. Dig the ground finely, and form one or more beds, but in general one will be sufficient, for the plants raised from the first sowing will require to be for the most part planted out either temporarily or permanently. Rake the soil evenly, and sow the seed thinly, either broadcast or in drills; then rake the bed over neatly, and give the ground a good soaking of water. This sowing may be made at the latter part of April, or beginning of May, when all danger from the weather has passed; but, in purchasing the seed, be sure to obtain an early sort for the first sowing, either in a frame or in the open ground. After the seed is deposited in the ground, occasional waterings will be necessary whenever the weather is dry and warm. When the plants come up, thin them moderately, particularly where growing very closely, and in eight or ten days more, a further thinning will be requisite, when those taken up may be planted into other beds, prepared previously, in rows eight inches apart, and about the same distance from plant to plant.

At every planting of this kind, the seed-bed and the secondary beds should be well soaked with water in order to refresh the plant. In taking up the plants from the seed-bed, preserve as much soil to their roots as possible, and drills about two inches deep should be previously prepared for them in their new quarters. These drills should be drawn across the bed with the corner of a small hoe. What is called a drill-hoe should be used for this purpose. They will soon strike root: as they progress, be careful to remove all weeds before they attain any size, otherwise they will injure the plants. The operation of weeding is also beneficial, by loosening the soil about their roots; and even where there are no weeds, which is, however, somewhat rare in newly prepared ground, it will be proper to stir the surface with a hoe. In every case of stirring the ground, or weeding by hand, the soil should be thoroughly soaked with good rain water immediately after the operation; and, in continued dry weather, an application of weak manure water, if it can be obtained, will be very beneficial, as it tends to invigorate the plants, and imparts to them a more delicate flavour than when grown without it. They also grow more crisp and juicy, and therefore have a finer relish when cut for use. When the plants begin to come to some considerable size, and particularly in the case of any having long stems, a little soil should be drawn round them with a hoe. This will keep them from being shaken by the wind, and will also hasten their growth. When the plants become sufficiently strong, which may be known by the leaves being large and regularly formed, they may be tied round with a string of common matting to blanch. Tie them lightly, but completely all round, beginning at the bottom and crossing and recrossing the string towards the top, where it may terminate in a knot. The plants should always be tied as soon as they are ready, for they are apt to run to seed if the operation is omitted beyond a certain time. This precaution is the more necessary with the early-sown crop.

For a successional principal crop, sow again about the beginning of June, in a more open situation, or on a warm border, if there is room. Make the soil somewhat rich and fine. A light sandy, but substantial soil should be preferred. When the plants have attained a good size, say about two inches, they may be planted out in other beds in rows eight

inches apart, and six inches from plant to plant. But they should be partially thinned out as soon as they are large enough to handle, before the pricking out is performed. As many of the plants from this sowing will come in for use somewhat late in the season, it may be advisable to keep them a little wider than those previously planted. They will also be later in blanching—that is, they will take a much longer time, and therefore they should be tied up as soon as they are of sufficient size. It will be better to be a little too soon than too late ; but the plants should be in a perfectly dry state before they are tied to blanch, as otherwise at this season they are very liable to rot. No more should be tied at a time than are likely to be wanted.

About the beginning of August, if endive is much in request, another sowing may be made in good rich soil, and on a dry warm border which is well sheltered from the north. This sowing will produce a supply for the winter, and even extend as far as the spring with proper protection ; and, as it is made at a time which is too far in the season to insure good weather to the plants, the warmest situations should be chosen. Ground sloping to the south, and protected behind by trees or bushes, or the narrow strip of ground usually preserved between the back alley of a border and the wall, will be very suitable ; but more particularly for the pricking out of the young plants. As soon as the seed is sown, rake the soil evenly, and give it a good soaking with water to accelerate the germination of the seed. As soon as the plants are large enough,—having been previously thinned out,—plant them in such sheltered places as have been pointed out. Keep the ground clear of weeds, an operation which will become less troublesome as the season declines, but frequent stirring of the surface is always beneficial. In cold drenching rains the bed should have a covering of canvas or garden mats, supported on hooped sticks inserted in the soil at each side of the bed, where the plants are placed conveniently, or if along the bottom of the wall, the sticks may be merely made to lean against it. If the soil in which the plants are placed is well situated, and moderately dry and free, the plants will be the better fitted to withstand the cold weather, and, with the protection of canvas or mats, during drenching rains or severe frost, they may be kept in a good condition for a long time ; but if you can plant them in a frame under glass, they will

be more secure. Wherever they are planted, whether in a frame or on a border, the greatest attention is necessary to keep them clean and somewhat dry. Pick off all decaying or decayed foliage, and remove any other matters which may have a tendency to vitiate the atmosphere around them ; all dampness and mouldiness should be carefully prevented. Some persons also recommend taking up the plants on the approach of cold weather, to be planted in a sheltered place ; but it is much better to plant them at once out of the seed-bed into such a place, as, if this can be done, they need not be disturbed after. We may, however, observe that, if taken up, they may be preserved for a week or two by being merely covered with soil at the root ; but this should not be practised if it can be avoided.

What is called plunging the plants in a bed of tan under glass is perhaps sufficient, in many cases, for keeping a crop of endive late in the season, if it is not wanted through the whole of the winter. The plants may be tied up as wanted ; about a fortnight or more should be allowed for them to blanch well, but only a limited number should be blanched at a time, and always when the weather is dry and mild. There are various ways of blanching endive, but tying with matting is the more generally adopted. You may, however, effect your purpose equally well, and as quickly, by inverting flower-pots over the plants. This is the most preferable method in the colder time of year, as the plants are less apt to rot ; for, while they are being blanched under the pots, they are also protected from cold rains. Blanching is a process which requires more or less time, as the weather is cold, warm, wet, or dry ; but it may generally be effected in a little more than a fortnight.

There are two classes of endives : one, the broad-leaved, or Batavian ; the other the curled-leaved, which is most extensively cultivated in England. Of both these, there are several varieties to be met with, more or less in cultivation ; but there is not sufficient difference between them to render it very important what particular sorts are grown where only a small supply is needed. What are called the Green-curled, and the Broad-leaved Batavian, are the best sorts ; but, when a continued supply is wanted, the Small Green-curled, and the Small Batavian, may be added for the earlier crops.

RAPE.

BEING quite hardy, this plant is not unfrequently cultivated in the rural districts, the cottagers using it instead of greens during winter ; at which season it acquires a tenderness and relish which make it a very excellent dish for the labourer's table. It is propagated by seed, and almost any kind of soil will suit it. It may be sown on beds or borders or open quarters, and will accommodate itself to any aspect. The best time to sow the seed is about July or August ; and the soil may be of any light and friable kind. After the young plants have attained a convenient size, they should be transplanted to a quarter previously prepared for them ; they should not be planted nearer one another than eighteen or twenty inches ; and water should be freely supplied to them, if the weather be dry and warm. After they have attained a considerable size, and have been acted on by the frost, they will be in a fit condition to be used.

Rape is sometimes used as small salad both in winter and summer ; and when wanted for this purpose, may be sown in beds and treated similarly to the garden-cress. The first sowing may be made in January, during mild open weather, in light rich soil, which is most suitable for producing it tender and mild. It will also be improved by a warm sheltered situation. Rape is often substituted, in the London markets, for mustard, as small salading ; but, though it is less expensive, it is much inferior to mustard in point of quality and flavour.

SORREL.

THERE are few plants more freely propagated than this, and as few that are more relished by all tastes. Sorrel is used in salads, and, from its gratefully acid qualities, is very agreeable to eat in the hot summer-time. It may be raised either from seeds or offsets of the roots. It grows best in a soil of strong loamy character, moderately retentive of moisture, and somewhat rich. It may be grown in beds of any convenient size, or along the bottom of a wall having a north aspect ; but in general, it adapts itself to almost any situation, and is sometimes more difficult to get rid of than to propagate. We have

always grown it readily enough, and very good, in good loamy soil, in which a quantity of road-scrapings was mixed.

If wanted to be raised from seed, prepare a bed in the first or second week of March, in a situation which is rather moist and shady, or if you prefer it, along with the other salads, on the border in the kitchen-garden. Sow the seed in shallow drills across the border, about nine inches apart. You may also sow broadcast, and when the young plants are large enough, plant them out to other beds in rows of the same width, and about six inches apart in the row. Whether the seed is sown in drills or broadcast, cover it in lightly, and give the bed a good soaking with water. It is, perhaps, preferable to sow in drills, as, when the plants come up and are strong enough, they can be thinned out, and those removed planted in another bed; and in this way as many beds may be planted as will keep up a good supply. The beds should be frequently hoed between the rows, for the purpose of keeping down weeds and stirring the soil. Little more will be wanted, but plentiful supplies of water when the weather is hot and dry. The leaves, which are the parts used, will be fit to cut at the end of the summer, and the plants raised from this sowing will last for a number of years, only requiring to have the soil dug about them every autumn or winter, when a quantity of old dung or leaf-mould should be mixed with it. You may obtain a crop of sorrel much sooner, by planting good strong offsets, which may be procured at any nursery or market-garden. The offsets may be planted in beds, as directed for those raised from seed, any time in the spring of the year when the weather is favourable for the operation. The plants will soon grow strong, and produce plenty of leaves throughout the summer. In the autumn, at digging the ground, or before that time, it will be proper to cut off all flowering stems, as they only exhaust the plants, and are not wanted.

The French sorrel may be kept green and fresh during winter, if it is provided with a covering during the inclement weather. Accordingly, if a supply of the leaves is wanted in the dull season, drive in a number of sticks to be bent over the bed crosswise, the other ends being inserted at the opposite side. These will serve as a framework to support a covering of canvas or garden-mats, which should be thrown over it during hard frost or sharp, cutting winds; but air and light

must be admitted as freely as possible at all times, and any weeds that may spring up among the plants should be carefully removed.

LETTUCE.

LETTUCE may be grown the entire year, and frequent successional sowings require to be made either in the open ground, or in pits or hot-beds. The seed should be sown in a light, rich, sandy loam, with which a portion of good old decomposed manure should be incorporated. The soil need not be deeper than twelve inches ; and if it is somewhat stiff and retentive at the bottom, it will be none the worse. Very little ground is necessary to raise a sufficient quantity for ordinary purposes ; a bed four feet broad, and between twenty and thirty feet long, will generally be large enough to supply a family during the summer ; and if more is necessary, several sowings may be made in the beds of permanent crops, as onions, carrots, and the like. We have sown a quantity of the seed of radishes and lettuces together on the cucumber-bed after the crop of that vegetable was cleared, and when the bed scarcely retained any heat. We have sown the seed of lettuce in pots in cold pits, and have made up hot-beds on purpose ; we have sown it in all months, and there are varieties that will even brave mild or moderate winters, but they are not worth the expense of growing out of season.

To grow early lettuces, make up a slight hot-bed in January or February. Let the dung lie to ferment for a few days, and turn it over once or twice, when the bed may be formed, then a quantity of good, light, rich soil placed over it to the depth of six or eight inches, and after placing on the frame, rake it evenly. Sow it broadcast with the seed of the Cos and Cabbage lettuce pretty nearly equal in quantity, and rather thinly ; rake the soil over again to let the seed be mixed with it, so as to be partially covered, and give the bed a good watering to hasten the germination of the seed. Let them grow on together, merely thinning them a little after they come up. Get another bed ready by preparing the dung in the same way as before, or make use of one that has done its work so far as heat is concerned. You may also prepare a bed of good light litter, but rich withal, and which you can cover with a common garden frame and light. As soon as the young plants

of the cos lettuce which were sown in the first bed are large enough, prick them out carefully into the second bed which has been prepared, and keep them about six inches apart. Water them as soon as they are planted, and put on the lights of the frame, which must also be properly covered with mats at night, if the weather indicates frost. The cabbage lettuces which are left in the first, or original seed-bed, having now more room, will have grown well, and from the time they have formed leaves to the period of their running into seed they are good in salad ; so that beginning by thinning them where they are too thick, and when they have formed rough leaves, you may take them up to be used in salad ; continue to thin them in this way where they are most crowded, and they will assist in the supply until they are capable of forming salad by themselves. But they must always be kept free from weeds, and carefully protected from the frost by the frame being covered as occasion may require. You must also water them from time to time, and give air in fine mild weather by sliding down or propping up the frame at the back.

The plants of cos lettuce which were removed into the intermediate bed will be rapidly advancing, and will soon be ready for use to succeed the others. A month after the first you may prepare another bed, which may be formed of any moderately hot and light material, such as stable-litter, and leaves. Make it large enough to take on a frame with a light, and cover it with six or eight inches of good, rich, light, mould. Here you may sow again, for the purpose of raising plants to be pricked out on a bed, or the borders of the garden. The time for planting them is as soon as they are large enough. After sowing, water the soil, and put on the lights. In case of frost, protect the bed properly by a covering of mats, and admit air freely when the weather is mild. On fine warm days the lights may be taken off entirely, so as the better to harden the young plants against their final removal.

From February you may sow every month, if you wish to continue a supply all the year ; but it is always advisable to sow in small quantities. Always select a mild day for planting out lettuce, for when raised in a warm, or even covered bed, and suddenly exposed to the cold, they receive a check, and do not so readily establish themselves in the open ground.

They may be planted out from the time they are about three-quarters of an inch to three inches in size ; and therefore, you can afford to wait a day or two until the weather be sufficiently mild. They may be planted out at a distance of about nine inches by twelve, or if they are of a large sort, you may keep the rows eighteen inches apart, and the plants twelve inches apart in the row. At an early season they should always be planted on a warm sheltered border, and in soil which is light and rich. If removed very early from the bed, they may be planted near and along the bottom of the wall, and if the weather is cold, particularly at night, they should be protected by matting. For this purpose a number of sticks may be placed in the ground in a slanting direction, so as to lean against the wall, and common garden mats can thus be laid over them ; but the mats must be secured so as not to be blown by the wind, otherwise the plants would be injured both by the mats and the cold. In cases of sudden or severe late frosts, lettuces planted in beds may also be protected in a similar way, by sticks being hooped over them, and covered with mats.

In raising lettuce in the open ground, and without the assistance of a frame, you may prepare one or more beds on a warm border about the first or second week in March. If the ground has been dug or ridged during the winter, it will only require to be levelled and raked over neatly at the time of forming the beds. These should be four feet wide, and as long as the border will admit,—having alleys about twelve inches broad, which will be found very convenient for the purpose of thinning and weeding ; but if it has not been previously prepared in this way, it must be properly dug, and a portion of old rich dung laid in the bottom of the ridges. In forming the beds, make the surface fine and level, and then sow the seed thinly. In general it will be sufficient to rake the surface after sowing the seed ; but you may also throw a little fine earth over them, out of the alleys, and water the beds if the weather is dry. When the plants are up, thin them out where they are too thick. Those removed may be transplanted into other beds or along the bottom of the wall, in fine, rich, and moderately dry soil. The others in the seed-bed should be finally thinned to three or four inches apart, or even more if the sort is large. The plants of the first thinning may not be so large as to make it worth the trouble of planting them out, but those of the second or final thinning will be

quite large enough, and they should be planted in beds in rows twelve or fifteen inches apart, and eight inches from plant to plant in the row. The earth round the plants should be frequently stirred and kept clear of weeds ; water the bed as occasion may require, and in dry warm weather a good soaking will be necessary every other day.

A kind of grub sometimes preys on the younger lettuces, and this insect must be occasionally looked after ; but the frequent stirring of the surface is generally a preventive of its ravages to any serious extent.

During the summer, lettuces may be planted with perfect freedom in almost any situation, and, indeed, if it is somewhat shaded it will be considerably improved in flavour during the dry season ; and accordingly we frequently find them grown between other crops, such as peas, beans, cauliflowers, and cabbages. By this arrangement a considerable space of ground is saved, while the shade afforded to the lettuces by the taller crops renders them more delicate and tender. Lettuces are also improved in flavour by being somewhat blanched in the heart. For this purpose, when they have attained a pretty good size and begun to swell, you should tie their leaves together by a string of bass mat, and they will grow nice and crisp in a few days.

Lettuces may be raised in beds, and planted out in the autumn in any sheltered situation, where the plants can have protection during cold weather. In mild winters they will generally succeed well enough along the bottom of a wall having a south aspect, but they may else be planted out in frames, and in such structures they should be protected by a covering of mats during very cold weather, and more particularly at night. If the seed of any hardy sort, such as the Brown Cos, Hammersmith Green, and Green Cos, is sown in the open border at the end of August, the young plants will be large enough to plant out either in a cool frame or along the bottom of a wall by the beginning of October. They may also be planted in any other sheltered place, and which can be readily covered in case of frost. Great attention must, however, be paid to cleanliness. Stir the ground frequently between the plants, which should stand about eight inches apart, and keep it rather dry than too moist, for, in the absence of sun heat, much water would be injurious, as likely to make the plants rot. Be very careful, also, to examine the

plants from time to time, so that no insects or vermin, such as slugs and snails, may be allowed to lodge about the plants. This precaution is very necessary, as, during the winter, plants of a succulent or juicy character, such as lettuce, are always liable to be preyed upon by vermin. In whatever structure or situation the lettuce plants are kept, they should never be deprived of the air, except during drenching cold rains, or severe frost, when they must be carefully covered up. The soil in which the plants are put should be somewhat raised, so that all superabundant moisture may be readily run off; and if a frame is used, they should be kept as near the glass as possible, without, however, coming into close contact with it. When raised in beds or on a border in the autumn to be planted out for winter use, they may be very conveniently pricked into six-inch pots, properly drained and filled with fine, rich, and light soil, instead of being planted in the ground; or one or two seeds may be sown in the pots, and when the plants come up, they may be thinned so as to leave only one in each pot. They may thus be conveniently placed along the bottom of a wall, and as soon as the very cold rains set in, they can easily be removed to a cool frame or other structure suitable for their preservation.

There are two classes of lettuces cultivated, and these are distinguished by the names of Cos lettuces and Cabbage lettuces. The former are the larger upright growers, which, when blanched in the heart by having the leaves loosely tied together at top, eat crisp and juicy. The latter grow in a flattish spreading form, and at the best are soft and flabby, but some of the kinds are more hardy than the others, and they are hence sometimes grown for winter and early spring use. For our own parts, if we could manage to preserve a few plants of a good hardy sort of cos lettuce, in a cold frame through the winter, so as to be enabled to plant them at the foot of a south wall in February, or as early as the season would allow, we should never care about having cabbage lettuces; but in these matters, tastes vary.

There are many varieties of both the classes of lettuce, but one or two sorts are as good as,—ay, better than a dozen; the chief thing is to take care that the seed is well saved, that is, that it is perfectly true from a good genuine stock. There is no better sort than the Bath Brown Cos to be sown in autumn for spring use; and the Paris White Cos for summer growth;

but good local varieties may be sometimes met with, equally useful with the best that can be purchased under these or any other names. The Hammersmith and Tennis-ball are good hardy cabbage lettuces for winter use ; and the Neapolitan and Versailles are among the best for the summer crops. The cabbage varieties, when grown to their full size and best condition, close over their central leaves in the way of the cabbage, and hence the hearts become more or less blanched. Some of the cos varieties do the same, but it is preferable to tie the ends of the leaves loosely together ; they may then be converted into use, as soon as they have half-a-dozen leaves. The flat growers may be blanched artificially while small, by inverting a garden pan, or laying a tile or slate over them.

MUSTARD

IN a young and green state is generally employed for mixing in salads. The sort grown for this purpose is called the white mustard. It is raised by sowing seed, and it may be had fresh and young all the summer by making successional sowings about every ten days. About the end of February or the beginning of March, if the weather is mild and open, prepare a bed on a warm border. Make the soil rather fine, and sow the seed somewhat thickly, broadcast or in shallow drills, covering it over lightly with fine soil taken from the alleys of the bed. If the weather is dry, water the bed freely, and repeat the watering from time to time as may be necessary, and the surface should be covered with a garden mat laid on the soil. When the plants begin to appear above the ground, the mat must be removed, except at night, when it must be supported on hooped stakes. All weeds must be carefully removed as soon as they come up. Or, if the season is backward and cold frosty nights intervene, lay a few branches of fir over the bed, and if the plants happen to be caught with the hoar-frost, give them a gentle watering in the morning before the sun is on them. Another sowing should be made in a week or ten days, as the leaves of mustard are best when young and green, and sowing from time to time on a border having a good aspect, you can always have a fresh supply.

To provide a supply for winter, make up a moderate hot-bed in September, and when the dung is properly sweated, lay in about six inches of good light soil ; sow the seed thinly

in shallow drills or broadcast; then keep the frame close till the plants come up, when they should have air and water as required. They should have abundance of air when the weather is mild, and all weeds must be taken out by the hand as soon as they grow. The bed for the mustard need not be warmer than what will be sufficient to keep the plants growing slowly, and for this purpose the bed may be made for the most part of leaves and such other materials, as light stable litter. It will even be sufficient, if the seed is sown in the frame without having any artificial heat, but the plants should be protected during frost by a covering of common garden mats. The principal point to attend to when mustard is raised for a winter supply, is to keep the plants moderately dry and remove all decaying matter, such as leaves and weeds, admitting air freely whenever the weather is mild and open. If the frame is large enough, only a part of it should be sown about September, and in about a fortnight later, the rest of the space should be sown, so that when the plants of the first sowing have been cut, those of the second sowing will be ready to keep up the supply; and that part of the frame where the first sowing was made can be cleared for a third crop; and so on with the second, clearing away the plants of each crop as soon as they have done, and making another sowing in their place, previously forking up the soil and adding a little fresh mould. In this way you may have a supply all the winter and early spring, or until the crop in the open ground is ready for use.

RADISH.

THE radish is an esculent much valued on account of its agreeable pungent properties. It is chiefly used in a raw state, either mixed with other salads or eaten separately, and imparts a grateful relish. Like almost all the other vegetables belonging to the cruciferous tribe, radishes are successfully employed in scorbutic complaints. They are, however, more relishing to the taste than nourishing to the animal system; and though exceedingly grateful and cooling to the palate during the dry and warm days of summer, they should never be eaten raw to a very great extent, as injurious consequences are likely to follow their excessive use. In cases of difficult respiration, coughs, and similar complaints proceeding

from the chest or lungs, the syrup of radishes is allowed to have very beneficial effects. When boiled, and served to table in the manner usual with asparagus, radishes make a wholesome dish, and may be partaken, when so treated, with greater freedom than when they are in a raw condition. The seed-pods are not unfrequently pickled among other vegetables; for the purpose of pickling, they should be gathered in a young state, and during dry, warm weather, so as to be perfectly free from moisture. As soon as gathered, they should be placed in pickle, as, if allowed to lie for any length of time, they lose their pungent qualities.

Radishes have been divided into two principal groups, viz. Spring Radishes, or those sorts which admit of being sown early in the spring, and subsequently throughout the summer, for immediate use; and those known as Autumn Radishes, which are better adapted for being sown towards the end of the summer, to come to maturity in the autumn, when they are taken up and stored in dry sand, in a cool shed or store-room, to be used throughout the winter.

The Spring Radishes should be grown on a rich, open, and well-pulverized soil, and abundantly supplied with moisture during dry, warm weather. The best situation is a sheltered border facing the south, or south-east; but, wherever the situation may be, care should be observed that the soil is not allowed to become dry or parched for want of moisture.

When there is the convenience of a frame, the earliest crop may be very advantageously sown on a slight hot-bed, and protected by a covering of mats or canvas. The formation of the hot-bed may commence about the middle or end of January, and the materials of which it is formed should be a mixture of leaves and light stable-dung. The bed should be made about two feet or two feet and a half in height, and should be as neat and regular as possible, the materials being uniformly laid and mixed so as to equalize the heat at every part of the bed. When the bed has been properly formed, a frame, with single or double lights, according to the size of the bed, should be placed upon it. Though the use of such frame and lights is recommended as most suitable for ensuring a crop in the shortest space of time, there are other means by which a comparatively early supply can be obtained; and therefore, in the absence or scarcity of frames and lights, a warm covering may be effected by simply placing over the

bed a number of hoops or sticks, bent so that their ends may be inserted into the bed on each side ; and over these hoops, or sticks, a covering of mats may be placed during cold and wet weather. The bed should be covered with a layer of fine soil, composed of light loam and leaf-mould, to the depth of six or seven inches, and on this the seed should be sown. Air must be freely admitted to the young plants as soon as they appear above the surface, and the bed should be frequently watered with a pan having a fine rose, using slightly tepid water. Such beds may be made to serve a double purpose, as the seed of radishes may be sown over sets of potatoes planted in the frames to produce an early crop. The best variety for early sowing in a frame, is the Long Scarlet Radish, which may also be slightly mixed with the White Turnip variety.

The time at which the first crop should be sown in the open ground will much depend on the mildness of the season ; but it is advisable to make a good sowing about the middle of February, and while the weather is mild and open. A little protection will occasionally be requisite during severe frosts and cold drenching rains. When radishes are not raised on beds, the first sowing should be made on a warm and sheltered border, about the middle or end of January, according to the state of the weather. The soil should be light and friable loam, and the bottom of the border should be thoroughly drained, both for the purpose of rendering the earth warmer, and freeing it from stagnant moisture. It is preferable to sow in beds of any convenient length, and ample protection should be ensured until the warm, mild weather fairly sets in. If space is limited, several things may be sown in the same bed—such as onions and lettuces ; but where there is plenty of room, there will, of course, be no necessity for adopting such an expedient, which is otherwise of great advantage. Great care should be taken to pull out the weeds as soon as they appear ; for, if left to grow up unnoticed, they soon become very troublesome, especially when other crops are sown along with the radishes. Presuming that the first sowing has been made in the middle of January, it will be necessary to make a second sowing about the beginning, and a third about the middle of February, and so on, every two weeks, according to the extent desired. It is much better to sow a small quantity at a time, and frequently, than to make

an extensive sowing, and at long intervals. Early-sown radishes are apt to become rank, and to run to seed after they have grown to a certain stage; and these evils are best obviated by frequent successional sowings.

During the summer months, a sowing should be made every week, so as to ensure a constant supply of young and tender roots. These summer sowings may be very properly made between the asparagus beds. The trenches should be prepared by being dug, and the soil made fine and soft. An abundance of rotten dung may be also dug in; and after the seeds have been sown, the soil should be freely watered. The advantage derivable from sowing in such situations is, that the branching stems of the asparagus form a kind of shade to the young radishes, which thereby grow up more tender.

With regard to Autumn Radishes, the first sowing should be made about the middle or end of July, in soil previously made rich, light, and friable. As soon as the young plants appear, the ground should be thoroughly soaked with water, in the absence of plentiful showers of rain. They should be thinned out as soon as they come into rough leaf, keeping them from four to six inches apart, and taking care to remove all weeds that appear. Those sorts wanted for winter use should be taken out of ground before the frosty weather comes on, and stored away in sand in any dry shed or store-room. The best method of storing them, is to provide a number of boxes, about two feet long and one foot wide; a number of the roots should be taken up, and the leaves twisted off close to the shoulder or top; having placed a layer of sand at the bottom of the box, a layer or single tier of the radishes should be laid in evenly and regularly over the sand; another layer of sand should then be added, and then another tier of the roots should be placed over that, continuing to add a layer of sand and roots alternately, until the box is filled, when it may be placed on a shelf, or removed to any dry corner. As many of such boxes should be filled in this way as will be sufficient for the probable supply. Previously to being used, the roots should be taken out and immersed in water for a few minutes.

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